

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

PRECISION PLANTING LLC,
Petitioner,

v.

MASCHIO GASPARDO S.p.A.,
Patent Owner

U.S. Patent No. 8,770,121
IPR Case No.: IPR2024-00008

**PATENT OWNER'S OPPOSITION
TO PETITIONER'S MOTION
TO STRIKE PATENT OWNER'S SUR-REPLY**

Precision (Petitioner) moves to strike Maschio's (Patent Owner's) Sur-Reply and its Ex.2021 (the Sur-Reply Declaration of its expert, which Precision notes on page 2 of its Motion largely tracks the Sur-Reply). The Motion asserts that the Sur-Reply and Declaration (collectively, the "POSR" below) raise "new issues," ostensibly improper under 37 C.F.R. § 42.23(b). Maschio responds as follows.

I. Background

This case involves, and has always involved, the limited issues of construction of one claim limitation (TBE) and the consequent validity of the claims reciting that limitation. Maschio's POSR does not raise any new issues. Rather, Precision's position is essentially: petitioner can take claim construction position A (TBE = "an element") in its Petition (Paper 2), then challenge patent owner's construction B (means-plus-function) from the Response (Paper 17) in the Reply (Paper 20) while abandoning A and proposing several alternative new claim constructions (C, D, etc.),¹ and then preclude patent owner from challenging petitioner's new claim

¹ Because Petitioner's new reply arguments were directed only to the existing claim construction and validity issues, Maschio reacted with its POSR instead of a motion to strike. By Precision's logic, however, its new reply arguments were improper and Precision should never have filed its Reply. Patent Trial and Appeals Board Consolidated Trial Practice Guide, November 2019 ("CTPG") at 73 ("Petitioner may not submit new evidence or argument in reply that it could have presented earlier . . ."). Precision should have stuck with its initial claim construction for "a party's argument should not be a moving target." *Finnigan Corp. v. ITC*, 180 F.3d 1354, 1363 (Fed. Cir. 1999). Contrary to Precision's moving target, Maschio has consistently offered one construction.

construction and related invalidity arguments in the POSR (Paper 24). That is not the law. *See, e.g., Chamberlain Group, Inc. v. One World Technologies, Inc.*, 944 F.3d 919, 924-25 (2019) (Board erred in finding patent owner waived its new claim construction arguments; due process rendered the arguments permissible even during oral argument because they responded to new arguments made in the reply and were consistent with its position throughout the IPR as merely a clarification).

II. The Board Should Not Strike the Entirety of the POSR.

Precision contends that the POSR relies heavily throughout on impermissible evidence. That contention is incorrect. The POSR is directed entirely to the claim construction and consequent validity analyses based on that construction addressed in the Institution Decision, as permitted by CTPG at 73 (“The patent owner will similarly be allowed to address the institution decision in its sur-reply, if necessary to respond to petitioner’s reply.”). Moreover, Precision does not contend that the POSR does anything other than respond to the Reply and its accompanying Declaration, as permitted by CTPG at 73-74 (“Sur-replies should only respond to arguments made in reply briefs [or] comment on reply declaration testimony”). Finally, Maschio could not have responded to Precision’s new arguments earlier; they were not known until the Reply.

III. The Board Should Not Strike Any Portions of the POSR Because All Arguments Are Proper Clarifications Of Prior Positions.

On pages 3-5 of its motion, Precision addresses four specific arguments as “new.” First, Maschio argued in its Preliminary Response (Paper 7) that even under Precision’s proposed construction which was similar to the preliminary construction (pages 26-28) of both the District Court and later the Board in its Institution Decision (Paper 12), VenHuizen does not anticipate (pages 32-38). In addition, Maschio’s expert did not agree that VenHuizen anticipates under that construction. Maschio’s expert agreed only that VenHuizen discloses “an element that provides support against an axial force,” and this is achieved by transferring load to the drive shaft which in turn must transfer it to the housing in ways that are not described.

Second, Precision challenges the “equivalents” arguments raised for the first time in the POSR. Maschio could not have raised those arguments before the POSR, however, because Precision only raised equivalents for the first time in its Reply. Third, Maschio’s arguments that a “rotatably mounted” shaft must be able to rotate in an unrestricted, 360° manner were made in Paper 17, at 21-22. Fourth, in its Preliminary Response (Paper 7) at 36, Maschio argued in distinguishing VenHuizen that the TBE must be in the movable portion. Therefore, Precision’s Motion fails as none of Maschio’s arguments are improperly new.

IV. Good Cause Exists for the Board to Consider the POSR.

The Board should exercise its discretion under 37 C.F.R. § 42.5(b) to waive 37 C.F.R. § 42.23(b) and/or to consider all, or at least parts of, the POSR, because

good cause exists. Consideration would also be in the interests of justice and consistent with due process. Maschio encourages the Board to read everything in the record and garner from that record the information helpful for it to decide this case. As the CTPG instructs, at 80: “The “Board is capable of identifying new issues or belatedly presented evidence when weighing the evidence at the close of trial, and disregarding any new issues or belatedly presented evidence that exceeds the proper scope of reply or sur-reply. As such, striking the entirety or a portion of a party’s brief is an exceptional remedy that the Board expects will be granted rarely.” Parties are not barred from clarifying their arguments on issues previously raised. *Chamberlain Group, Inc.*, 944 F.3d at 925. Further, in an IPR, the Board is “well-positioned to determine and assign appropriate weight to evidence presented,” and “recognize[s] that a complete record of the evidence is preferable to facilitate public access as well as appellate review.” *See, e.g., Weatherford U.S., L.P. v. Enventure Glob. Techn., Inc.*, No. IPR2020-01648, Paper 60 at 17-18 (P.T.A.B. Apr. 13, 2022) (denying motion to exclude a supplemental declaration).²

Precision argues prejudice on page 2 of its Motion, but the POSR does not propose a new claim construction or raise any new issues. It is ironic that Precision argues insufficient time between the POSR and oral argument because Precision

² *See also* CTPG at 79-80 (“In the Board’s experience, consideration of the objected-to evidence is often unnecessary to resolve the patentability of the challenged claims, and the motion to exclude is moot.”).

asked the Board to extend the briefing schedule (Maschio consented). Paper 14. Precision already cross-examined Maschio's expert (the author of Sur-Reply Declaration) and extensively addressed claim construction issues. Precision has an opportunity to address the POSR at oral argument. Finally, any prejudice would be self-inflicted as Precision's Reply abandoned its original claim construction and offered new constructions and invalidity arguments.

Accordingly, the Board should deny Precision's Motion because good cause exists and the interests of justice support consideration of Maschio's POSR.

V. CONCLUSION

For the foregoing reasons, Petitioner's Motion to Strike Patent Owner's Sur-Reply should be denied in its entirety.

Respectfully submitted,

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CERTIFICATE OF SERVICE

Pursuant to 37 C.F.R. § 42.6(e), the undersigned certifies that on December 3, 2024 a complete and entire copy of the PATENT OWNER'S OPPOSITION TO MOTION TO STRIKE PATENT OWNER'S SUR-REPLY was served via electronic mail, as agreed to by counsel, upon the following counsel of record for Petitioner:

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Date: December 3, 2024

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

WEATHERFORD U.S., L.P.,
Petitioner,

v.

ENVENTURE GLOBAL TECHNOLOGY, INC.,
Patent Owner.

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Patent 7,290,616 B2

Before MEREDITH C. PETRAVICK, HYUN J. JUNG, and
NEIL T. POWELL, *Administrative Patent Judges*.

POWELL, *Administrative Patent Judge*.

JUDGMENT
Final Written Decision
Determining All Challenged Claims Unpatentable
35 U.S.C. § 318(a)

Granting Patent Owner's Motion to Deem the Filing of Its Exhibits As
Timely (Paper 28)
37 C.F.R. § 42.5(c)(3)

Dismissing Petitioner's Motion to Submit Supplemental Information
(Papers 39, 40)
37 C.F.R. § 42.123(b)

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Dismissing Petitioner’s Motion to Exclude (Paper 45)
Denying-in-Part and Dismissing-in-Part Patent Owner’s Motion to Exclude
(Paper 46)
37 C.F.R. § 42.64(c)

Granting Motions to Seal (Papers 4, 5, 12, 33, 41, 43, 54)
37 C.F.R. § 42.64(c)

I. INTRODUCTION

A. BACKGROUND

Weatherford U.S., L.P. (“Petitioner”) filed a Petition for *inter partes* review of claims 1 and 5 of U.S. Patent No. 7,290,616 B2 (Ex. 1001, “the ’616 patent”). Papers 2, 3¹ (“Pet.”). Enventure Global Technology, Inc. (“Patent Owner”) filed a Preliminary Response. Papers 10, 11² (“Prelim. Resp.”). Pursuant to 35 U.S.C. § 314, we instituted an *inter partes* review of claims 1 and 5 of the ’616 patent on all presented challenges. Paper 20 (“Institution Decision” or “Inst. Dec.”), 2, 35–36, 40–41.

After institution, Patent Owner filed a Response (Paper 23, “PO Resp.”), to which Petitioner filed a Reply (Papers 31, 32³, “Pet. Reply”), and Patent Owner thereafter filed a Sur-reply (Paper 35, “PO Sur-reply”).

¹ Paper 2 is a private, unredacted version of the Petition, and Paper 3 is a public, redacted version of the Petition.

² Paper 10 is a private, unredacted version of the Preliminary Response, and Paper 11 is a public, redacted version of the Preliminary Response.

³ Paper 31 is a private, unredacted version of the Reply, and Paper 32 is a public, redacted version of the Reply.

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Patent Owner also filed a Motion to Deem the Filing of Its Exhibits As Timely (Paper 28), and Petitioner filed a Non-Opposition to Patent Owner's Motion to Deem the Filing of Its Exhibits As Timely (Paper 29).

Petitioner also filed a Motion to Submit Supplemental Information. (Papers 39, 40⁴, "Mot. Sub. Sup. Inf."); Patent Owner filed a Response to Petitioner's Motion to Submit Supplemental Information (Paper 42, "Resp. Mot. Sub. Sup. Inf."); and Petitioner filed a Reply in Support of Motion to Submit Supplemental Information (Paper 48, "Rep. Mot. Sub. Sup. Inf.").

Additionally, Petitioner filed a Motion to Exclude (Paper 45, "Pet. Mot. Excl."); Patent Owner filed a Response to Petitioner's Motion to Exclude (Paper 49, "Resp. Pet. Mot. Excl."); and Petitioner filed a Reply to Patent Owner's Response (Paper 50, "Reply Pet. Mot. Excl.").

Also, Patent Owner filed a Motion to Exclude (Paper 46, "PO Mot. Excl."); Petitioner filed an Opposition to Patent Owner's Motion to Exclude (Paper 47, "Opp. PO Mot. Excl."); and Patent Owner filed a Reply to Petitioner's Opposition (Paper 51, "Reply PO Mot. Excl.").

The parties also submitted a number of unopposed Motions to Seal. Papers 4, 5, 12, 33, 41, 43, 54.

An oral hearing was held in this proceeding on January 20, 2022. Papers 57, 58⁵ ("Tr.").

⁴ Paper 39 is a private, unredacted version of the Motion to Submit Supplemental Information, and Paper 40 is a public, redacted version of the Motion to Submit Supplemental Information.

⁵ Paper 57 is a private, unredacted version of the Transcript, and Paper 58 is a public, redacted version of the Transcript.

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We have jurisdiction under 35 U.S.C. § 6. This Decision is a final written decision under 35 U.S.C. § 318(a) and 37 C.F.R. § 42.73. For the reasons below, we determine that Petitioner has shown by a preponderance of the evidence that claims 1 and 5 are unpatentable.

B. RELATED PROCEEDINGS

The parties note that the '616 patent is involved in *Enventure Global Technology, Inc. v. Weatherford U.S., L.P. and Weatherford Technology Holdings, LLC*, Civil Action No. 4:19-cv-02397 (S.D. Tex. 2019) (“the Litigation”). Pet. 8; Paper 9, 1. The parties also identify as related matters IPR2020-01580, IPR2020-01661, IPR2020-01666, IPR2020-01684, and IPR2020-01700. Pet. 8; Paper 9, 1.

C. THE '616 PATENT

The '616 patent relates to wellbore casings. Ex. 1001, 10:7. The '616 patent explains that, conventionally, wellbore casings are installed in a wellbore to hold the wellbore open and prevent undesirable fluid transmission between the wellbore and the surrounding formation. *Id.* at 10:10–14. The '616 patent elaborates that

[t]he borehole is drilled in intervals whereby a casing which is to be installed in a lower borehole interval is lowered through a previously installed casing of an upper borehole interval. As a consequence of this procedure the casing of the lower interval is of smaller diameter than the casing of the upper interval. Thus, the casings are in a nested arrangement with casing diameters decreasing in downward direction. Cement annuli are provided between the outer surfaces of the casings and the borehole wall to seal the casings from the borehole wall. As a consequence of this nested arrangement a relatively large borehole diameter is required at the upper part of the wellbore. Such a large borehole diameter involves increased costs due to heavy casing handling

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equipment, large drill bits and increased volumes of drilling fluid and drill cuttings. Moreover, increased drilling rig time is involved due to required cement pumping, cement hardening, required equipment changes due to large variations in hole diameters drilled in the course of the well, and the large volume of cuttings drilled and removed.

Id. at 10:14–33. The ’616 patent then states that “[t]he present invention is directed to overcoming one or more of the limitations of the existing procedures for forming wellbores and wellheads.” *Id.* at 10:34–36.

The ’616 patent discloses a method and apparatus for deforming plastically a tubular liner inside a wellbore. *Id.* at 11:51–52. This method and apparatus serve to couple a radially expandable tubular member to a cased or open hole section of a wellbore. *Id.* at 11:53–56. It allows forming or repairing a pipeline, a wellbore casing, or a structural support. *Id.* at 11:56–58.

The ’616 patent discusses details of an embodiment in connection with Figures 1 and 1*a*–1*d*. Figures 1 and 1*a*–1*d* are reproduced below.

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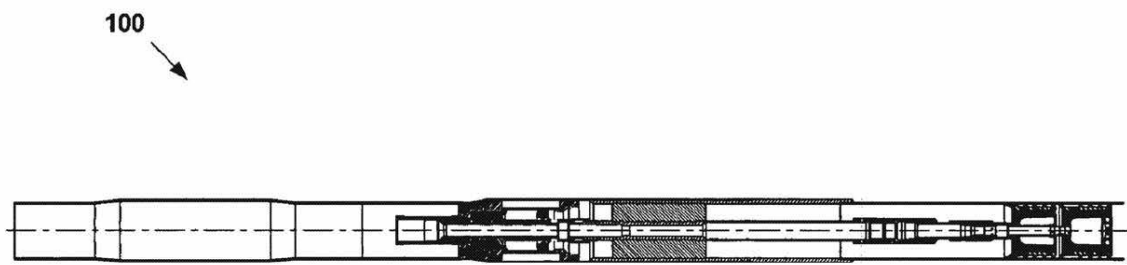


FIG. 1

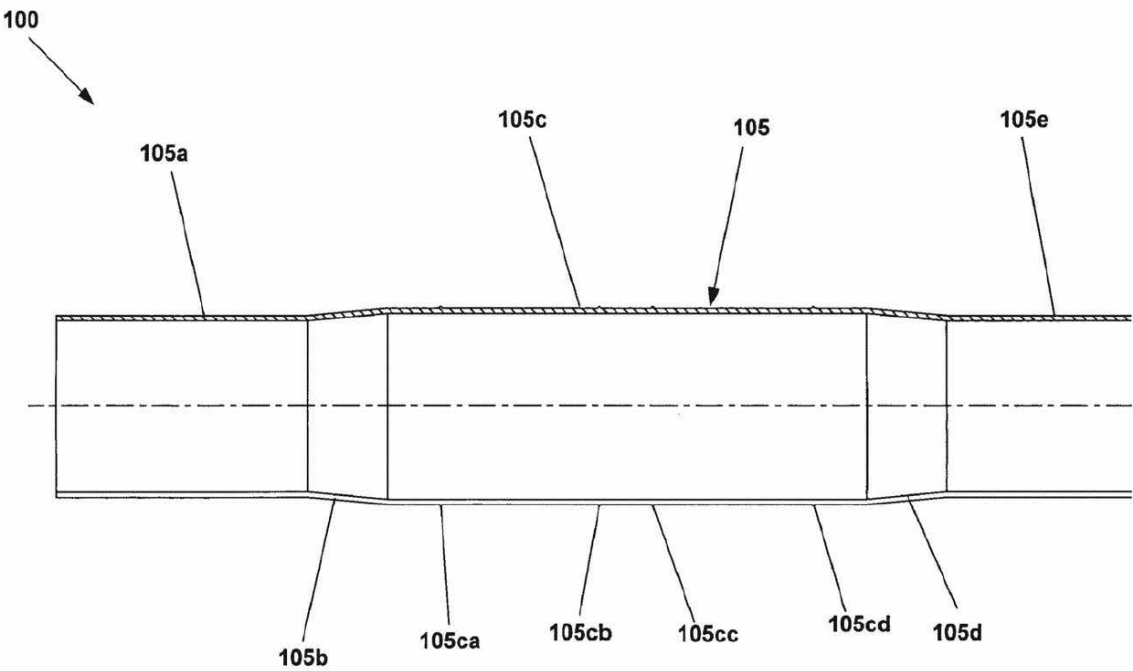
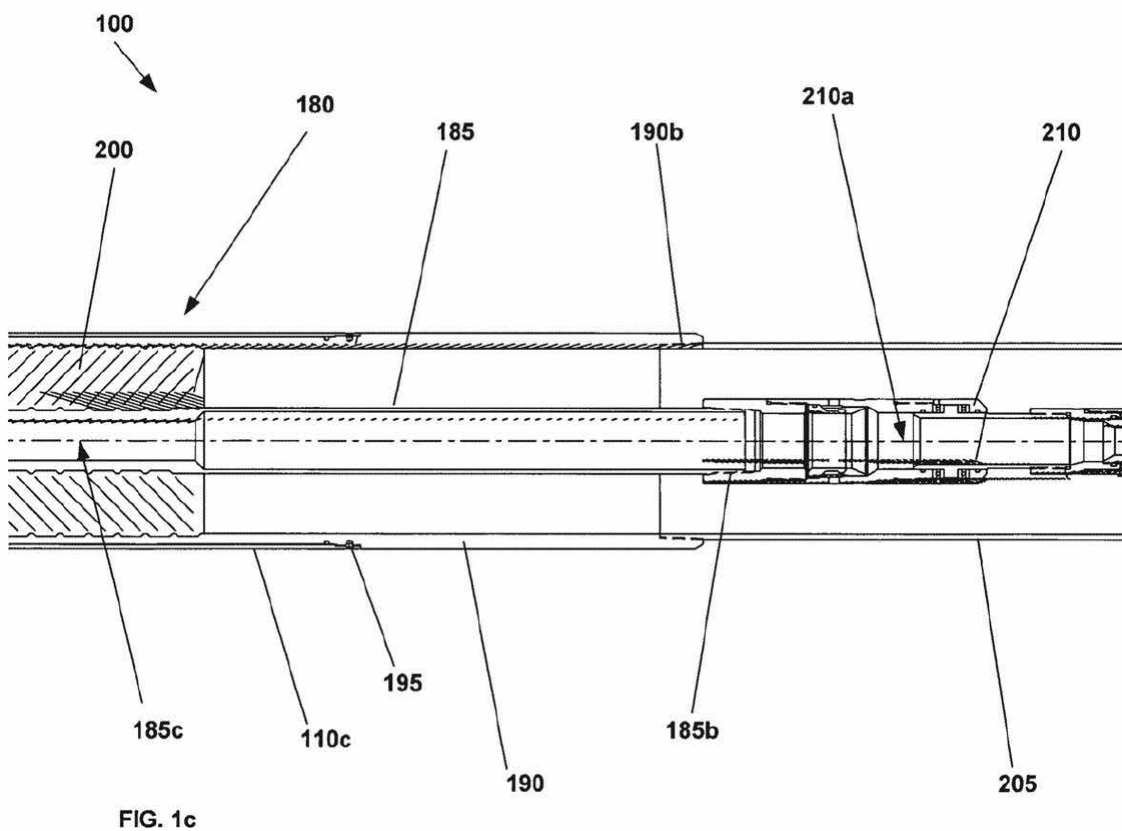
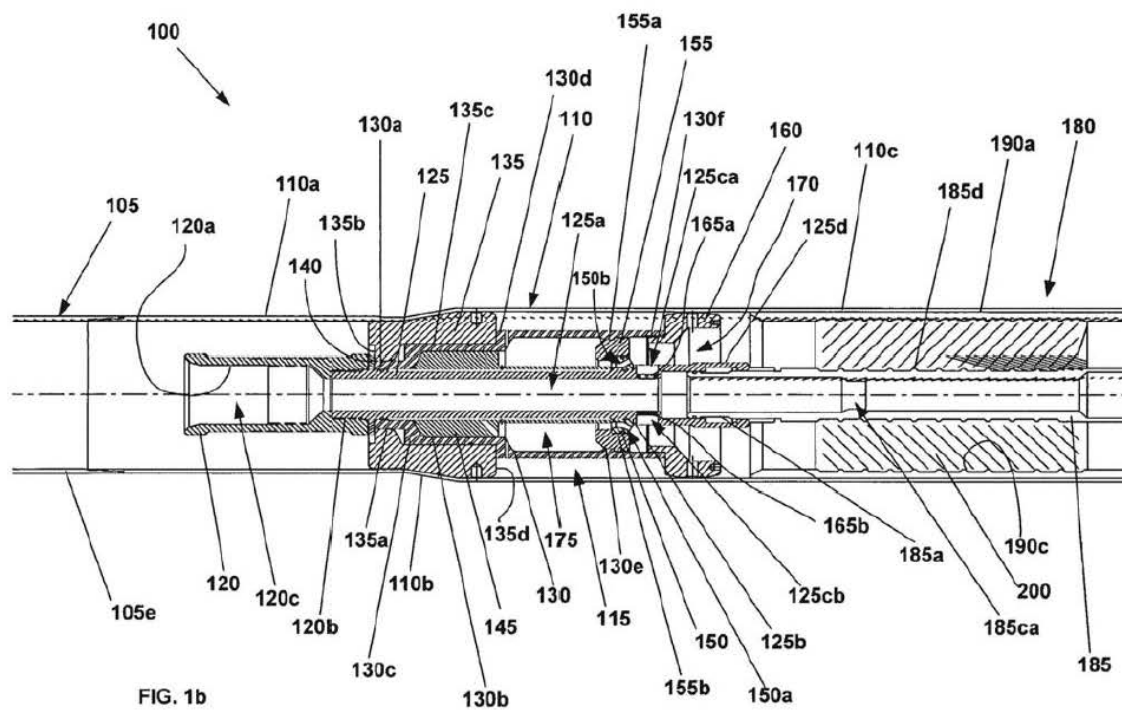


FIG.1a

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“[Figures 1 and 1a–1d] are fragmentary cross-sectional illustrations of an embodiment of a liner hanger.” *Id.* at 11:24–25.

Figure 1 shows apparatus 100 as a whole, and Figures 1a–1d provide enlarged views of different portions of apparatus 100. *See id.* at Figs. 1, 1a–1d, 11:60–13:58. Apparatus 100 includes tubular hanger joint 105 and tubular expansion cone launcher 110 coupled to one another. *Id.* at 11:60–63.

As shown in Figure 1a, tubular hanger joint 105 includes first section 105a, first transition section 105b, intermediate section 105c, second transition section 105d, and second section 105e. *Id.* at 11:63–66. “The outside diameter of the first and second sections, 105a and 105e, are preferably less than the outside diameter of the intermediate section 105c.” *Id.* at 11:67–12:2.

As shown in Figure 1b, expansion cone launcher 110 comprises upper tubular portion 110a, intermediate tubular portion 110b, and lower tubular portion 110c. *Id.* at 12:9–11. Expansion cone launcher 110 holds expansion cone assembly 115. *Id.* at 12:20–21. Expansion cone 135 mates with the inside of expansion cone launcher 110. *Id.* at 12:39–41. Internal passages 120c and 125a extend through tubular coupling 120 and first tubular support 125, respectively. *Id.* at 12:26–30. Tubular support 125 also includes openings 125ca and 125cb. *Id.* at 12:29–31. Additionally, longitudinal passages 150a and 150b extend through fourth tubular support 150. *Id.* at 12:56–60. The ’616 patent explains that

[b]urst discs 165a and 165b are received within the openings 125ca and 125cb of the first tubular support member 125 in order

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to controllably permit fluidic materials to pass from the passage 125 into a first annular region 170 defined by the annular region between the first tubular support member 125, the second tubular support member 130, and the sixth tubular support member 160, the passages 150*a* and 150*b*, and a second annular region 175 defined by the annular region between the second tubular support 130, the third tubular support 145 and the fifth tubular support 155.

Id. at 13:4–13.

Expansion cone launcher 110 and expansion cone assembly 115 also couple to shoe assembly 180. *Id.* at 13:14–16. Shoe assembly 180 includes tubular support member 185. *Id.* at 13:16–17. “The tubular support member 185 further includes an internal passage 185*c* for conveying fluidic materials that includes a restriction 185*ca* for receiving a conventional wiper plug, or other similar device, and a plurality of radially directed ribs 185*d*.”

Id. at 13:25–29.

In use, apparatus 100 is placed within a wellbore. *Id.* at 14:29–31. The ’616 patent discusses this use in connection with Figures 2*a*–2*d*. Figures 2*a* and 2*b* are reproduced below.



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placed within wellbore 220 in subterranean formation 225. *Id.* at 11:26–28, 14:29–31.

Figure 2*a* illustrates an embodiment in which

the intermediate section 105*c* of the tubular hanger joint 105 includes sealing members, 105*fa* and 105*fb*, positioned between corresponding pairs of ribs, 105*gaa* and 105*gba*, and 105*gab* and 105*gbb*, respectively, for sealing the interface between the intermediate section of the tubular hanger joint and another preexisting structure such as, for example, a wellbore casing. In an exemplary embodiment, the ribs, 105*gaa*, 105*gba*, 105*gab*, and 105*gbb*, are formed integrally to the intermediate section 105*c* of the tubular hanger joint 105.

Id. at 14:50–60.

After apparatus 100 is placed within wellbore 220, a process may be undertaken to radially expand expansion cone launcher 110 and expandable tubular member 105.⁶ *Id.* at 14:61–15:41. A stage of this process is shown in Figure 5*b*. Figure 5*b* is reproduced below.

⁶ The '616 patent uses the terms “tubular hanger joint 105” and “tubular member 105” interchangeably. *E.g.*, Ex. 1001, 14:44–57. We also use these terms interchangeably.

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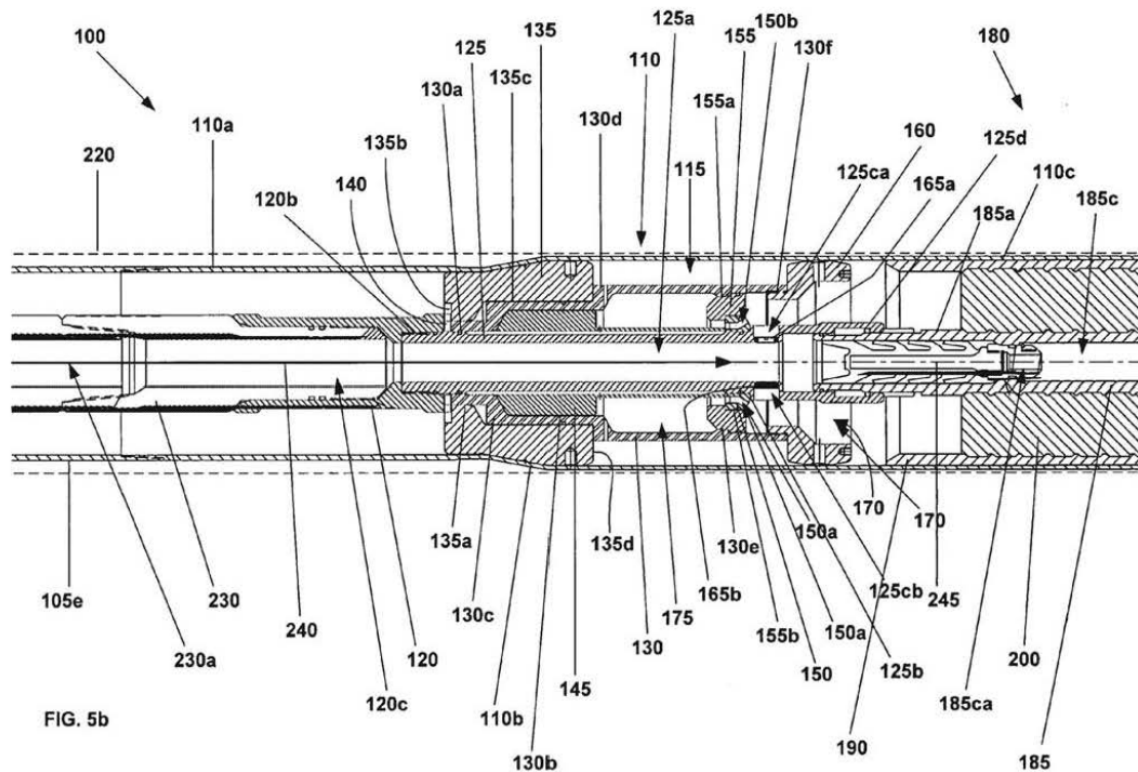


Figure 5b shows “a conventional dart, ball or other similar device 245 . . . positioned in the restriction 185ca in the passage 185c of the tubular support 185.” *Id.* at 15:9–12. As a result, “the region above the restriction 185ca is fluidically isolated from the region below the restriction.” *Id.* at 15:13–14.

Then, injection of fluidic material continues, raising the pressure upstream of restriction 185ca. *Id.* at 15:14–18. This ruptures at least one of rupture discs 165a and 165b. *Id.* at 15:18–20. This allows pressurized fluid to “flow through the passages 125ca and 125cb into the passages 170, 150a, 150b, and 175.” *Id.* at 15:20–22.

Then, after certain releasable couplings decouple, continued application of fluid pressure moves expansion cone assembly 115 in the longitudinal direction away from shoe assembly 180. *Id.* at 15:23–27.

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According to the '616 patent,

[i]n this manner, the expansion cone launcher 110 and the expandable tubular member 105 are radially expanded and thereby plastically deformed. In a preferred embodiment, the expansion cone launcher 110 and the expandable tubular member 105 are radially expanded into contact with the interior surface of the wellbore 220, or other tubular member such as, for example, a wellbore casing, a pipeline, or a structural support.

Id. at 15:27–35.

D. ILLUSTRATIVE CLAIM

Of the challenged claims, claim 1 is independent. Claim 5 depends from claim 1. Claim 1 is illustrative and is reproduced below with certain reformatting:⁷

1. A method of coupling a radially expandable tubular member to a preexisting structure, comprising:
 - [1a] positioning the tubular member and an expansion device within the preexisting structure;
 - [1b] injecting fluidic materials into the tubular member;
 - [1c] sensing the operating pressure of the fluidic materials; and
 - [1d] radially expanding the tubular member into contact with the preexisting structure when the sensed operating pressure exceeds a predetermined amount by displacing the expansion device relative to the tubular member.

Ex. 1001, 17:16–26.

⁷ We have numbered the claim limitations with the same numbers used by the Petition to identify claim 1's limitations.

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E. ASSERTED GROUNDS OF UNPATENTABILITY

Petitioner challenges the patentability of claims 1 and 5 of the '616 patent on the following grounds (Pet. 10):

Claims Challenged	35 U.S.C. §	Reference(s)/Basis
1, 5	102(b) ⁸	SPE 59151 ⁹
1, 5	102(b)	Offshore Article ¹⁰
1, 5	103(a)	Offshore Article, “knowledge of a [person of ordinary skill in the art]”
1, 5	103(a)	Offshore Article, “knowledge of a [person of ordinary skill in the art],” SPE 59151
1, 5	102(a), (e)	Vercaemer ¹¹

In support of its unpatentability contentions, Petitioner also relies on the Declaration of Michael Roy Chambers Sr. (Ex. 1002), as well as the Supplemental Declaration of Mr. Chambers (Ex. 1048). Patent Owner relies on the Declaration of Gary R. Wooley, PhD. Ex. 2006.

⁸ The Leahy-Smith America Invents Act, Pub. L. No. 112-29, 125 Stat. 284 (2011) (“AIA”), amended 35 U.S.C. §§ 102, 103. Because the '616 patent has an effective filing date prior to the effective date of the applicable AIA amendments, we refer to the pre-AIA versions of §§ 102, 103.

⁹ Lohoefer et al., “Expandable Liner Hanger Provides Cost-Effective Alternative Solution,” IADC/SPE Drilling Conference, 2000 (Ex. 1003, “SPE 59151”).

¹⁰ Furlow, “Expandable casing program helps operator hit TD with larger tubulars,” Offshore Magazine, Jan. 2000 (Ex. 1004, “Offshore Article”).

¹¹ Vercaemer et al., U.S. 6,085,838, issued July, 11, 2000 (Ex. 1005, “Vercaemer”).

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II. PATENT OWNER’S MOTION TO DEEM THE FILING OF ITS EXHIBITS AS TIMELY

Patent Owner filed an unopposed Motion to Deem the Filing of Its Exhibits as Timely. Paper 28; Paper 29. Patent Owner explains that it timely served Petitioner with Exhibits 2006–2011, but did not file those Exhibits with the Board until fifteen minutes after midnight of the due date, as a result of “technical problems with counsel’s home connection to the secured VPN and shared network drive where the Exhibits were located.” Paper 28, 2, 4. Patent Owner persuades us that good cause exists to deem Patent Owner’s filing of the exhibits timely. Patent Owner’s Motion to Deem the Filing of Its Exhibits as Timely is granted.

III. PETITIONER’S MOTION TO SUBMIT SUPPLEMENTAL INFORMATION

Petitioner filed a Motion to Submit Supplemental Information. Papers 39, 40. In this Motion, Petitioner seeks to submit an excerpt from Dr. Wooley’s expert report from the Litigation. *Id.* at 1. Petitioner argues that the excerpt from Dr. Wooley’s expert report undermines Patent Owner’s arguments in this proceeding. *Id.* at 2–3. As explained below in Section VII, Petitioner has demonstrated by a preponderance of the evidence that challenged claims 1 and 5 are unpatentable, without the need to rely on Dr. Wooley’s expert report from the Litigation. Accordingly, we dismiss Petitioner’s Motion to Submit Supplemental Information as moot.

IV. PETITIONER’S MOTION TO EXCLUDE

Petitioner’s Motion to Exclude seeks to exclude Exhibits 2009–2011. Pet. Mot. Excl. 1. Because we do not rely on these exhibits, we dismiss Petitioner’s Motion to Exclude as moot.

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V. PATENT OWNER’S MOTION TO EXCLUDE

In its Motion to Exclude, Patent Owner seeks exclusion of Exhibit 1048 (PO Mot. Excl. 2–7), “the cited portions of [Exhibit 1049]” (*id.* at 8–9), and Exhibit 1051 (*id.* at 9).

A. EXHIBIT 1048.

Exhibit 1048 is Mr. Chambers’ Supplemental Declaration, filed with Petitioner’s Reply. Patent Owner argues that the Supplemental Declaration “contains new matter outside the scope of the Petition, and goes beyond merely ‘replying’ to [Patent Owner]’s Response. Specifically, Mr. Chambers provided new information on his credentials and new bases attempting to save Petitioner’s argument concerning radial expansion and plastic deformation.” *Id.* at 3.

Patent Owner argues that the testimony in Mr. Chambers’ Supplemental Declaration about his background goes beyond the scope of the Petition and beyond responding to arguments in Patent Owner’s Response. *Id.* at 3–4. Patent Owner also argues that the testimony in Mr. Chambers’ Supplemental Declaration about his background is misleading, confusing, and unfairly prejudicial. *Id.* at 5–6.

Patent Owner also argues that testimony in Mr. Chambers’ Supplemental Declaration about “into contact with” goes beyond the scope of the Petition. *Id.* at 4. Patent Owner adds that this testimony is misleading, confusing, and unfairly prejudicial. *Id.* at 7.

In response, Petitioner asserts that “[i]n its Patent Owner Response, [Patent Owner] proposed constructions adding new limitations to the challenged claims and a narrow definition of a [person of ordinary skill in

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the art].” Opp. PO Mot. Excl. 1. Petitioner argues that Patent Owner’s complaints about Exhibit 1048 going beyond the scope of the Petition and beyond responding to the Patent Owner Response are not properly the subject of a motion to exclude. *Id.* at 2–3. Instead, Petitioner asserts, Patent Owner should have sought authorization for a motion to strike. *Id.* Additionally, Petitioner argues that Mr. Chambers’ Supplemental Declaration is directly responsive to the arguments in Patent Owner’s Response that “Mr. Chambers lacks the appropriate insight of a [person of ordinary skill in the art] regarding drilling technology at the time of the invention.” *Id.* at 3 (quoting PO Resp. 24). Petitioner similarly argues that Mr. Chambers’ testimony about “direct contact” and “plastic deformation” is proper rebuttal to arguments in Patent Owner’s Response and testimony in Dr. Wooley’s declaration. *Id.* at 4–5. Petitioner also argues that, contrary to Patent Owner’s assertions, the testimony in Mr. Chambers’ Supplemental Declaration is relevant, not unfairly prejudicial, and not confusing. *Id.* at 6–9.

Patent Owner counters that the testimony in Mr. Chambers’ Supplemental Declaration regarding his background relates to experience after the relevant timeframe of the claimed invention. Reply PO Mot. Excl. 1–2. Patent Owner adds that “Mr. Chambers’ newly-identified experience does not tend to make his insight of a [person of ordinary skill in the art] more or less probable, and it is cumulative, confusing, and misleading, thereby outweighing any probative value of such evidence.” *Id.* at 2.

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Patent Owner does not persuade us that exclusion of any portion of Mr. Chambers' Supplemental Declaration is warranted. Weighing the parties' arguments, Petitioner persuades us that the testimony in Mr. Chambers' Supplemental Declaration does not go beyond the scope of a proper response to the arguments in Patent Owner's Response. Regarding Patent Owner's concerns about the extent of Mr. Chambers' relevant experience and the allegedly confusing, misleading, and unfairly prejudicial nature of the testimony, we determine those arguments go to the proper weight to be afforded the testimony. In an *inter partes* review in which we both decide admissibility and serve as the fact-finder, we are well-positioned to determine and assign appropriate weight to evidence presented, and we recognize that a complete record of the evidence is preferable to facilitate public access as well as appellate review. *See, e.g., Sony Computer Entm't Am. LLC v. Game Controller Tech. LLC*, IPR2013-00634, Paper 32 at 31 (PTAB Apr. 14, 2015). Cognizant of all of Patent Owner's concerns about Mr. Chambers' background and testimony, we have given his testimony appropriate weight when weighing the record evidence.

B. EXHIBIT 1049

Exhibit 1049 is a transcript of a deposition of Dr. Wooley. Patent Owner argues that

the cited portions of Dr. Wooley's deposition transcript . . . contain irrelevant information that is beyond the scope of the Petition. Even if it were relevant (it is not), the information is unfairly prejudicial, confusing, misleading to the fact finder, a waste of time and/or cumulative, and should be excluded.

PO Mot. Excl. 8. Patent Owner argues that Petitioner cites Dr. Wooley's testimony to support new positions not presented in the Petition or in Mr.

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Chambers’ first Declaration. *Id.* Patent Owner also objects that the portions of Dr. Wooley’s deposition testimony are “irrelevant to the Petition, confusing and/or misleading to the fact finder, and should be excluded.” *Id.* at 8.

Petitioner responds that it used Dr. Wooley’s deposition testimony to demonstrate Dr. Wooley had less experience than Mr. Chambers, to show Dr. Wooley received a lot of money from Patent Owner for his opinions, and to assail Dr. Wooley’s credibility. Opp. PO Mot. Excl. 9–10. Petitioner also argues that Patent Owner’s Motion to Exclude does not identify Petitioner’s allegedly “new positions,” much less explain how it is true that Petitioner cited Dr. Wooley’s deposition testimony in support of those “new positions.” *Id.* at 10–11.

In reply, Patent Owner maintains that “[t]he testimony Petitioner cited is irrelevant, and the confusing, misleading nature outweighs any purported probative value.” Reply PO Mot. Excl. 4. For instance, Patent Owner argues that “Dr. Wooley provided the full technical services reflected by his fees. Moreover, his fees were reasonable given the scope of his work and his experience.” *Id.*

Patent Owner’s concerns do not warrant excluding any of Exhibit 1049. Patent Owner’s arguments go to the proper weight to be afforded Dr. Wooley’s deposition testimony. Cognizant of all of Patent Owner’s concerns about Dr. Wooley’s deposition testimony, we have given his testimony appropriate weight when weighing the record evidence.

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C. EXHIBIT 1051

We do not rely on Exhibit 1051. Therefore, we dismiss as moot Patent Owner’s request to exclude this exhibit.

VI. MOTIONS TO SEAL

The parties filed a number of unopposed Motions to Seal. Papers 4, 5, 12, 33, 41, 43, 54. In connection with these, the parties have submitted a copy of the Board’s default protective order. *E.g.*, Paper 4, 1. We find the Motions to Seal persuasive. Accordingly, we grant them, and we enter the accompanying protective order in this proceeding.

VII. ANALYSIS

A. LEVEL OF SKILL

Petitioner asserts that one of ordinary skill in the art “would have been a person with a bachelor of science degree in mechanical or petroleum engineering or a similar technical discipline, with at least five years of experience in oil or gas well drilling, completion, and/or subsurface production operations or in technical support of such operations.” Pet. 35–36 (citing Ex. 1002 ¶ 41). Petitioner also indicates that “[a]dditional education in a relevant technical discipline can compensate for less experience in the relevant field and vice versa.” *Id.* at 36.

Patent Owner states that its “analysis assumes the level of ordinary skill Dr. Wooley articulated, . . . which comports with that asserted by Petitioner’s expert Mr. Chambers.” PO Resp. 23 (citing Ex. 1002 ¶ 41; Ex. 2006 ¶¶ 25–27). Patent Owner “agrees with the degree qualifications and the experience level for oil or gas well drilling.” *Id.*

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Patent Owner disputes the “remaining portions” of Petitioner’s proposed level of skill because those portions are “far too broad, and show a misunderstanding about the technology at issue.” *Id.* at 23. According to Patent Owner, “[a]t the time of the invention, solid expandables was a drilling technology,” and “an engineer having experience in ‘completion, and/or subsurface production operations or in technical support of such operations,’ especially at the time of the invention in the late 1990s, would lack sufficient relevant knowledge about drilling, the problems associated with ‘nested’ casing, and how they could be solved.” *Id.* at 23–24.

Patent Owner argues that Petitioner’s declarant “is an experienced engineer when it comes to conventional operations (*i.e.*, after drilling is done and the well needs to be ‘completed’ so it can begin producing oil or gas)” but “lacks the appropriate insight of a [person of ordinary skill in the art] regarding drilling technology at the time of the invention.” PO Resp. 24. Patent Owner contends that Petitioner’s declarant conflates the term “expandables” as used during the relevant time to include both conventional operations and drilling and inappropriately mixes the term. *Id.* at 24(citing Ex. 2007 ¶¶ 48–50).

Petitioner replies that its declarant “has extensive prior experience with both drilling and expandables” with citations to the record. Pet. Reply 3 (citing Ex. 1002 ¶¶ 7, 12, 13, 16–18; Ex. 1048 ¶¶ 5–7). [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

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Patent Owner replies that its declarant’s “experience in oil drilling is vastly more substantial than undergraduate summer internships” and lists other work he has done. PO Sur-reply 3. Regarding Patent Owner’s declarant’s involvement in prior litigation, Patent Owner argues that, “given his experience and knowledge of the technology and the intrinsic,” his “inclusion in this proceeding is common sense.” *Id.* (citing Pet. Reply 9). Patent Owner also argues that Petitioner’s declarant testimony “cannot make up for the substantial missing elements.” *Id.* at 4.

In determining the level of ordinary skill in the art, various factors may be considered, including the “type of problems encountered in the art; prior art solutions to those problems; rapidity with which innovations are made; sophistication of the technology; and educational level of active workers in the field.” *In re GPAC Inc.*, 57 F.3d 1573, 1579 (Fed. Cir. 1995) (internal quotation marks omitted).

The full record makes clear that the parties do not dispute the portion of Petitioner’s proposed level of ordinary skill regarding education and years of experience. Pet. 35–36; PO Resp. 23; Ex. 1002 ¶ 41; Ex. 2008 ¶¶ 25–27. Regarding the parties’ dispute over relevant experience, a paper titled “Towards a Mono-Diameter Well – Advances in Expanding Tubing Technology” indicates in a section directed to “Markets and Applications,” that “[e]xpanding tubing can be applied in three markets or application segments” that include “Remediation,” “Wellbore Construction,” and “Completions.” Ex. 1037, 2; *see also id.* at 2–3 (describing “[t]he development of expandable tubing technology towards the mono-diameter well”).

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In view of the above, we agree with Petitioner that one of ordinary skill in the art would have had “experience in oil or gas well drilling, completion, and/or subsurface production operations or in technical support of such operations.” Pet. 35–36; Ex. 1002 ¶ 41. Weighing the parties’ arguments and cited evidence, we determine that one of ordinary skill in the art would have had Petitioner’s asserted experience and that experience does not need to be narrowed in the manner argued by Patent Owner. Pet. 35–36; PO Resp. 23–25; Ex. 1037, 2; Ex. 2006 ¶¶ 25–27.

Thus, we determine that one of ordinary skill in the art would have had “a bachelor of science degree in mechanical or petroleum engineering or a similar technical discipline, with at least five years of experience in oil or gas well drilling, completion, and/or subsurface production operations or in technical support of such operations” and that “[a]dditional education in a relevant technical discipline can compensate for less experience in the relevant field and vice versa.” Pet. 35–36; Ex. 1002 ¶ 41; Ex. 2006 ¶¶ 25–27. This level of skill in the art is consistent with the disclosure of the ’616 patent and the prior art of record. *GPAC*, 57 F.3d at 1579.

B. CLAIM INTERPRETATION

In an *inter partes* review proceeding, a claim of a patent is construed using the same standard used in federal district court, including construing the claim in accordance with the ordinary and customary meaning of the claim as understood by one of ordinary skill in the art and the prosecution history pertaining to the patent. 37 C.F.R. § 42.100(b) (2021). According to the applicable standard, claim terms “are generally given their ordinary and customary meaning” as understood by a person of ordinary skill in the art in

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question at the time of the invention. *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312–13 (Fed. Cir. 2005) (en banc). “In determining the meaning of the disputed claim limitation, we look principally to the intrinsic evidence of record, examining the claim language itself, the written description, and the prosecution history, if in evidence.” *DePuy Spine, Inc. v. Medtronic Sofamor Danek, Inc.*, 469 F.3d 1005, 1014 (Fed. Cir. 2006) (citing *Phillips*, 415 F.3d at 1312–17). Extrinsic evidence is “less significant than the intrinsic record in determining ‘the legally operative meaning of claim language.’” *Phillips*, 415 F.3d at 1317. Only those terms that are in controversy need be construed, and only to the extent necessary to resolve the controversy. *See Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017) (citing *Vivid Techs., Inc. v. America Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999)).

The parties raise issues regarding various aspects of the meanings of multiple portions of claim 1. *E.g.*, Pet. 45–49; PO Resp. 25–49; Pet. Reply 4–18; PO Sur-reply 4–18. In order to resolve the parties’ dispute regarding the patentability of claims 1 and 5, we need to address the proper construction of limitation 1[d].

Patent Owner contends that limitation 1[d]’s recitation of “radially expanding the tubular member into contact with the preexisting structure” means “radially expanded and **plastically deformed** into **direct contact** with the preexisting structure.” PO Resp. 27. Patent Owner also presents a narrower interpretation, arguing that limitation 1[d] “requires the portions of the tubular member within the preexisting structure are radially expanded

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and plastically deformed into **direct** continuous contact with the preexisting structure.” *Id.*

The key issue relates to Patent Owner’s position that the tubular member must be radially expanded “into direct contact” or “into direct continuous contact” with the preexisting structure.¹² Patent Owner reads these constructions narrowly, as reflected in its arguments regarding the asserted prior art and limitation 1[d]. For example, Patent Owner argues that, in the prior art, the presence of elastomers, ribs, or an annulus where the radially expanded tubular member interfaces with the preexisting structure does not meet limitation 1[d]. *E.g., id.* at 59–64. Thus, Patent Owner appears to understand limitation 1[d] as excluding any separation of any metal portion of the tubular member from the adjacent preexisting structure. Petitioner disagrees. *E.g., Pet. Reply* 5–12, 19–21. We turn now to the details of this dispute.

1. *The Parties’ Arguments*

In the Petition, Petitioner indicates that limitation 1[d] “should be given [its] plain meaning in light of the specification.” *See Pet.* 45. Additionally, addressing claim 1’s preamble, the Petition discusses certain disclosures of the ’616 patent regarding radially expanding a tubular member into contact with a preexisting structure, likening those disclosures to those of the prior art. *Id.* at 51–52.

In its Response, Patent Owner argues that “Petitioner improperly asserts the Board should import unclaimed elements into Challenged

¹² Resolution of the parties’ patentability dispute does not turn on Patent Owner’s addition of the language “plastically deformed.”

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Claims 1 and 5.” PO Resp. 1. According to Patent Owner, “Petitioner’s basis for importing an elastomer into the claims is a single embodiment in the Specification.” *Id.* Patent Owner asserts that “a single embodiment reflected in a single figure is not sufficient basis to import an unrecited limitations into claims.” *Id.* (citing *Williamson v. Citrix Online, LLC*, 793 F.3d 1339, 1346–47 (Fed. Cir. 2015)). Patent Owner argues that “[u]nlike systems known in the art, the expanded portions of the tubular member in the ’616 Patent do not rely on ribs or elastomerics to contact the preexisting structures.” *Id.* at 22.

Patent Owner contends that “[t]he proper meaning of the term ‘into contact with,’ when read in the context of the Patent as a whole, requires the portions of the tubular member within the preexisting structure are radially expanded and plastically deformed into **direct** continuous contact with the preexisting structure.” *Id.* at 27 (emphasis in original) (citing Ex. 2006 ¶ 84). Patent Owner elaborates that “[t]he ’616 Patent sought to resolve, among other things, the loss of internal diameter in a wellbore as successive liners and casings were installed.” *Id.* (citing Ex. 1001, 10:14–33).

According to Patent Owner “[t]he technology is most effective, when there is no material preventing the expandable tubular from contacting the existing casing.” *Id.* at 28 (citing Ex. 2006 ¶ 95). After discussing prior art approaches to the problem of decreasing diameter in wellbores (*id.* at 28–30), Patent Owner argues that “[t]he ’616 Patent and the recited claims provide for expanding tubulars into direct contact with the preexisting structure, establishing an internal diameter substantially equal to that of the preexisting structure” (*id.* at 30 (citing Ex. 2006 ¶ 109)).

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Patent Owner argues that claim 1 does not recite the word “seal.” *Id.* Patent Owner argues Mr. Chambers points to the term “coupling” in claim 1’s preamble in an attempt to inject a seal into claim 1. *Id.* at 30–31 (citing Ex. 2008, 33:18–34:10).

Citing Mr. Chambers’ deposition testimony, Patent Owner argues that Mr. Chambers relied on the ’616 patent’s Figures 1 and 1a–1c “for a sealing/coupling element,” but could not “identify in those figures the coupling/seal elements positioned between the expandable tubular and the preexisting structure.” *Id.* at 31–32 (citing Ex. 2008, 36:25–38:6, 47:22–49:25). Patent Owner argues that “Figure 1a **doesn’t show** coupling elements between the expandable tubular and a preexisting casing, and Figures 6a through 6c **don’t show** coupling elements or elastomeric materials.” *Id.* at 32 (emphases in original).

Patent Owner contends that the Specification “expressly describ[es] **all** embodiments with a liner hanger (expandable tubular member 105 that is expanded into direct continuous contact with the preexisting structure, either a wellbore or casing.” *Id.* at 33–34 (citing Ex. 1001, 10:45–48, 14:44–49, 15:30–35). Patent Owner contends that the ’616 patent’s Figure 6a shows that “it is the expanded tubular member 105 that comes into direct contact with the interior surface of the wellbore 220.” *Id.* at 36 (citing Ex. 2006 ¶¶ 111–112). Patent Owner argues that Figure 7a also “show[s] the expandable tubular member 105 **in direct contact** with the wellbore 220 (*i.e.*, no intervening components).” *Id.* at 36 (emphasis in original) (citing Ex. 2006 ¶¶ 113–114). Patent Owner adds that “those sections of the tubular hanger

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joint do not include coupling elements (105ca, 105cd) or sealing members 105fa and 105fb.” *Id.* (citing Ex. 2006 ¶ 114).

Petitioner responds that “[g]iven the clarity of the claim language, [it] should be given its plain and ordinary meaning.” Pet. Reply 4. Petitioner notes the claim does not include the word “direct.” *Id.* at 5.

Petitioner adds that “the specification broadly recites ‘into contact with’ and never mentions ‘direct contact.’” *Id.* (citing Ex. 1001, 10:45–47, 11:12–14, 14:47–49, 15:30–33). Petitioner asserts that “Dr. Wooley conceded at his deposition that every ’616 embodiment includes tubulars with either coupling elements or sealing members between ribs—the very features [Patent Owner] hopes to exclude with its construction.” *Id.* (citing Ex. 1050, 13:11–14:15, 24:8–18, 27:18–28:2, 28:17–25, 29:14–23, 36:15–38:10, 39:11–40:7). Petitioner argues that “Dr. Wooley admitted that none of the embodiments disclosed in the ’616 Patent would satisfy his narrow interpretation of claim 1.” *Id.* at 6 (citing Ex. 1050 41:6–17). Thus, “Dr. Wooley’s construction . . . cannot be correct,” Petitioner asserts. *Id.* at 6–7 (citing *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1583 (Fed. Cir. 1996)).

Petitioner notes that “the ’616 Patent teaches an embodiment in Figure 2a that expressly includes elastomeric sealing members 105fa and 105fb.” *Id.* at 8 (citing Ex. 1001, 14:50–57; Inst. Dec. 9, 31). Petitioner adds that “Figures 3-7 include the same sealing members because they depict the same structure as Figure 2a.” *Id.* (citing Ex. 1001, 11:29–43, Figs. 3a, 4a, 5a, 6a, 7a; Ex. 1050, 24:8–18, 27:18–28:2, 28:17–25, 29:14–23, 36:15–38:10, 39:11–40:7). Accordingly, Petitioner argues, “the ’616 Patent

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contradicts [Patent Owner’s] interpretation of ‘direct’ contact and does not disclose that such ‘direct’ contact solved any problems stemming from sealing elements that are part of the expandable tubular.” *Id.* at 8–9.

Asserting that Patent Owner ultimately has only Dr. Wooley’s declaration testimony on its side, Petitioner argues “that testimony is not credible.” *Id.* at 9. Petitioner argues that Dr. Wooley does not adequately support his declaration testimony. *Id.* Indeed, Petitioner argues, the objective evidence and Dr. Wooley’s own deposition testimony contradict his declaration testimony. *Id.* at 9–12.

Patent Owner replies that “[c]laim 1 does not recite an elastomeric component, and the ‘616 Patent is directed to an improved tubular that does not rely on an elastomeric component.” PO Sur-reply 1. Patent Owner argues that “[i]t is irrelevant that the specification may or may not contain the phrase ‘direct contact.’” *Id.* at 5. Patent Owner reiterates that “the ‘616 Patent sought to resolve, among other things, the loss of internal diameter in a wellbore as successive liners and casings were installed.” *Id.* Patent Owner argues that anything “added to the annular space between a liner top and existing casing” unavoidably increases the liner’s inside diameter. *Id.* at 5–6. Patent Owner reiterates that “the specification expressly describes **preferred** embodiments with a liner hanger (expandable tubular member 105) that is expanded into direct contact with the preexisting structure, either a wellbore or casing.” *Id.* at 6 (emphasis in original).

Additionally, Patent Owner contends that Petitioner misrepresents Dr. Wooley’s deposition testimony. *Id.* at 7–8. Patent Owner asserts that Dr. Wooley qualified his statements and “never admitted that none of the

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embodiments are covered by [Patent Owner’s] construction of the claim term.” *Id.* at 7. Patent Owner cites Dr. Wooley’s deposition testimony that “[y]ou’re asking if, indeed, the embodiment in Figure 1a satisfies Claim 1 and if it indeed applies the method of Claim 1 to that embodiment. The answer is yes. It’s in contact with the preexisting structure without anything in between the two.” Ex. 1050, 19:17–23; PO Sur-reply 7.

Finally, Patent Owner argues that

[w]hile certain embodiments and certain figures may include a sealing member or coupling element, those are not limiting. Indeed, as mentioned above, the ’616 Patent describes a preferred embodiment as having the tubular member “expanded into contact with the interior surface of the wellbore.” EX1001, 15:30-35. Interceding elastomers and coupling elements, while part of some embodiments, do not allow the tubular member to be expanded into contact with the interior surface. Only direct continuous contact between the tubular and the wellbore (or preexisting structure) would satisfy this preferred embodiment.

PO Sur-reply 8.

2. *Analysis*

To resolve the parties’ claim-construction dispute, we first look to the claim language itself. Limitation 1[d] recites, in relevant part, “radially expanding the tubular member into contact with the preexisting structure.” Ex. 1001, 17:22–26. The plain and ordinary meaning of this language is radially expanding the tubular member with the result that the tubular member is in contact with the preexisting structure. The plain and ordinary meaning of the claim language does not require any particular type or extent of contact between the tubular member and the preexisting structure. Patent Owner’s proposal to rewrite “into contact with the preexisting structure” as

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“into direct continuous contact with the preexisting structure” deviates from the plain and ordinary meaning of the claim language. *See* PO Resp. 27.

Additionally, the claim language’s plain and ordinary meaning comports with Petitioner’s position that the tubular member may include external structures, such as external elastomers, sealing members, coupling elements, or ribs, in contact with the preexisting structure after radial expansion. *E.g.*, Pet. 50–52, 57–58; Pet. Reply 5–12, 19–21. This position does not “import unclaimed elements into the claims,” as Patent Owner contends. *E.g.*, PO Resp. 26, 30–33. For example, contrary to Patent Owner’s suggestion, the claim’s silence regarding external seals does not convey that the tubular member cannot have them; it only conveys that the tubular member does not necessarily have them. *See id.* at 30 (“Notably, claim 1 does not include the word ‘seal’ in the body of the claim or in the preamble.”).

We turn next to the Specification and drawings. This evidence does not support Patent Owner’s position that the proper claim construction excludes any separation of any metal portion of the tubular member from the adjacent preexisting structure. To the contrary, the Specification and drawings support Petitioner’s position that the proper claim construction encompasses embodiments in which at least some metal of the tubular member is separated from the adjacent preexisting structure, such as by coupling elements and/or ribs.

For example, Petitioner persuades us that the Detailed Description and drawings of the ’616 patent exclusively disclose using a tubular member that includes either external coupling elements or external sealing members

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between ribs. Pet. Reply 5–12. Petitioner also persuades us that the Detailed Description and drawings convey radially expanding such external coupling elements and sealing members between ribs into contact with the adjacent preexisting structure. *Id.*

In support of its contrary position, Patent Owner cites the '616 patent's Figures 6*a* and 7*a*. PO Resp. 33–36. Patent Owner argues that Figure 7*a* shows portions of tubular member 105 contacting wellbore 220. *Id.* at 36 (citing Ex. 2006 ¶¶ 113–114). Patent Owner contends that the contacting portions “do not include coupling elements (105*ca*, 105*cd*) or sealing members 105*fa* and 105*fb*.” *Id.* (citing Ex. 2006 ¶ 114).

The disclosures of the '616 patent and Dr. Wooley's deposition testimony belie Patent Owner's position. As noted above, when discussing Figure 2*a*, the '616 patent discloses that

intermediate section 105*c* of the tubular hanger joint 105 includes sealing members, 105*fa* and 105*fb*, positioned between corresponding pairs of ribs, 105*gaa* and 105*gba*, and 105*gab* and 105*gbb*, respectively, for sealing the interface between the intermediate section of the tubular hanger joint and another preexisting structure. In an exemplary embodiment, the ribs, 105*gaa*, 105*gba*, 105*gab*, and 105*gbb*, are formed integrally to the intermediate section 105*c* of the tubular hanger joint 105.

Ex. 1001, 14:50–60. This passage discloses that sealing members 105*fa* and 105*fb* and ribs 105*gaa*, 105*gba*, 105*gab*, and 105*gbb* are part of tubular member 105.

Petitioner persuades us that “Figures 3-7 include the same sealing members because they depict the same structure as Figure 2*a*.” Pet. Reply 8. In his deposition, Dr. Wooley testified that Figures 3*a*–3*d* show the same tubular hanger as Figures 2*a*–2*d*. Ex. 1050, 27:18–21. He also agreed that

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the '616 patent discloses that Figures 4a–4d “are fragmentary cross-sectional illustrations of the release of the top SSR plug from the apparatus of Figures 3a–3d.” Ex. 1001, 11:32–34; Ex. 1050, 28:8–16. He further agreed that the '616 patent discloses that Figures 5a–5d “are fragmentary cross-sectional illustrations of the initiation of the radial expansion process for the apparatus of [Figures] 4a–4d.” Ex. 1001, 11:35–37; Ex. 1050, 29:6–13. Additionally, he acknowledged that the '616 patent discloses Figures 6a–6c “are fragmentary cross-sectional illustrations of the continuation of the radial expansion process for the apparatus of [Figures 5a–5c].” Ex. 1001, 11:38–40; Ex. 1050, 33:22–34:9. He also testified that Figure 7a shows the same apparatus as Figure 6a “[f]ollowing drill-out of the collar,” acknowledging the '616 patent’s disclosure that Figures 7a–7c “are fragmentary cross-sectional illustrations of the drilling out of the collar upon completion of radial expansion process for the apparatus of Figures 6a–6c.” Ex. 1001, 11:41–3; Ex. 1050, 38:21–39:4.

Consistent with these statements, when asked if Figures 3a, 4a, 5a, 6a, and 7a show the same sealing members that Figure 2a does, Dr. Wooley indicated he believes they do. Ex. 1050, 27:22–28:2, 28:17–25, 29:14–23, 36:15–38:10, 39:11–40:7. He did so, for example, in the following exchange regarding Figure 3a:

Q. And looking at Figure 3a in the '616 Patent, you can see the sealing members, which are depicted as dark lines on the outside diameter of the intermediate section 105c of the tubular liner hanger 105; correct?

A. That appears to be correct, yes.

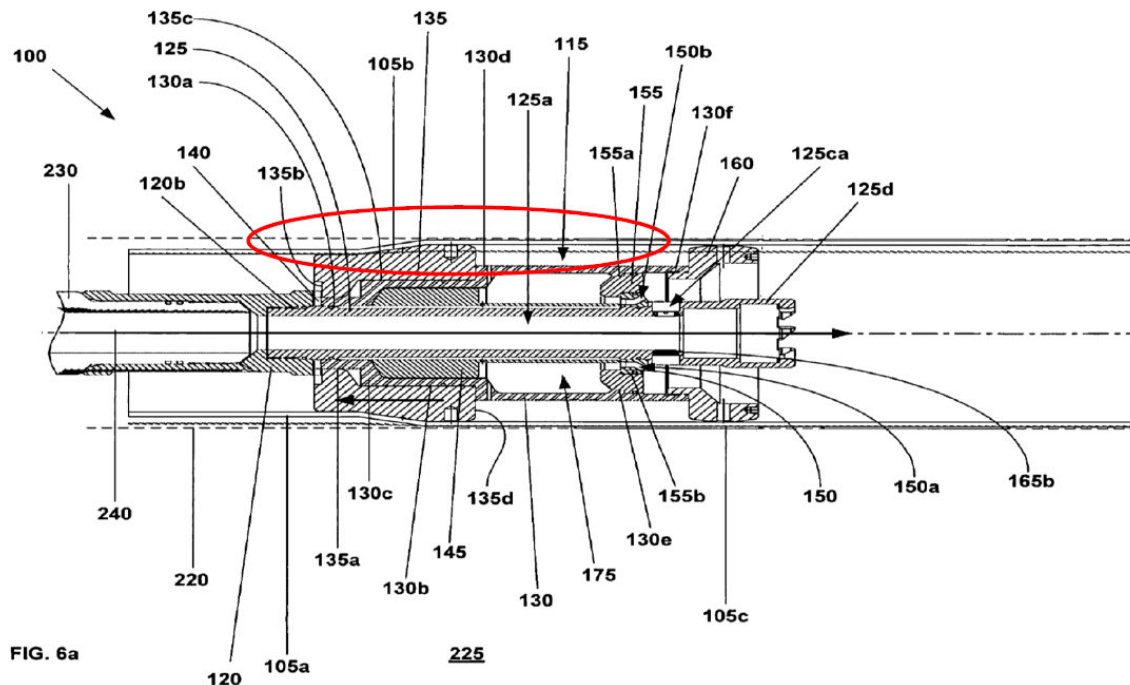
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Id. at 27:22–28:2. Accordingly, we find that the '616 patent discloses, in connection with Figures 2*a*, 3*a*, 4*a*, 5*a*, 6*a*, and 7*a*, tubular member 105 having external sealing members and ribs.

Petitioner further persuades us that the '616 patent discloses radially expanding the same tubular member 105 and its external sealing members and ribs into contact with the adjacent preexisting structure. Pet. 51–52; Pet. Reply 5–13. As Petitioner argues, Dr. Wooley conceded in his deposition that Figure 6*a* shows sealing members and ribs expanded into contact with wellbore 220. Ex. 1050, 38:3–10.

Petitioner explains that an annotated version of Figure 6*a* in Dr. Wooley's Declaration comports with Dr. Wooley's deposition testimony that the '616 patent discloses radially expanding the sealing members and ribs of tubular member 105 into contact with wellbore 220. Pet. Reply 11. The annotated version of Figure 6*a* in Dr. Wooley's Declaration is reproduced below.

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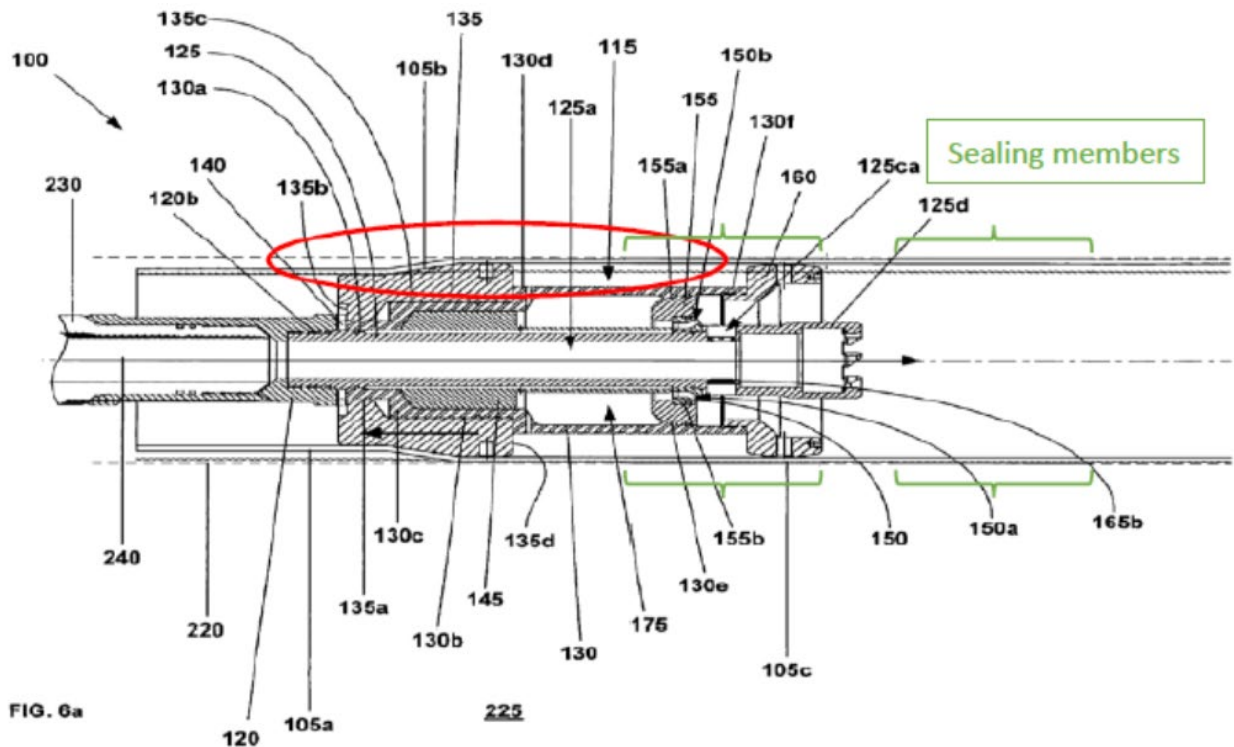
EX1001, FIG. 6a (annotated)

Dr. Wooley’s annotated version of Figure 6a is annotated with a red oval surrounding a portion of the drawing. Ex. 2006 ¶ 110. Dr. Wooley explains that “[d]uring the expansion process depicted in Figure 6a, the expandable tubular member 105 is ‘**radially expanded into contact with the interior surface**’ of the wellbore 220, or other tubular members such as, for example, a wellbore casing, a pipeline, or a structural support.” *Id.* ¶ 111 (quoting Ex. 1001, 15:28–35). Dr. Wooley elaborates that “[a]s shown in Figure 6a, and highlighted by the [red oval], it is the expanded tubular member 105 that comes into direct contact with the interior surface of the wellbore 220.” *Id.* ¶ 112.

Petitioner explains that Dr. Wooley’s red oval surrounds a portion of a solid line that shows a sealing member in contact with wellbore 220. Pet. Reply 11–12. Petitioner illustrates this by further annotating Dr. Wooley’s

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annotated version of Figure 6a. *Id.* Petitioner’s further-annotated version of Figure 6a is reproduced below.



Petitioner’s further-annotated version of Figure 6a adds green annotations to identify the solid lines that Petitioner contends show sealing members in contact with wellbore 220. *Id.* at 11. Petitioner persuades us that, consistent with Dr. Wooley’s deposition testimony, the red oval Dr. Wooley used to identify where tubular member 105 contacts wellbore 220 surrounds part of a solid line showing a sealing member contacting wellbore 220. This comports with the ’616 patent’s description of the purpose the sealing members serve: “tubular hanger joint 105 includes sealing members, 105fa and 105fb . . . for sealing the interface between the intermediate section of the tubular hanger joint and another preexisting structure such as, for example, a wellbore casing.” Ex. 1001, 14:51–57; Pet. 51–52. In order to

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serve this purpose, the sealing members seemingly would contact the adjacent preexisting structure.

Additionally, Petitioner persuades us that the sealing members contact the adjacent preexisting structure as a result of radially expanding tubular member 105. In his deposition, Dr. Wooley testified that figures showing tubular member 105 prior to radial expansion illustrate the solid lines showing the sealing members spaced from adjacent portions of wellbore 220. Ex. 1050, 25:10–25, 27:18–28:6, 29:1–5. For example, Dr. Wooley agreed that Figure 2a includes “a discernable space between the sealing members and the wellbore 220.” *Id.* at 25:23–25. This comports with the ’616 patent’s disclosures that “tubular member 105 may be radially expanded into contact with the preexisting wellbore casing” (Ex. 1001, 14:48–49; Pet. 51–52) and that “the expansion cone liner 110 and expandable tubular member 105 are radially expanded into contact with the interior surface of the wellbore 220” (Ex. 1001, 15:30–35). Facially, these statements disclose radially expanding all portions of tubular member 105, including its sealing members and ribs, into contact with the preexisting structure.

The ’616 patent similarly conveys that the method involves radially expanding all portions of tubular member 105 in other statements. For example, the ’616 patent does so in the disclosure that

[t]he intermediate section 105c preferably further includes radially directed coupling elements 105ca-105cd affixed to the outside surface of the intermediate section 105c ***for enhancing the connection of the tubular hanger joint 105 to a preexisting structure following the radial expansion of the tubular hanger joint*** using the apparatus 100.

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Ex. 1001, 12:2–8 (emphasis added). As Petitioner explains, this passage conveys that “the ‘radially directed coupling elements’ enhance the connection to the preexisting structure *after radial expansion* because they are expanded into contact with the preexisting structure.” Pet. Reply 10.

The intrinsic evidence contradicts Dr. Wooley’s conclusory testimony in his Declaration that

[t]he only portions of the tubular described in the ’616 Patent that are expanded are those with a smaller diameter: first and second sections 105a and 105e, respectively, transition sections 105b and 105d, and an upper portion 110a of the expansion launcher. *Id.*, 11:60-12:19. As such, it is those sections that are expanded “into contact” with the preexisting structure.

Ex. 2006 ¶ 108.

In concert with the foregoing issues, we have also considered Patent Owner’s argument that the ’616 patent’s stated objectives preclude any separation of metal portions of a tubular member from the preexisting structure, such as by external elastomers, seals, coupling elements, and/or ribs and coupling elements that get radially expanded into contact with the adjacent preexisting structure. PO Resp. 13–18, 27–30, 35–38. We do not agree with this argument. Indeed, as explained above, the Detailed Disclosure and drawings exclusively disclose using a tubular member with either external coupling elements or external sealing members between ribs that get radially expanded into contact with the preexisting structure. This disclosure of using either coupling elements or external sealing members between ribs demonstrates that such an approach comports with the ’616 patent’s goals, including avoiding large differences in successive tubulars’ diameters. Ex. 1001, 10:10–36. It also demonstrates that the disclosure of

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the '616 patent does not exclude any separation of any metal portion of the tubular member from the adjacent preexisting structure in order to “establish[] an internal diameter substantially equal to that of the preexisting structure.” PO Resp. 30. Indeed, it conveys the opposite: that some separation of metal portions of the tubular member from the adjacent preexisting structure and some corresponding loss of diameter does not conflict with the objective of avoiding large differences in diameter. Consistent with this, Dr. Wooley testified that he does not understand limitation 1[d] to require “continuous contact.” Ex. 1050, 63:18–64:6.

Patent Owner’s counter arguments about Dr. Wooley’s deposition testimony do not persuasively rebut Petitioner’s evidence and arguments. For example, Patent Owner’s objection that “Dr. Wooley qualified” his testimony is unavailing. PO Sur-reply 7. On the whole, the cited testimony demonstrates that, in the candid setting of a deposition, Dr. Wooley agreed with Petitioner’s reading of the '616 patent’s disclosure, regardless of whether he was absolutely certain. We find the disclosures and the drawings of the '616 patent consistent with Dr. Wooley’s deposition testimony that the portions of the '616 patent related to Figures 2*a*–2*d*, 3*a*–3*d*, 4*a*–4*d*, 5*a*–5*c*, 6*a*–6*c*, and 7*a*–7*c* consistently disclose tubular member 105 including sealing members between ribs. *See, e.g.*, Ex. 1001, 11:26–43, 14:50–60, Figs. 2*a*, 3*a*, 4*a*, 5*a*, 6*a*, 7*a*. The intrinsic evidence does not support Patent Owner’s counter arguments.

Additionally, we find unavailing Patent Owner’s argument that Dr. Wooley views the '616 patent’s discussion of Figures 1 and 1*a*–1*d* as representative of the claimed subject matter. PO Sur-reply 7 (citing

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Ex. 1050, 19:17–23). Dr. Wooley’s testimony on this matter is less clear than Patent Owner suggests, as he waffled about whether an embodiment with coupling elements would satisfy claim 1. Ex. 1050, 19:17–23:8. Moreover, even if we agreed with Patent Owner’s position that Figures 1 and 1*a–1d* satisfy Patent Owner’s proposed claim construction, this argument would still be unavailing. This argument implies that we should construe claim 1 as encompassing Figures 1 and 1*a–1d*, but excluding Figures 2*a–2d*, 3*a–3d*, 4*a–4d*, 5*a–5c*, 6*a–6c*, and 7*a–7c*. Neither Patent Owner nor Dr. Wooley provides a persuasive basis to construe claim 1 as excluding the subject matter of the bulk of the Detailed Description and drawings.

Also, the portions of Mr. Chambers’ deposition cited by Patent Owner do not contradict the Specification, drawings, and Mr. Wooley’s deposition testimony about them. Mr. Chambers’ deposition testimony confirms that the claim language itself does not use the word “seal.” Ex. 2008, 33:18–34:10. Additionally, Mr. Chambers’ deposition testimony establishes that the ’616 patent does not say expressly that “coupling elements” constitute “seals.” *Id.* at 38:9–15. Aside from demonstrating those two things, the cited portions of Mr. Chambers’ deposition lack sufficient clarity to support Patent Owner’s assertions about it. *See* PO Resp. 30–32; Ex. 2008, 32:12–35:18, 36:25–38:6, 38:9–15, 47:22–49:25.

We next consider the prosecution history of the ’616 patent. Neither party argues that anything in the prosecution history affects the proper claim construction.

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On the whole, the intrinsic evidence is clearly at odds with the position of Patent Owner and Dr. Wooley’s declaration testimony that the correct claim construction excludes separation of any metal portion of the tubular member from the adjacent preexisting structure, such as by external elastomeric seals. We find this especially so, given that Dr. Wooley provides limited objective support for many of his opinions. For example, Dr. Wooley does not cite objective support for his opinion that “[t]he ‘616 Patent overcomes this issue in the prior art by removing the component/layer, such as an elastomeric seal, between an expandable tubular and a preexisting casing, to enable direct contact between the two and recovering the otherwise sacrificed internal diameter.” Ex. 2006 ¶ 99. Indeed, as discussed above, Dr. Wooley’s deposition testimony contradicts his Declaration.

We also find that Patent Owner’s arguments about other extrinsic evidence does not persuasively rebut Petitioner’s arguments about the intrinsic evidence. For example, in view of the ample intrinsic evidence supporting Petitioner’s claim-construction position, we find unavailing Patent Owner’s suggestion that the disclosures of prior art references support its claim-construction position. PO Resp. 28–30, 34–35.

We conclude that limitation 1[d] requires what it recites: “radially expanding the tubular member into contact with the preexisting structure.” Ex. 1001, 17:22–23. The evidence does not support Patent Owner’s various claim-construction positions. The evidence does not support rewriting the claim to require radially expanding the tubular member “into direct contact” or “direct continuous contact.” Nor does the evidence support a construction

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that excludes any separation of any metal portion of the tubular member from an adjacent portion of the preexisting structure.

C. GROUND 1 – ALLEGED ANTICIPATION BY SPE 59151

1. *Overview of SPE 59151*

SPE 59151 discusses an “expandable-liner-hanger system.”

Ex. 1003, 2. SPE 59151 discloses that the system includes “an expandable-liner-hanger joint,” “an expandable-liner-hanger running tool,” “a cementing wiper-plug system,” and “a crossover sub from the expandable-liner-hanger joint to the liner.” *Id.* SPE 59151 elaborates that

The expandable-liner-hanger joint is machined from 4140-grade materials. Several bands of elastomeric material are coated to the joint, with the bands being separated by ribs that are an integral part of the hanger body (**Fig. 6**). When the liner hanger is expanded, the elastomer provides the primary anchoring force for the hanger and attached liner, with the ribs furnishing a secondary anchoring force (**Fig. 7**).

Id. Figure 6 is reproduced below.



Fig. 6—When the expandable hanger joint is expanded, the elastomer coating on the joint provides a hydraulic seal and helps anchor the liner system to the previous casing string.

Figure 6 provides one view of SPE 59151’s expandable liner hanger.

Id. at 8.

In providing a summary of expandable-tubular technology, SPE 59151 explains the process of expanding the tubulars by stating that “[h]ydraulic pressure applied directly to the pig, or a pushing or pulling

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force applied through the workstring attached to the pig, propels the pig through the pipe, thereby deforming the pipe's metal into its plastic region.”

Id. at 2. SPE 59151 describes its “running sequence for the expandable-liner-hanger system” as follows:

1. Make up cement float shoe to liner, run in liner to total length of liner required, and hang off liner in slips.
2. Install a swivel and dual-wiper-plug set onto expandable-liner-hanger running tool. Use PBR option as required.
3. Install crossover sub between conventional liner casing and expandable-liner-hanger running tool.
4. Make up liner to expandable-liner-hanger running tool.
5. Make up workstring to expandable-liner-hanger running tool
6. Run assembly in hole to setting depth. Rotate and circulate as required.
7. Drop sealing dart for drilling-fluid wiper plug.
8. Displace required cement volume and drop sealing dart for cement wiper plug
9. Drop primary setting ball into running tool.
10. Increase pressure to shear pins in crossover ports and divert flow into flow paths to pig. (Note: Three crossover ports provide triple redundant fluid flow for setting operation.)
11. Pressure up until pig propagation pressure is obtained.
12. Maintain expansion pressure and clad liner hanger to previous string of casing.
 - Observe pressure readout on surface pumping unit for indications of cladding.
 - Note that full travel of the pig mandrel will result in a shifting of the bypass port and a consequent pressure drop.
13. Set down on workstring to release running tool.

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14. Pressure test liner-top seal.

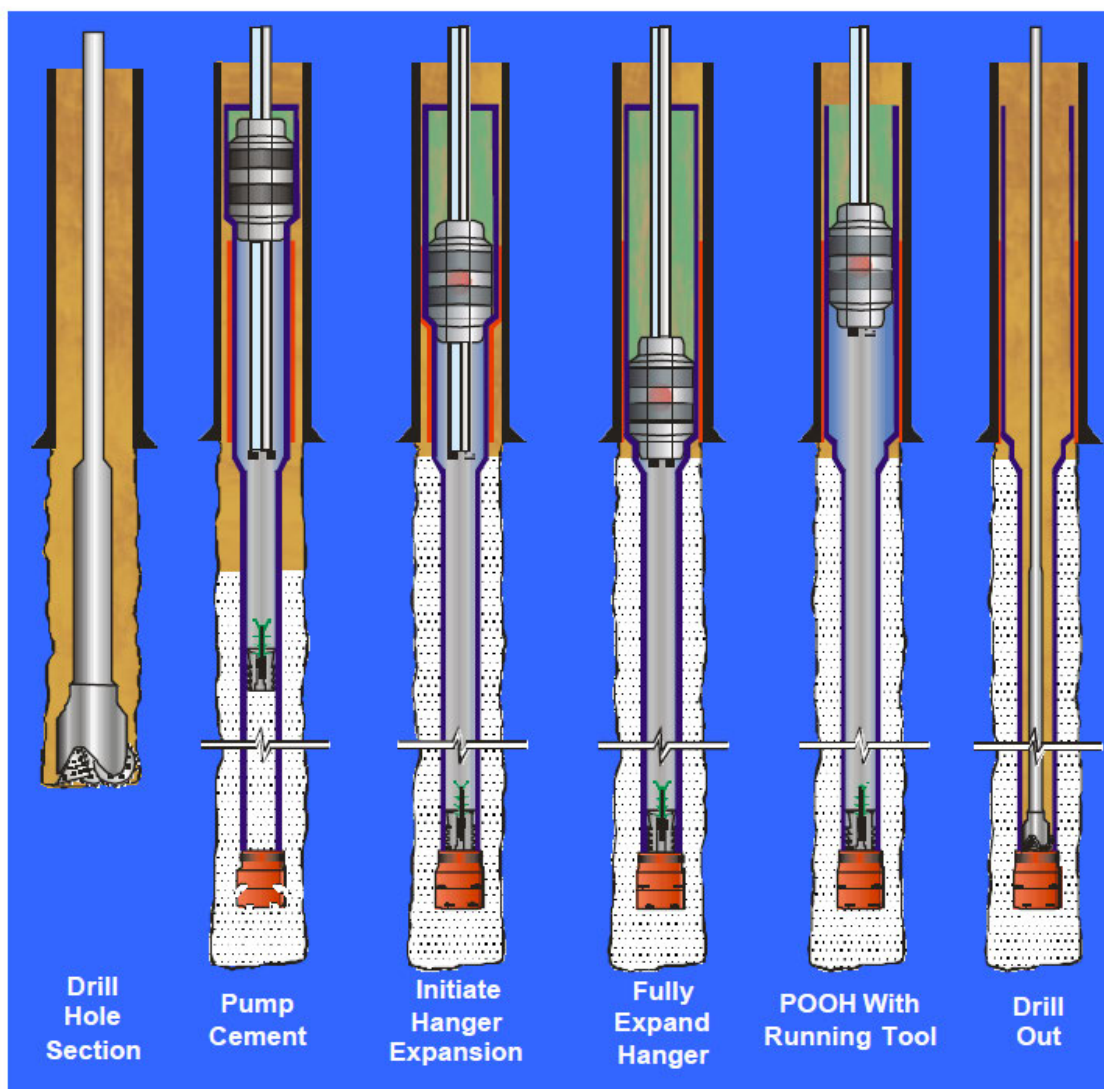
15. Pull out of hole with running tool (**Fig. 13**).*Id.* at 3–4. Figure 12 is reproduced below.

Fig. 12—The running procedure for the expandable liner-hanger system involves a top-down expansion method.

Figure 12 illustrates SPE 59151's running procedure. *Id.* at 11. Figure 7 is reproduced below.

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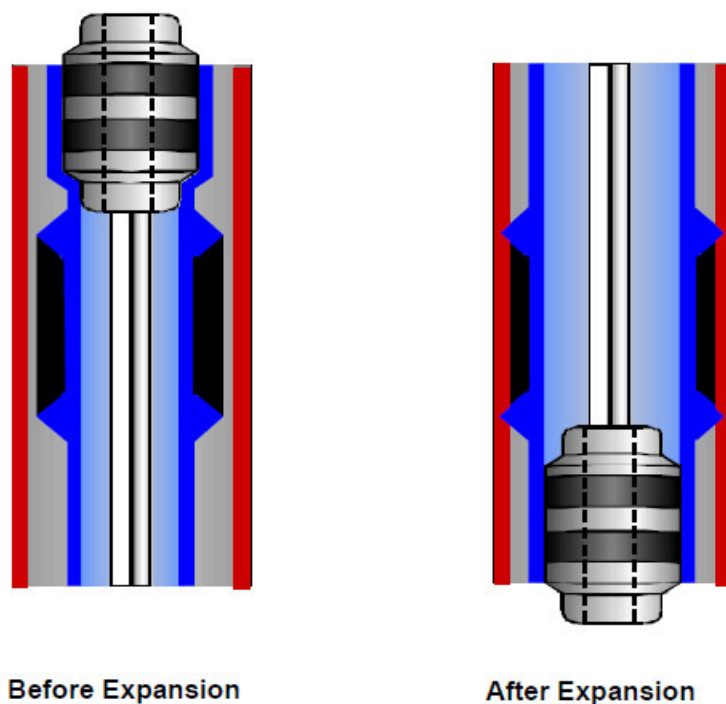


Figure 7—Upon expansion of the expandable liner hanger, ribs machined on the surface of the hanger engage the previous casing string, providing an anchor for the liner string.

Figure 7 shows the expandable liner hanger engaged to the previous casing string after expansion. *Id.* at 8.

2. Discussion

Petitioner asserts that SPE 59151 discloses all of the limitations of claims 1 and 5. Pet. 49–60; Pet. Reply 18–22. Patent Owner argues that Petitioner has not shown that SPE 59151 discloses claim limitation 1[d]. PO Resp. 59–64; PO Sur-reply 16–18. Patent Owner does not otherwise dispute Petitioner’s assertion that SPE 59151 anticipates claims 1 and 5.¹³ *See generally* PO Resp.; PO Sur-reply.

¹³ Patent Owner mentions secondary indicia of non-obviousness, but this is inapposite to Petitioner’s anticipation challenge. *See* Prelim. Resp. 75.

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Having reviewed the parties’ arguments and evidence, we determine Petitioner has demonstrated by a preponderance of the evidence that SPE 59151 anticipates claims 1 and 5. In the following sections, we discuss the parties’ contentions regarding SPE 59151 as it relates to the limitations of claims 1 and 5.

a) Claim 1

(1) Preamble

Claim 1’s preamble recites “[a] method of coupling a radially expandable tubular member to a preexisting structure, comprising.” Ex. 1001, 17:16–17. Petitioner argues that SPE 59151’s “expandable liner hanger” corresponds to the “expandable tubular member” recited in claim 1. Pet. 50. Petitioner argues that “[as SPE 59151’s] pig propagates, the expandable liner hanger is coupled (cladded) to the casing.” *Id.* Petitioner argues that SPE 59151’s use of ribs and elastomer seals to engage the expandable liner hanger to the casing matches the ’616 patent’s disclosed use of coupling elements and seals on its expandable tubular member 105. *Id.* at 51–52 (citing Ex. 1001, 12:2–8, 14:44–49, 14:50–60). To the extent the preamble of claim 1 is limiting, we find Petitioner has shown sufficiently that SPE 59151 discloses the preamble.

(2) Claim limitation 1[a]

Claim limitation 1[a] recites “positioning the tubular member and an expansion device within the preexisting structure.” Ex. 1001, 17:18–19. In asserting that SPE 59151 discloses this limitation, Petitioner cites steps 4–6 of the disclosed running sequence. Pet. 52. Petitioner adds that SPE 59151’s Figures 4 and 12 show “positioning the expandable liner hanger and

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expansion device downhole within the preexisting casing.” *Id.* At this stage, we find that Petitioner has shown sufficiently that SPE 59151 discloses claim limitation 1[a].

(3) *Claim limitation 1[b]*

Claim limitation 1[b] recites “injecting fluid materials into the tubular member.” Ex. 1001, 17:20. In asserting that SPE 59151 discloses claim limitation 1[b], Petitioner cites steps 9 and 10 of SPE 59151’s running sequence. Pet. 53–54. Petitioner argues that “Step 10 discloses pressurizing the tubular member by injecting fluid.” *Id.* at 54. Petitioner also cites SPE 59151’s disclosure that “[h]ydraulic pressure applied directly to the pig . . . propels the pig through the pipe.” *Id.* at 53–54 (alterations in original). Petitioner explains that “[a]pplying ‘hydraulic pressure’ to the ‘pig’ involves injecting fluidic material into the tubular member.” *Id.* at 54. At this stage, we find Petitioner has shown sufficiently that SPE 59151 discloses claim limitation 1[b].

(4) *Claim limitation 1[c]*

Claim limitation 1[c] recites “sensing the operating pressure of the fluidic materials.” Ex. 1001, 17:21. Petitioner argues that the shear pins disclosed in step 10 of SPE 59151’s running sequence serve to sense the operating pressure of the fluidic materials. Pet. 55–56. Petitioner explains that

[a]s pressure increases due to the presence of the setting ball, the shear pins in the crossover ports sense the increased pressure and are sheared (at their known failure rating, EX1002 ¶143), which causes fluid flow to be diverted into areas around and above the pig. *Id.* at 4 (“Increase pressure to shear pins in crossover ports and divert flow into flow paths to pig.”).

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Id. at 55.

Petitioner argues in the alternative that SPE 59151 discloses claim limitation 1[c] because “SPE 59151 teaches a surface gauge ‘on [the] surface pumping unit’ that provides a ‘pressure readout’ of the injected fluidic materials.” *Id.* at 56 (alterations in original). Petitioner notes that SPE 59151 discloses in step 12 of the running sequence to “[o]bserve pressure readout on surfacing pumping unit for indications of cladding.” *Id.* at 56–57. At this stage, we find Petitioner has shown sufficiently that SPE 59151 discloses claim limitation 1[c].

(5) *Claim limitation 1[d]*

Claim limitation 1[d] recites “radially expanding the tubular member into contact with the preexisting structure when the sensed operating pressure exceeds a predetermined amount by displacing the expansion device relative to the tubular member.” Ex. 1001, 17:22–26. Petitioner argues that “SPE 59151 discloses radially expanding the liner hanger into contact with the previous casing when the sensed operating pressure exceeds a predetermined amount (*i.e.*, when the pins are sheared) by displacing the pig relative to the liner hanger.” Pet. 57. Petitioner elaborates that the shear pins will fail at a predetermined pressure, after which fluid pressure will move the pig through the expandable liner hanger. *Id.* at 57–58. Petitioner quotes step 12 of SPE 59151’s running sequence, which discloses “[m]aintain expansion pressure and clad liner hanger to previous string of casing.” Ex. 1003, 4. Petitioner explains that “[m]aintaining the fluidic pressure would cause the region upstream of the pig to pressurize and force the pig down the liner hanger, which causes radial expansion of the liner into

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contact with the previous casing.” Pet. 58. Petitioner asserts that Figure 12 of SPE 59151 shows the pig moving down the expandable liner hanger and radially expanding it into contact with the surrounding casing. *Id.*

Patent Owner argues that Petitioner has not shown that SPE 59151 discloses claim limitation 1[d]. PO Resp. 59–64. Patent Owner does not dispute that SPE 59151 discloses radially expanding the expandable liner hanger when sensed operating pressure exceeds a predetermined amount by moving the pig relative to the expandable liner hanger. *See id.* Rather, Patent Owner argues that this process does not produce the type of contact required by Patent Owner’s construction of claim limitation 1[d].¹⁴ *See id.* Patent Owner reiterates that “the proper construction of element 1[d] includes ‘radially expanding and plastically deforming the portions of the tubular member within the preexisting structure into direct contact with the preexisting structure.’” *Id.* at 59.

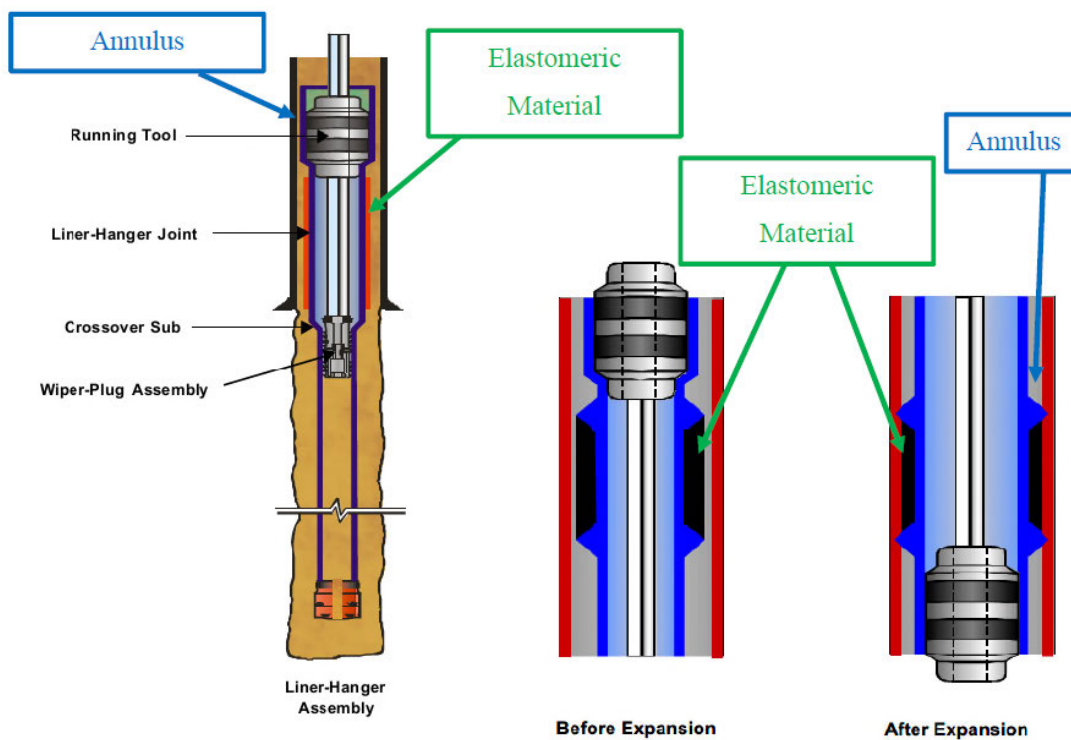
Patent Owner then argues that SPE 59151 “does not and cannot teach or suggest direct continuous contact between the tubular member and the previous casing string. Instead, it is the elastomer and external steel ribs that contact the previous casing string and form the required anchoring force.” *Id.* at 60. In connection with this argument, Patent Owner provides annotated versions of SPE 59151’s Figures 4 and 7, as well as an annotated

¹⁴ In its claim-construction arguments, Patent Owner contends that limitation 1[d] requires plastic deformation of the tubular member. *E.g.*, PO Resp. 27. Patent Owner does not, however, argue that SPE 59151 lacks a disclosure of plastically deforming a tubular member. *See generally* PO Resp.; PO Sur-reply.

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version of an excerpt of Figure 12. *Id.* at 61–62. Patent Owner’s annotated versions of the drawings are reproduced below.

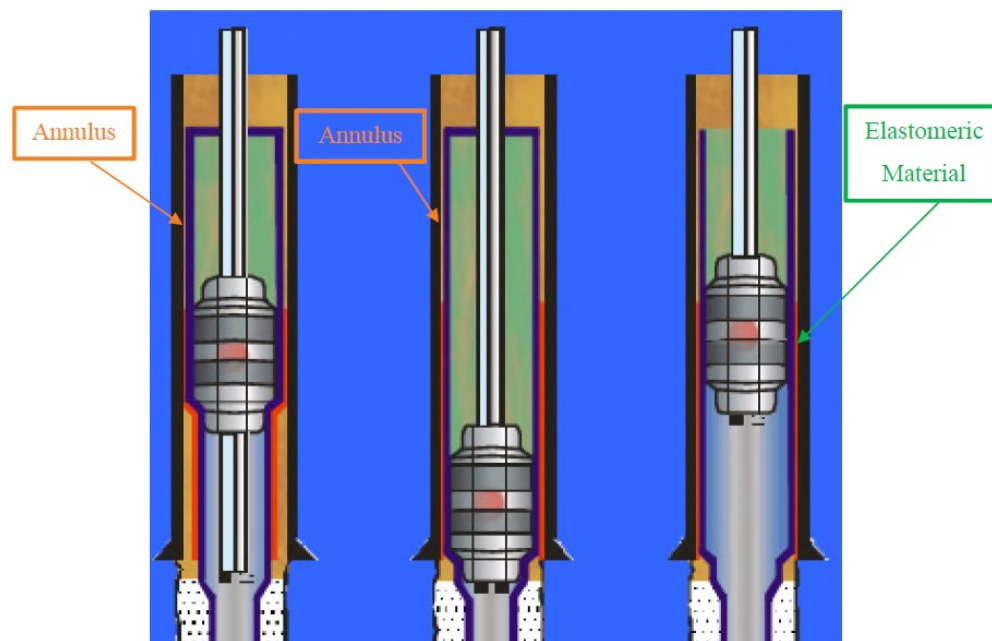


EX1003, Fig. 4 (annotated)

EX1003, Fig. 7 (annotated)

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EX1003, Fig. 12, excerpted (boxed annotations added)

Patent Owner’s annotated versions of SPE 59151’s drawings include annotations identifying elastomeric material and points where Patent Owner contends an annulus exists. *Id.* According to Patent Owner, “[a]ll of the figures unambiguously indicate that the annulus between the liner itself and the existing casing remains after expansion.” *Id.* at 62. Patent Owner adds that “[t]he language of SPE59151 further confirms, ‘[w]hen the liner hanger is expanded, the elastomer provides the primary anchoring force for the hanger and attached liner . . . When the liner hanger is expanded, the elastomer furnishes the desired hydraulic seal between the hanger and the previous casing string.’” *Id.* (quoting Ex. 1003, 2) (second two alterations in original).

Additionally, Patent Owner reiterates that “[t]he ’616 Patent sought to remove components such as elastomers, steel rings, and annular regions between the tubular member and the preexisting casing,” which Patent

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Owner argues “cause a loss of internal diameter.” *Id.* at 63. Patent Owner contends that

[a]s shown in Figure 7 of SPE59151, reproduced above, even the portions of the tubular between the ribs have an internal diameter **less** than the internal diameter of the casing, which is precisely the problem the Challenged Claims overcome. EX2006, ¶182. That is, even after expansion, the internal diameter is significantly reduced because the tubular itself is not expanded into direct continuous contact with the existing casing.

Id.

Addressing SPE 59151’s disclosure of ribs, Patent Owner contends that “those ribs provide only a secondary anchoring force and, in any event, do not amount to ‘the portions of the tubular member within the preexisting structure’ as claim 1 requires.” *Id.* Patent Owner adds that “[t]he single point contact of the ribs with the preexisting casing does not amount to radially expanding and plastically deforming the tubular member into direct continuous contact with the preexisting structure.” *Id.*

Patent Owner also argues that “a [person of ordinary skill in the art] would not be motivated to remove the elastomer to enable direct contact between an expandable tubular liner and a preexisting casing.” *Id.* at 64. Patent Owner explains that SPE 59151’s elastomer “is the ‘primary anchoring force’ for the liner.” *Id.* Patent Owner adds that “SP59151 describes its elastomer as overcoming failures to create hydraulic integrity suffered by previous methods.” *Id.*

Petitioner responds that “[Patent Owner] cannot distinguish the Challenged Claims over the prior art.” Pet. Reply 1. Petitioner asserts that Patent Owner’s arguments rest on incorrect claim constructions. *Id.*

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Petitioner adds that “[e]ven under [Patent Owner’s] narrow construction requiring ‘direct contact,’ SPE 59151 anticipates.” *Id.* at 19. Petitioner explains that “[l]ike the ’616 preferred embodiment (EX1001, 12:2-8, 14:50-57), SPE 59151 discloses the concept of expanding alternating elastomeric and steel bands on a tubular, as shown in Figure 6 of the reference.” *Id.* Petitioner elaborates that “SPE 59151 expressly discloses expanding both the elastomeric and steel portions of the tubular ‘into contact with’—indeed ‘intimate contact’ with—the preexisting casing.” *Id.* (citing Ex. 1003, 1–2, 4, 8). [REDACTED]

[REDACTED]

[REDACTED]

Petitioner faults Patent Owner’s attempts to distinguish limitation 1[d] based on SPE 59151’s use of elastomeric bands and ribs. *Id.* at 20–21. Petitioner reiterates that “every coupling in the ’616 Patent occurs either by coupling elements or seal members between ribs.” *Id.* at 20. According to Petitioner, “[t]hat SPE 59151 describes the elastomeric bands as the ‘primary anchoring force’ is irrelevant.” *Id.* Petitioner faults Patent Owner’s argument that SPE 59151’s ribs “do not amount to ‘the portion of the tubular member within the preexisting structure’ as claim 1 requires” as unclear and unavailing. *Id.* (citing PO Resp. 63).

In doing so, Petitioner argues that it is unclear what Patent Owner means when it argues claim 1 requires “continuous” contact. *Id.* at 20–21. Petitioner adds that “[Dr. Wooley] disagrees that ‘continuous’ is a requirement of claim 1.” *Id.* (citing Ex. 1050, 63:18–64:6). Additionally, Petitioner argues that

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to the extent it would exclude elastomeric contact or contact points by the ribs, it cannot be correct for all the reasons explained above regarding “direct.” See Section III.A.1 above. Also, contrary to PO’s repeated arguments about “annuli” based on cartoon figures (POR, 51, 61-62), the quoted portions above of SPE 59151 make clear that every portion of the elastomeric bands, ribs, and steel bands shown in Figure 6 are expanded into contact with the casing (*i.e.*, in practice, there are no annuli between the portions of liner that have been expanded and the prior casing). EX1048, ¶¶ 24-27.

Id. at 21. Moreover, Petitioner argues, “any amount of ‘direct contact’ . . . would meet [Patent Owner’s] initial construction,” and SPE 59151 “clearly discloses ‘direct contact.’” *Id.* at 21–22.

In response, Patent Owner reiterates that SPE 59151 “does not and cannot teach or suggest direct continuous contact between the tubular member and the previous casing string.” PO Sur-reply 16. In connection with this, Patent Owner explains that

Petitioner points to Fig. 6 where SPE59151 discloses expanding elastomeric and steel portions of the tubular into direct contact with the casing. [Pet. Reply 19]. However, SPE59151 discloses using an elastomeric material on the outside of the liner hanger to make contact with and secure the hanger to the preexisting casing.

Id. Addressing SPE 59151’s ribs, Patent Owner reiterates a number of its arguments from the Response, including its positions that “a [person of ordinary skill in the art] would not consider those ribs to be “the tubular member” and “the steel ribs provide only a secondary anchoring force.” *Id.* at 17.

Patent Owner adds that

[i]n SPE59151, the portions of the tubular between the ribs have an external diameter **less** than the internal diameter of the casing

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due to the presence of the ribs and the elastomer. EX1003, p.2. Thus, even after expansion of the tubular, the internal diameter of the tubular is significantly reduced because the tubular itself is not expanded into direct continuous contact with the existing casing.

Id. at 18. Finally, Patent Owner argues that “[i]mportantly, SPE59151 cannot simply be modified to remove the elastomer.” *Id.*

Petitioner persuades us that SPE 59151 discloses limitation 1[d]. Pet. 18–27, 50–52, 57–59; Pet. Reply 1–2, 18–22. With respect to the dispute framed by the parties’ arguments, Petitioner convinces us that SPE 59151 discloses radially expanding both the metal and elastomeric portions of its expandable liner hanger into direct contact with the surrounding casing. *E.g.*, Pet. Reply 19–20. As Petitioner notes, SPE 59151 discloses that its “new liner system . . . into *intimate contact* with the casing from which the liner being hung.” Ex. 1003, 1 (emphasis added). SPE 59151 adds that “[t]he combination of the metal-to-metal and elastomer-to-metal contacts that are created during expansion of the liner hanger produce a very reliable seal.” *Id.* at 4. Consistent with these disclosures, Patent Owner concedes “SPE 59151 discloses expanding elastomeric and steel portions of the tubular into direct contact with the casing.” PO Sur-reply 16.

[REDACTED]

[REDACTED]

[REDACTED]

Patent Owner’s attempts to distinguish limitation 1[d] from SPE 59151 based on arguments about elastomers, ribs, annuli, and internal diameters all rest on Patent Owner’s narrow understanding of limitation 1[d]. These arguments do not persuasively rebut Petitioner’s position, as the

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evidence supports Petitioner’s claim construction positions, not Patent Owner’s. For the reasons discussed above in Section VII.B, the proper construction of limitation 1[d] does not exclude external ribs and elastomeric seals, or any of the other things that Patent Owner contends SPE 59151 discloses.

Moreover, Patent Owner does not provide persuasive support for many of its allegations of what SPE 59151 discloses. For example, Patent Owner does not provide persuasive support for its assertion that

[i]n SPE59151, the portions of the tubular between the ribs have an external diameter **less** than the internal diameter of the casing due to the presence of the ribs and the elastomer. EX1003, p.2. Thus, even after expansion of the tubular, the internal diameter of the tubular is significantly reduced because the tubular itself is not expanded into direct continuous contact with the existing casing.

PO Sur-reply 18. In support of these arguments, Patent Owner cites only page 2 of SPE 59151. Ex. 1003, 2. On this page, SPE 59151 discloses that “it affords a means of progressing from one casing string to a smaller string *with minimal reduction in internal diameter, i.e., the technology conserves hole size.*” *Id.* (emphasis added). This does not support Patent Owner’s position that SPE 59151’s tubular member has a “significantly reduced” internal diameter after expansion. PO Resp. 63.

Nor does Dr. Wooley’s testimony that SPE 59151 “shows that the portions of the tubular with ribs have an internal diameter **less than** the internal diameter of the casing” support Patent Owner position that the diameter is “significantly reduced.” Ex. 2006 ¶ 182. Neither Dr. Wooley nor Patent Owner explains how a tubular member disposed inside a

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preexisting structure could have an internal diameter identical to that of the preexisting structure. The tubular member seemingly would have to have an internal diameter smaller than the surrounding preexisting structure, due to the thickness of the tubular member. Given this, Patent Owner does not provide persuasive evidence that SPE 59151's liner hanger has a "significantly reduced" internal diameter. As discussed above in Section VII.B, the '616 patent's disclosure of using external ribs and elastomers indicates that some reduction in internal diameter comports with the patent's objectives.

We also find Patent Owner does not provide persuasive evidence in support of many of its assertions about SPE 59151's ribs. For example, Patent Owner does not persuade us that the ribs "provide only a secondary anchoring force and, in any event, do not amount to 'the portions of the tubular member within the preexisting structure' as claim 1 requires." PO Resp. 63. In support of this, Patent Owner cites two paragraphs of Dr. Wooley's Declaration. *Id.* One paragraph says exactly the same thing Patent Owner says. PO Resp. 63; Ex. 2006 ¶ 180. The other paragraph offers the conclusory opinion that "[a]n elastomer and external steel ribs would not be understood by a [person of ordinary skill in the art] to form the contact necessary in 'radially expanding the tubular member into contact with the preexisting structure.'" Ex. 2006 ¶ 181. Neither Patent Owner nor Dr. Wooley provides persuasive, objective evidence for Patent Owner's position that SPE 59151's ribs do not constitute portions of the tubular member within "the portions of the tubular member within the preexisting structure." PO Resp. 63; Ex. 2006 ¶¶ 180–181.

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Regarding the dispute about whether SPE 59151 discloses an annulus and therefore fails to disclose limitation 1[d], Petitioner again has the more persuasive position. First, as explained above in Section VII.B, the '616 patent's disclosure of using ribs and elastomers belies Patent Owner's apparent position that limitation 1[d] excludes any separation of any metal portion of the tubular member from the surrounding preexisting structure. Indeed, as Petitioner notes, Dr. Wooley conceded that he does not understand limitation 1[d] as requiring continuous contact. Ex. 1050, 63:18–64:6. Thus, we do not agree with Patent Owner's suggestion that the claim precludes an annulus. Moreover, Petitioner persuades us that the text of SPE 59151 conveys that no significant annulus exists between the liner hanger and the casing after expansion. Pet. Reply 21; Ex. 1048 ¶¶ 24–27.

b) Claim 5

Claim 5 adds certain limitations regarding the geometry of the tubular member prior to radial expansion. Ex. 1001, 17:41–47. Petitioner explains its position that SPE 59151 teaches the limitations of claim 5, citing record evidence. Pet. 59–60. Aside from its arguments regarding independent claim 1, Patent Owner does not dispute Petitioner's argument that SPE 59151 anticipates claim 5. *See generally* PO Resp. Based on the full record, we determine Petitioner has shown by a preponderance of the evidence that SPE 59151 anticipates claim 5.

D. GROUNDS 2–5

As noted above in Section I.E, Petitioner also argues that claims 1 and 5 are unpatentable as (a) anticipated by the Offshore Article, (b) “obvious over the Offshore Article in view of a [person of ordinary skill in the art],”

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(c) “obvious over the Offshore Article in view of the knowledge of a [person of ordinary skill in the art] and further in view of SPE 59151,” and (d) anticipated by Vercaemer. Pet. 10, 60–90. Because we determine that claims 1 and 5 are anticipated by SPE 59151, we do not reach Grounds 2–5.

VIII. CONCLUSION¹⁵

In summary:

Claim(s)	35 U.S.C. §	References/Basis	Claim(s) Shown Unpatentable	Claim(s) Not Shown Unpatentable
1, 5	102(b)	SPE 59151	1, 5	
1, 5	102(b)	Offshore Article ¹⁶		
1, 5	103(a)	Offshore Article, “knowledge of a [person of ordinary skill in the art]” ¹⁷		
1, 5	103(a)	Offshore Article, “knowledge of a [person of ordinary		

¹⁵ Should Patent Owner wish to pursue amendment of the challenged claim in a reissue or reexamination proceeding subsequent to the issuance of this decision, we draw Patent Owner’s attention to the April 2019 *Notice Regarding Options for Amendments by Patent Owner Through Reissue or Reexamination During a Pending AIA Trial Proceeding*. See 84 Fed. Reg. 16,654 (Apr. 22, 2019). If Patent Owner chooses to file a reissue application or a request for reexamination of the challenged patent, we remind Patent Owner of its continuing obligation to notify the Board of any such related matters in updated mandatory notices. See 37 C.F.R. § 42.8(a)(3), (b)(2).

¹⁶ As explained above in Section VII.D, we do not reach this challenge.

¹⁷ As explained above in Section VII.D, we do not reach this challenge.

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		skill in the art],” SPE 59151 ¹⁸		
1, 5	102(a), (e)	Vercaemer ¹⁹		
Overall Outcome			1, 5	

IX. ORDER

In consideration of the foregoing, it is:

ORDERED that claims 1 and 5 have been shown, by a preponderance of the evidence, to be unpatentable;

FURTHER ORDERED that Patent Owner’s Motion to Deem the Filing of Its Exhibits As Timely is *granted*;

FURTHER ORDERED that Petitioner’s Motion to Submit Supplemental Information is *dismissed as moot*;

FURTHER ORDERED that Petitioner’s Motion to Exclude is *dismissed as moot*;

FURTHER ORDERED that Patent Owner’s Motion to Exclude is *dismissed-in-part* and *denied-in-part*;

FURTHER ORDERED that the Motions to Seal are *granted*;

FURTHER ORDERED that the default Protective Order submitted with the Motions to Seal is entered; and

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

¹⁸ As explained above in Section VII.D, we do not reach this challenge.

¹⁹ As explained above in Section VII.D, we do not reach this challenge.

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