

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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McCLINTON ENERGY GROUP, LLC,  
Petitioner,

v.

MAGNUM OIL TOOLS INTERNATIONAL, LTD.,  
Patent Owner.

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Case IPR2013-00231  
Patent 8,079,413 B2

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Before SALLY C. MEDLEY, MEREDITH C. PETRAVICK, and  
MICHAEL R. ZECHER, *Administrative Patent Judges*.

ZECHER, *Administrative Patent Judge*.

FINAL WRITTEN DECISION  
*35 U.S.C. § 318(a) and 37 C.F.R. § 42.73*

## I. BACKGROUND

McClinton Energy Group, LLC (“McClinton”) filed a Petition on April 2, 2013, requesting an *inter partes* review of claims 1–20 (“the challenged claims”) of U.S. Patent No. 8,079,413 B2 (Ex. 1001, “the ’413 patent”). Paper 3 (“Pet.”). Magnum Oil Tools International, Ltd. (“Magnum”) timely filed a Preliminary Response. Paper 14 (“Prelim. Resp.”). Taking into account the information presented in McClinton’s Petition, as well as the arguments presented in Magnum’s Preliminary Response, the Board determined that the information presented in the Petition demonstrated that there was a reasonable likelihood that McClinton would prevail in challenging claims 1–20 as unpatentable under 35 U.S.C. § 103(a). Pursuant to 35 U.S.C. § 314, the Board instituted this proceeding on September 23, 2013, as to all of the challenged claims of the ’413 patent. Paper 16 (“Dec.”).

During this proceeding, Magnum timely filed a Patent Owner Response (Paper 20, “PO Resp.”), and McClinton timely filed a Reply to the Patent Owner Response (Paper 22, “Pet. Reply”). An oral hearing was held on May 8, 2014. Paper 30 (“Tr.”).

We have jurisdiction under 35 U.S.C. § 6(c). This decision is a final written decision under 35 U.S.C. § 318(a) as to the patentability of the challenged claims. Based on the record before us, McClinton has demonstrated by a preponderance of the evidence that claims 1–20 are unpatentable.

### A. *The ’413 Patent*

The ’413 patent relates to downhole tools that are set within a wellbore with a lower shear mechanism. Ex. 1001, 1:13–15. The ’413

patent discloses that bridge plugs, packers, and fracking (“frac”) plugs are downhole tools that typically are used to permanently, or temporarily, isolate one wellbore zone from another. *Id.* at 1:17–19. Such isolation is often necessary to pressure test, perforate, frac, or simulate a zone of the wellbore, without impacting or communicating with other zones within the wellbore. *Id.* at 1:19–22. Plugs typically are removed, or otherwise compromised, in order to reopen or restore fluid communication through the wellbore. *Id.* at 1:22–24.

The ’413 patent discloses that the process of removing permanent, non-retrievable plugs, or packers, typically includes drilling or milling. Ex. 1001, 1:25–26. However, problems sometimes occur during the removal or drilling of such non-retrievable plugs. *Id.* at 1:29–31. For instance, the non-retrievable plug components can bind upon the drill bit and rotate within the casing string, thereby resulting in extremely long drill-out times, excessive casing wear, or both. *Id.* at 1:31–34.

The ’413 patent also discloses that certain completion or production activities may require several plugs or plug types that run in series. Ex. 1001, 1:46–48. However, the uncertainty in the number and types of plugs that may be required typically leads to the over-purchase, or under-purchase, of the appropriate number and types of plugs, thereby resulting in fiscal inefficiencies or field delays. *Id.* at 1:54–58. The ’413 patent solves these problems by providing a downhole tool that performs the following functions: (1) seals the wellbore at wellbore conditions effectively; (2) may be removed from the wellbore quickly, easily, or reliably; and (3) is capable of being configured in the field to perform one or more functions. *Id.* at 1:59–62.

Figure 1B of the '413 patent, reproduced below, illustrates a partial sectional view of an insert that may be threaded to, or disposed within, a plug. Ex. 1001, 2:8–10; 3:33–35.

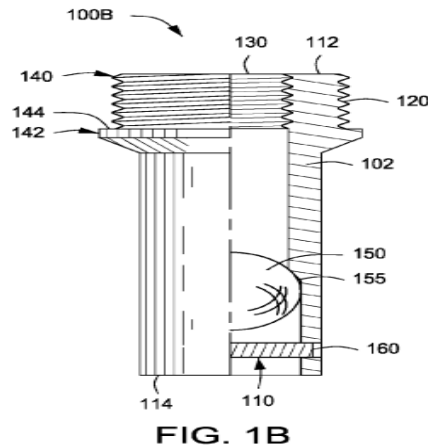


Figure 1B illustrates a partial sectional view of shearable insert 100B for a plug.

The '413 patent discloses that one or more shearable threads 130 can be disposed or formed on the inner surface of body 102. Ex. 1001, 3:47–48. Shearable threads 130 can be used to couple insert 100B to another insert 100 (illustrated in Figure 1A) or 100B, setting tool, tubing string, plug, or other tool. *Id.* at 3:48–51.

Figure 2A of the '413 patent, reproduced below, illustrates a partial sectional view of a plug configured with the insert 100 or 100B. Ex. 1001, 2:11–13; 5:21–24.

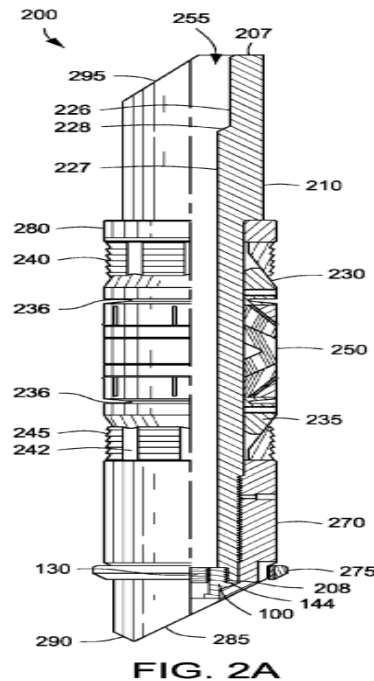


Figure 2A illustrates a partial sectional view of plug 200 configured with insert 100 or 100B.

The '413 patent discloses that plug 200 includes mandrel or body 210 having first or upper end 207 and second or lower end 208. *Id.* at 5:24–26. Insert 100B can be threaded to, or otherwise disposed within, plug 200 at lower end 208 of body 210. *Id.* at 5:34–35. A setting tool, tubing string, plug, or other tool can enter bore 255 through first end 207 of body 210 and can be threaded to, coupled to, or disposed within insert 100 or 100B. *Id.* at 5:36–39. Shearable threads 130 on insert 100 or 100B can be sheared, fractured, or otherwise deformed, thereby releasing the setting tool, tubing string, plug, or other tool from plug 200. *Id.* at 5:39–42.

#### *B. Illustrative Claim*

Of the challenged claims, claims 1, 7, and 17 are independent claims. Claims 2–6 directly depend from independent claim 1, claims 8–16 directly

or indirectly depend from independent claim 7, and claims 18–20 directly or indirectly depend from independent claim 17. Independent claim 1 is illustrative of the invention of the '413 patent and is reproduced below:

1. A plug for isolating a wellbore, comprising:
  - a body having a first end and a second end;
  - at least one malleable element disposed about the body;
  - at least one slip disposed about the body;
  - at least one conical member disposed about the body; and
  - an insert screwed into an inner surface of the body proximate [to] the second end of the body and adapted to receive a setting tool that enters the body through the first end thereof, wherein:*
    - the insert comprises one or more shearable threads disposed on an inner surface thereof;*
    - the insert has a passageway extending therethrough;*
    - the one or more shearable threads are adapted to engage the setting tool; and*
    - the one or more shearable threads are adapted to deform to release the setting tool when exposed to a predetermined axial force, thereby providing a flow passage through the insert and the body.*

Ex. 1001, 13:56–14:7 (emphases added).

### *C. Related Proceedings*

McClinton indicates that the '413 patent was asserted against it in *Magnum Oil Tools Int'l LLC v. Tony D. McClinton*, No. 2:12-cv-00099 (S.D. Tex.). Pet. 1. Both parties indicate that the '413 patent is related to the following three patent applications, two of which already have issued as patents: (1) U.S. Patent Application No. 12/317,497, filed December 23, 2008—now U.S. Patent No. 8,496,052; (2) U.S. Patent Application No. 13/329,077, filed December 16, 2011—now U.S. Patent No. 8,459,346; and

(3) U.S. Patent Application No. 13/329,096, filed December 16, 2011.

Pet. 1; Prelim. Resp. 5.

*D. Prior Art Relied Upon*

McClinton relies upon the following prior art references:

Cockrell	US 4,437,516	Mar. 20, 1984	Ex. 1005
Slup	US 6,708,768 B2	Mar. 23, 2004	Ex. 1006
Lehr	US 2007/0151722 A1	July 5, 2007	Ex. 1007
Streich	US 5,224,540	July 6, 1993	Ex. 1008
McKeachnie	US 7,350,582 B2	Apr. 1, 2008	Ex. 1009
Kristiansen	US 4,595,052	June 17, 1986	Ex. 1010

*E. Grounds of Unpatentability*

We instituted this proceeding based on the grounds of unpatentability set forth in the table below.

<b>Challenged Claims</b>	<b>Basis</b>	<b>References<sup>1</sup></b>
1–3, 5–8, 12, and 13	§ 103(a)	Lehr, Cockrell, and Kristiansen
4 and 9–11	§ 103(a)	Lehr, Cockrell, Kristiansen, and Slup
14 and 16	§ 103(a)	Lehr, Cockrell, Kristiansen, and Streich
15	§ 103(a)	Lehr, Cockrell, Kristiansen, Streich, and McKeachnie
17–19	§ 103(a)	Lehr, Cockrell, Kristiansen, Slup and Streich
20	§ 103(a)	Lehr, Cockrell, Kristiansen, Slup, Streich, and McKeachnie

## II. ANALYSIS

### A. Claim Construction

In an *inter partes* review, we construe a claim by applying the broadest reasonable interpretation in light of the specification of the patent in which it appears. 37 C.F.R. § 42.100(b); *see* Office Patent Trial Practice Guide, 77 Fed. Reg. 48,756, 48,766 (Aug. 14, 2012).

#### 1. Claim Phrases Previously Construed

In its Petition, McClinton provided a construction for each of the following claim phrases: (1) “first end” and “second end”; (2) “shearable

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<sup>1</sup> For each of the grounds of unpatentability instituted in this proceeding, Kristiansen was omitted inadvertently from the statement of the ground of unpatentability, yet nonetheless included in the corresponding analysis. *See, e.g.*, Pet. 44, 46–47. In the Decision to Institute, we treated each incorrect statement of the ground of unpatentability as mere harmless error and presumed that McClinton intended to assert that claims 1–20 are unpatentable under 35 U.S.C. § 103(a) based, in whole or in part, on the combination of Lehr, Cockrell, and Kristiansen. *Accord* Prelim. Resp. 20–21 (confirming that the grounds of unpatentability asserted by McClinton were based, in whole or in part, on the combination of Lehr, Cockrell, and Kristiansen).



threads”; and (3) “the first and second ends of the body each comprise anti-rotation features formed thereon.” Pet. 17–22. In its Preliminary Response, Magnum only contested McClinton’s claim constructions with respect to “shearable threads” and “the first and second ends of the body each comprise anti-rotation features formed thereon.” Prelim Resp. 7–9. In the Decision to Institute, we construed each claim phrase identified by McClinton. Dec. 9–14.

During trial, McClinton and Magnum did not dispute our claim constructions for the claim phrases identified above. We discern no reason to alter our claim construction for each claim phrase set forth in the Decision to Institute in this Final Written Decision. For convenience, each claim phrase we construed in the Decision to Institute is reproduced in the table below.

<b>Claim Phrase(s)</b>	<b>Claim Construction in the Decision to Institute</b>
“first end” and “second end” (claims 1, 3, 7, 12, and 17)	“a first end of a downhole tool relative to a second end of the downhole tool”
“shearable threads” (claims 1, 7, 17, and 19)	“spiral ridges that are designed to shear, fracture, break, or otherwise deform thereby releasing two or more engaged components, parts, or things”
“the first and second ends of the body each comprise anti-rotation features formed thereon” (claims 3 and 12)	“the anti-rotation features are formed on the first and second ends of the body”

2. *“Setting tool” (claims 1–20)*

In its Patent Owner Response, Magnum contends that, since McClinton filed its Petition, a dispute has arisen between the parties in the

related district court case regarding the claim term “setting tool.”  
PO Resp. 10. Magnum alleges that, in the related district court case, McClinton proposed a narrow claim construction for the claim term “setting tool” that was not accepted by the court, and should not be accepted for purposes of this proceeding, because it is not the broadest reasonable interpretation. *Id.* at 11. Magnum argues that the broadest reasonable interpretation of the claim term “setting tool” is “any device used in the installation process of the plug within the wellbore, and includes any outer cylinder, adapter rod, and/or extender.” *Id.* at 13. To support its claim construction, Magnum directs us to various portions of the Specification of the ’413 patent, as well as the prosecution history of the ’413 patent. *Id.* at 11–12 (citing Ex. 1001, 8:35–38, 46–52, 62–67; Ex. 3002).

In response, McClinton acknowledges that the court overseeing the related case accepted Magnum’s claim construction for the claim term “setting tool.” Pet. Reply 14. McClinton then urges us to apply that claim construction in this proceeding because it is the broadest reasonable interpretation. *Id.* In addition, upon inquiry during oral argument, McClinton agrees that Magnum’s proposed claim construction for the claim term “setting tool” is the broadest reasonable interpretation for purposes of this proceeding. Tr. 6:24–7:25.

Upon reviewing the Specification of the ’413 patent, we do not find an explicit definition for the claim term “setting tool.” Therefore, we refer to its ordinary and customary meaning, as would be understood by one of ordinary skill in the art in the context of the entire disclosure. *In re Translogic Tech., Inc.*, 504 F.3d 1249, 1257 (Fed. Cir. 2007). For purposes of this proceeding, we adopt Magnum’s claim construction because it is

consistent with the ordinary and customary meaning of a “setting tool,” as would be understood by one with ordinary skill in the art in light of the Specification of the ’413 patent.

3. *“The outer surface of the insert” (claim 2)*

Dependent claim 2 recites “*the outer surface of the insert* has a larger diameter and a small diameter forming a shoulder therebetween, the shoulder adapted to anchor the insert within the body.” Ex. 1001, 14:8–11 (emphasis added). Neither McClinton nor Magnum provides an explicit construction for this claim phrase. As a first step in our analysis, we must ascertain its scope and meaning. Upon reviewing the Specification of the ’413 patent, we note the following disclosure:

[t]he outer surface of the insert **100**, **100B** can have a constant diameter, or its diameter can vary, as depicted in FIGS. **1A** and **1B**. For example, the outer surface can include a small first diameter portion or area **140** that transitions to a larger, second diameter portion or area **142**, forming a ledge or shoulder **144** therebetween.

Ex. 1001, 4:41–46. This cited disclosure does not define explicitly the claim phrase “the outer surface of the insert.” Despite the lack of an explicit definition, however, this claim phrase is relatively simple to understand. Applying the broadest reasonable interpretation standard in light of the Specification of the ’413 patent, we construe the claim phrase “the outer surface of the insert” to be “any surface located on the outside of the insert, including the top, bottom, and sides.”

*B. The Level of Ordinary Skill in the Art*

In determining the level of one with ordinary skill in the art, various factors may be considered, including “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) (citing *Custom Accessories, Inc. v. Jeffrey-Allan Indus., Inc.*, 807 F.2d 955, 962 (Fed. Cir. 1986)). There is uncontested evidence in the record before us that reflects the knowledge level of a person with ordinary skill in the art. McClinton’s expert, Dr. Gary R. Wooley, attests that a person with ordinary skill in the art would be an individual with a bachelor’s degree in an engineering discipline, such as mechanical engineering, who possesses two years of work experience with frac plugs used in the fracture simulation of oil and gas wells. Ex. 1020 ¶ 9; see PO Resp. 28; Ex. 3004 ¶ 34.

*C. 35 U.S.C. § 103(a) Grounds of Unpatentability Based  
on Lehr, Cockrell, and Kristiansen*

McClinton contends that claims 1–3, 5–8, 12, and 13 are unpatentable under § 103(a) over the combination of Lehr, Cockrell, and Kristiansen. Pet. 44–49. In support of this alleged ground of unpatentability, McClinton provides explanations as to how the proffered combination teaches each claim limitation. *Id.* McClinton also submits the Declaration of Dr. Wooley (Ex. 1020 ¶¶ 71–80) to support its positions. Upon reviewing McClinton’s Petition and supporting evidence, as well as Magnum’s Patent Owner Response and supporting evidence, we determine that McClinton has demonstrated by a preponderance of the evidence that claims 1–3, 5–8, 12, and 13 are unpatentable over the combination of Lehr, Cockrell, and Kristiansen.

We begin our analysis with the principles of law that generally apply to a ground of unpatentability based on obviousness, followed by brief

discussions of Lehr, Cockrell, and Kristiansen, and then we turn to the arguments presented by both McClinton and Magnum that are directed towards each challenged claim.

### *1. Principles of law*

A patent claim is unpatentable under § 103(a) if the differences between the claimed subject matter and the prior art are such that the subject matter, as a whole, would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007).

The question of obviousness is resolved on the basis of underlying factual determinations, including: (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of skill in the art; and (4) where in evidence, so-called secondary considerations. *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966). We also recognize that prior art references must be “considered together with the knowledge of one of ordinary skill in the pertinent art.” *In re Paulsen*, 30 F.3d 1475, 1480 (Fed. Cir. 1994) (citing *In re Samour*, 571 F.2d 559, 562 (CCPA 1978)). We analyze the ground of unpatentability based on the combination of Lehr, Cockrell, and Kristiansen with the principles identified above in mind.

### *2. Lehr*

Lehr generally relates to a release device that may be used with downhole setting tools. Ex. 1007 ¶ 3. In particular, Lehr discloses that the release device deforms to provide a releasable detachment mechanism for a setting tool used to set a downhole tool, such as a frac plug. *Id.*

Figure 1 of Lehr, reproduced below, illustrates a cross-sectional view of a setting tool, adapter kit, and packer, wherein the packer is retained on the adapter kit by the deformable release device. Ex. 1007 ¶¶ 25, 38.

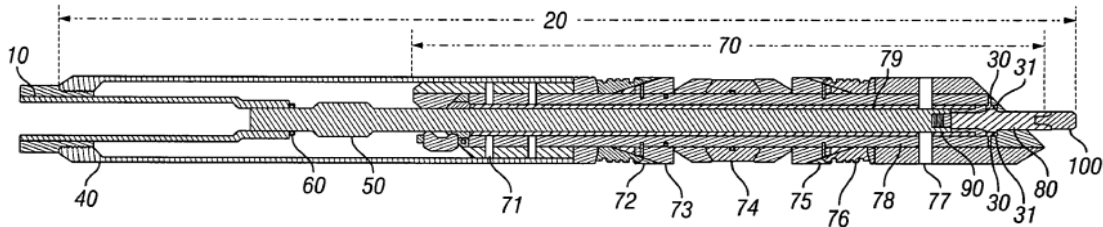


FIG. 1

Figure 1 illustrates a cross-sectional view of a setting tool, adapter kit, and packer.

Lehr discloses wireline adapter kit 20 that includes adapter sleeve 40 and release stinger 50. Ex. 1007 ¶ 39. Adapter sleeve 40 is threaded onto wireline pressure setting assembly 10 and extends down to packer assembly 70, e.g., frac plug. *Id.* Plunger 80 is threaded onto the downhole end of release stinger 50. *Id.*

Lehr discloses that packer assembly 70 includes upper cap 71, upper slip 72, upper cone 73, elastomeric packing element 74, lower cone 75, lower slip 76, lower cap 77, and mandrel 78. Ex. 1007 ¶ 40. Mandrel 78 provides general support for each of the components of packer assembly 70. *Id.* During the process of setting packer assembly 70, deformable release device 30 retains the packer assembly on release stinger 50. *Id.* ¶ 44. Deformable release device 30 contacts protruding section 83 of plunger 80, which is attached to the lower end of release stinger 50. *Id.* Retaining pins 31 secure deformable release device 30 to mandrel 78 of packer assembly 70. *Id.* According to one embodiment disclosed in Lehr, when a

predetermined upward force is applied to plunger 80, protruding portion 83 of plunger 80 deforms beveled portion 32 of deformable release device 30, allowing for release of plunger 80. *Id.* ¶ 50.

### 3. Cockrell

Cockrell relates to downhole tools that are used in the development of oil and gas wells for providing an annular seal and/or anchoring means between one conduit disposed in another. Ex. 1005, 1:7–10. In particular, the invention disclosed in Cockrell pertains to a combination shear type and rotational type release mechanism for downhole tools. *Id.* at 1:10–13.

Figure 1C of Cockrell, reproduced below, illustrates a vertical elevation view, in a central longitudinal section, of a downhole well apparatus that includes the combination shear type and rotational type release mechanism. Ex. 1005, 2:63–66, 3:37–40.

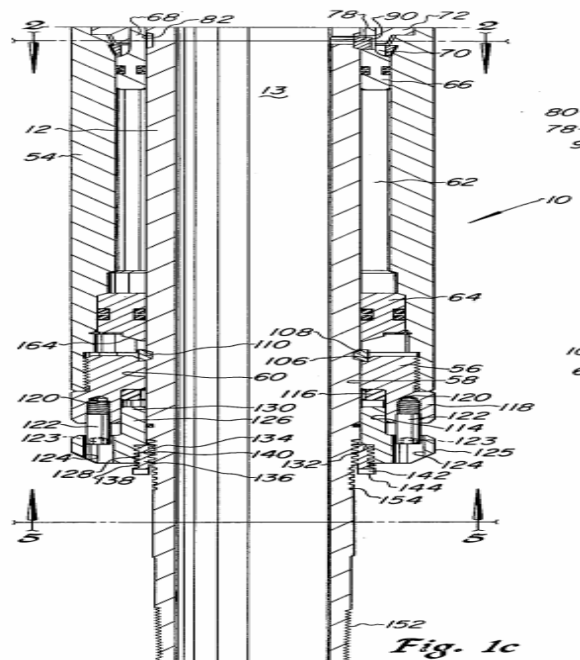


Figure 1C illustrates packer 10 that is characterized by elongated inner tubular member or mandrel 12, which includes threads 134 adapted to engage frangible release member 136.

Cockrell discloses that mandrel 12 includes threads 134 extending over a portion of the outer cylindrical surface of the mandrel in the vicinity of nut member 126. Ex. 1005, 5:40–42. Mandrel 12 is engaged by frangible release member 136, which comprises a cylindrical sleeve that includes respective external and internal threads 138 and 140 adapted to cooperate, respectively, with threads 128 and 134. *Id.* at 5:43–47. Depending on the number of cooperating threads 134–140 in engagement, it is possible to determine the axial force necessary to effect shearing of threads 140 in order to permit relative upward axial movement of mandrel 12 with respect to nut member 126 when the latter is engaged with head 56 through resilient collar 116. *Id.* at 5:54–60.

#### 4. *Kristiansen*

Kristiansen generally relates to a bridge plug that is used for sealing, in transitory or permanent form, the perforations lined with pipes or tubes of insulation, particularly those that are used in oil wells or the like. Ex. 1010, 1:6–10. Figure 13a of Kristiansen, reproduced below, illustrates the cross-sectional view of a converter plug. *Id.* at 5:4–5, 30–31.

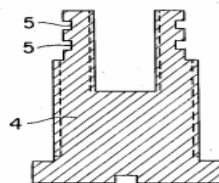


Figure 13a illustrates a converter plug.

Kristiansen discloses threading converter plug 4 in body 6 of the bridge plug (illustrated in Figure 1). Ex. 1010, 5:30–31. Another embodiment, shown in Figure 17 of Kristiansen, reproduced below,



illustrates a cross-sectional view of converter plug 4' as a calibrated element.  
*Id.* at 5:13–14, 7:13–16.

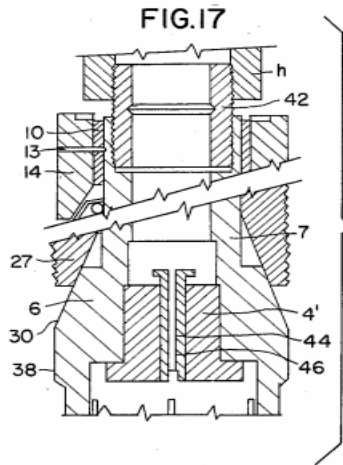


Figure 17 illustrates converter plug 4' threaded into the body of plug 6.

5. *Claims 1 and 7*

As an initial matter, Magnum states in its Patent Owner Response that it incorporates by reference all the arguments presented in its Preliminary Response. PO Resp. 19. In its Reply, McClinton contends that our rules strictly prohibit incorporating arguments by reference. Pet. Reply 12 (citing 37 C.F.R. § 42.6(a)(3) (“Arguments must not be incorporated by reference from one document into another document. Combined motions, oppositions, replies, or other combined documents are not permitted.”)). We agree with McClinton. Pursuant to 37 C.F.R. § 42.6(a)(3), a party involved in a proceeding before us is forbidden from incorporating arguments from one document—in this case, the Preliminary Response—into another document—namely, the Patent Owner Response. Therefore, we will only consider the arguments developed and presented in the Patent Owner Response, itself.

*a. The Combination of Lehr, Cockrell, and Kristiansen  
Properly Accounts for Each Limitation Recited in  
Independent Claims 1 and 7*

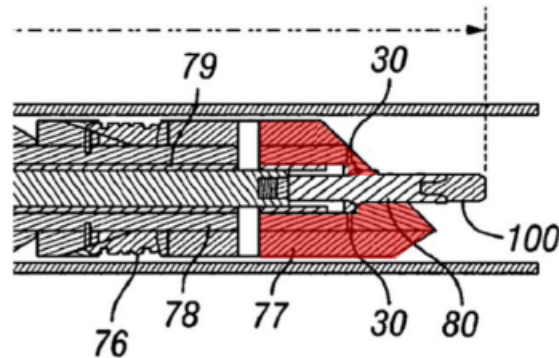
Independent claim 1 recites, in relevant parts, “an insert screwed into an inner surface of the body . . . adapted to receive a setting tool,” “the insert comprises one or more shearable threads disposed on an inner surface,” “the insert has a passageway,” “the one or more shearable threads are adapted to deform to release the setting tool . . . thereby providing a flow passage through the insert and the body.” Ex. 1001, 13:56–14:7. Independent claim 7 recites similar claim limitations. *Id.* at 14:26–49.

In its Petition, McClinton contends that the collective teachings of Lehr, Cockrell, and Kristiansen render obvious the claim limitations identified above. Pet. 44–49. In particular, McClinton argues that Lehr’s disclosure of a setting tool that connects to an insert, i.e., deformable release device 30, in a downhole plug, i.e., packer assembly 70 or frac plug, teaches all the claim limitations recited in independent claim 1, and similarly recited in independent claim 7, except: “(1) the requirement . . . of threads that shear in response to a predetermined axial force; and (2) the requirement . . . of threads on the outside of the insert that screw into the inner surface of the plug body.” *Id.* at 45–47. McClinton relies upon Cockrell’s shearable threads 134, 138, and 140 to teach threads that shear in response to a predetermined axial force, as well as Kristiansen’s insert 4 that is threaded into the body of plug 6 to teach threads on the outside of the insert that screw into the inner surface of the plug body. *See, e.g., id.* at 29–33, 46–47 (citing Ex. 1005, 5:43–47, 54–60, fig. 1C; Ex. 1010, 5:30–31, figs. 13 and 17).

In its Patent Owner Response, Magnum contends that Lehr's deformable release device 30 is not located within an inner surface of the plug body, or otherwise made to attach or secure to the inner surface of the plug body. PO Resp. 21 (citing Ex. 1005, figs. 3A and 8A; Ex. 3004 ¶¶ 26–28). Magnum then argues that McClinton improperly relied upon Lehr's deformable release device 30 to teach the “insert,” as recited in independent claims 1 and 7. *Id.* at 21–22. Magnum also argues that neither Cockrell nor Kristiansen cure the deficiency identified above in Lehr. *Id.* at 22.

In its Reply, McClinton asserts that Magnum's argument that Lehr's deformable release device 30 is not located within the inner surface of the plug body ignores Figures 1, 4A, and 4B of Lehr, all of which illustrate deformable release device 30 located within the body of the plug. Pet. Reply. 4 (citing Ex. 1007, figs. 1, 4A, and 4B). McClinton argues that its expert, Dr. Wooley, corroborated its position by providing citations to relevant passages and figures in Lehr. *Id.* (citing Ex. 1020 ¶ 80—specifically, pages 59–60). McClinton also argues that Magnum's expert, Kevin Trahan, conceded during cross-examination that Lehr's deformable release device 30 may be located within the body of the plug. *Id.* at 4–5 (citing Ex. 1026, 40:17–41:4). We agree with McClinton that Lehr discloses at least one embodiment where deformable release device 30 is located within the body of the plug.

Figure 4A of Lehr, an annotated version of the relevant portion of which is reproduced below, illustrates one embodiment of packer assembly 70, e.g., frac plug, being run into the wellbore using wireline adapter kit 20 and deformable release device 30. Ex. 1007 ¶¶ 30, 51.



As shown in the relevant portion of Figure 4A of Lehr, deformable release device 30 is located within lower cap 77 of packer assembly 70 (the red shaded area). See Ex. 1007 ¶¶ 39 (“packer assembly 70, such as a Python Frac Plug Assembly”), 41 (“packer assembly 70 (i.e., lower cap 77, lower cone 75, and lower slip 76)”). Based on the embodiment illustrated in Figure 4A of Lehr, as well as the related description of packer assembly 70, we are persuaded that McClinton has presented sufficient evidence to support a finding that Lehr’s deformable release device 30 may be located within the body of the frac plug.

*b. McClinton Provides Sufficient Rationales to Combine Lehr, Cockrell, and Kristiansen*

In its Patent Owner Response, Magnum contends that McClinton improperly asserts that Alpha’s shear insert ring<sup>2</sup> is similar to Lehr’s deformable release device 30. PO Resp. 22–23. Magnum directs us to the

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<sup>2</sup> In its Petition, McClinton proposes numerous grounds of unpatentability based, in part, on Alpha. Pet. 27–44. We did not institute an *inter partes* review as to those grounds of unpatentability. Notwithstanding, to support its argument that one with ordinary skill in the art would have combined the teachings of Lehr, Cockrell, and Kristiansen, McClinton refers back to its discussion on how one with ordinary skill in the art would have combined the teachings of Alpha, Cockrell, and Kristiansen. *Id.* at 30, 47.

Declaration of Mr. Trahan to supports its arguement that Alpha and Lehr disclose completely different plugs with different components, structures, and methods of operation. *Id.* at 23 (citing Ex. 1004, figure of Alpha's shear insert ring; Ex. 1007, fig. 8A; Ex. 3004 ¶ 23). Based on those differences, Magnum asserts that simply referring to how one of ordinary skill in the art would combine the teachings of Alpha, Cockrell, and Kristiansen does not, in any way, describe how one of ordinary skill in the art would combine the teachings of Lehr, Cockrell, and Kristiansen. *Id.* at 23–24. Along the same lines, Magnum contends that McClinton fails to establish a reasonable expectation of success for combining the teachings of Lehr, Cockrell, and Kristiansen to arrive at the claimed invention. *Id.* at 25–26. Magnum also generally alleges that modifying Lehr with the teachings of Cockrell and Kristiansen is beyond the level of an ordinarily skilled artisan. *Id.* at 27–28.

In its Reply, McClinton contends that the Petition, along with the corroborating testimony of Dr. Wooley, explains why one with ordinary skill in the art would combine the teachings of Lehr, Cockrell, and Kristiansen. Pet. Reply 9–10 (citing Pet. 44–47; Ex. 1020 ¶¶ 71–80). McClinton recognizes that Magnum directs us to the Declaration of Mr. Trahan to demonstrate the differences between Alpha and Lehr, but asserts that Mr. Trahan simply offers conclusory statements in that regard. *Id.* at 10. McClinton then provides a number of examples where Mr. Trahan admitted during cross-examination that Alpha and Lehr disclose similar features—namely, frac plugs that have a body, malleable element, slip, conical member, inserts that are bottom-set, etc. *Id.* at 10–11. Based on those alleged similarities, McClinton argues that Mr. Trahan's cross-examination testimony supports combining the teachings of Lehr, Cockrell, and

Kristiansen in the same manner as combining the teachings of Alpha, Cockrell, and Kristiansen. *Id.* at 11.

We do not credit Mr. Trahan's testimony concerning the differences between Alpha and Lehr because it is conclusory in nature. According to 37 C.F.R. § 42.65(a), "[e]xpert testimony that does not disclose the underlying facts or data on which the opinion is based is entitled to little or no weight." *See Ashland Oil, Inc. v. Delta Resins & Refractories, Inc.*, 776 F.2d 281, 294 (Fed. Cir. 1985) (stating a lack of objective support for expert opinion "may render the testimony of little probative value in [a patentability] determination"). In his Declaration, Mr. Trahan testifies that:

the deformable disk of Lehr cannot be modified in the same manner as the insert in Alpha. Lehr and Alpha are different in their components, structures, and methods of operation. Specifically, Alpha's insert and Lehr's deformable disk are completely different structures with no similarities. Therefore, the same rationales used to modify Alpha cannot be used to modify Lehr.

Ex. 3004 ¶ 23 (emphasis omitted). However, Mr. Trahan provides little, if any, support for these statements. Absent underlying facts or data to support his opinion, we are not persuaded by Magnum's assertion that, given the differences between Alpha's shear insert ring and Lehr's deformable release device 30, one with ordinary skill in the art would not have recognized these components to be interchangeable.

Regardless of the alleged differences between Alpha and Lehr asserted by Magnum in its Patent Owner Response, we are persuaded that McClinton provides sufficient rationales for combining the teachings of Lehr, Cockrell, and Kristiansen. As we explained in the Decision to Institute (Dec. 20–21, 24–25), when McClinton discusses the alleged ground of

unpatentability based on the combination of Alpha, Cockrell, and Kristiansen in its Petition, McClinton indicates why it would have been obvious to one with ordinary skill in the art to combine Cockrell and Kristiansen with other prior art directed to downhole plugs. Pet. 47. McClinton asserts, and we agree, that the same analysis applies to the combinations using Lehr as the base reference. *Id.*

In the alleged grounds of unpatentability based on the combination of Alpha, Cockrell, and Kristiansen, McClinton concludes that:

[i]t would have been obvious to combine the shearable threads from Cockrell with the Alpha Standard Frac Plug since it would have been simply substituting [the] shearable threads from Cockrell for the shear ring of Alpha to obtain a predictable result of an insert maintained in one larger piece to reduce the chance of large components falling in the wellbore.

Pet. 30. Other than assert that there are alleged differences between Alpha's shear ring insert and Lehr's deformable release device 30, which as we explained above was not persuasive, Magnum does not explain adequately why the same analysis is not applicable to Lehr. For instance, Magnum does not explain why the simple substitution of shearable threads, as taught by Cockrell (Ex. 1005, 5:43–47, 54–60), for retaining pins 31 that secure the deformable release device 30, as taught by Lehr (Ex. 1007 ¶ 44), would not yield a predictable result. *See KSR*, 550 U.S. at 417. Moreover, Magnum does not provide sufficient or credible evidence that such a substitution is beyond the level of an ordinarily skilled artisan. *See Leapfrog Enters., Inc. v. Fisher-Price, Inc.*, 485 F.3d 1157, 1162 (Fed. Cir. 2007).

McClinton also takes the position that one with ordinary skill in the art would have recognized that packer assembly 70, e.g., frac plug, as taught

by Lehr (Ex. 1007 ¶ 39), may include a threaded connection, as taught by Kristiansen (Ex. 1010, 5:30–31), between deformable release device 30 and the body of the frac plug. *See, e.g.*, Pet. 33. According to McClinton, placing Kristiansen’s threads on both the outer surface of Lehr’s deformable release device 30 and the inner surface of the frac plug combines prior art elements according to known methods to yield a predictable result—namely, an insert that is capable of being screwed into an inner surface of the body of the frac plug to hold it in place for the purpose of simplifying assembly. *See id.*; *KSR*, 550 U.S. at 416. In our view, McClinton’s suggestions for combining the teachings of Lehr, Cockrell, and Kristiansen each suffice as an articulated reason with a rational underpinning to justify the legal conclusion of obviousness.

*c. Modifying Lehr with the Teachings of Cockrell and Kristiansen Would Not Require a Major Redesign of Lehr*

In its Patent Owner Response, Magnum contends that modifying Lehr with the teachings of Cockrell and Kristiansen would require a major redesign of Lehr because deformable release device 30 is not located within the body of the plug. PO Resp. 24. Magnum further argues that such a combination would require Lehr’s plunger 80 and release device 30 to be redesigned to include, amongst other things, threads on the outer surface of deformable release device 30 after the plunger 80 and deformable release device 30 are modified to both fit within the body of the plug. *Id.* at 24–25 (citing Ex. 3004 ¶¶ 24–26). We do not agree with Magnum.

Magnum’s argument is predicated on the notion that Lehr’s deformable release device 30 is not located within the body of the plug. However, as we explained previously, Figure 4A of Lehr illustrates at least



one embodiment where deformable release device 30 is located within the body of the plug. Ex. 1007 ¶¶ 39, 41. Therefore, contrary to Magnum's assertion, Lehr would not need to be modified to accommodate an "insert screwed into an inner surface of the body," as recited in independent claims 1 and 7, because Lehr already discloses such a configuration.

With respect to Magnum's argument that modifying Lehr with the teachings of Cockrell and Kristiansen requires other modifications to Lehr's plunger 80 and release device 30, Magnum does not present sufficient or credible evidence that such modifications would be substantial, or otherwise require a complete redesign of Lehr. The only evidence Magnum directs us to as supporting its argument is the testimony of Mr. Trahan. PO Resp. 25 (citing Ex. 3004 ¶¶ 24–26). We have reviewed the cited paragraphs in Mr. Trahan's Declaration, and similar to our previous explanation regarding his testimony, Mr. Trahan provides little, if any, support for his statements that modifying Lehr with the teachings of Cockrell and Kristiansen would require substantial modifications to Lehr's plunger 80 and release device 30. As such, his statements in that regard are of little probative value. *See* 37 C.F.R. § 42.65(a).

*d. Lehr Does Not Teach Away from Cockrell and, as a Result, Does Not Teach Away From the Claimed Invention*

In its Patent Owner Response, Magnum directs our attention to two disclosures in Lehr to support its argument that Lehr teaches away from Cockrell. PO Resp. 26–27. For convenience, those disclosures are reproduced in turn. Lehr discloses that "[o]ne potential problem with using release devices that fail under a designated mechanical force, such as a release stud or shear pin, is that debris from the release device remains in the

well bore after the device has released.” Ex. 1007 ¶ 10. Lehr further discloses that the “use of a plunger **80** and deformable release device **30** decreases the manufacturing costs of adapter kits and downhole tools as compared to using other mechanically releasing devices such as shear pins and shear screws.” *Id.* ¶ 48. Based on these cited disclosures, Magnum contends that Lehr teaches away from Cockrell because Lehr discourages the use of mechanical shearing devices, such as the shearing threads taught by Cockrell. PO Resp. 27.

In its Reply, McClinton contends that, although shear pins may be less desirable than shear rings or threads to achieve the stated goal in Lehr, both rings, as taught by Lehr, and threads, as taught by Cockrell and Kristiansen, constitute interchangeable deformable release devices that allow construction of a plug without drilling extra holes into the plug. Pet. Reply 8 (citing Ex. 1007 ¶ 13). McClinton also argues that, contrary to Magnum’s assertion, debris from sheared threads is negligible compared to the debris from large components, such as the release studs and shear pins discouraged by Lehr. *Id.* (citing Ex. 1007 ¶ 10).

Although [determining whether] a reference [] teaches away is a significant factor to be considered in determining unobviousness, the nature of the teaching is highly relevant, and must be weighed in substance. A known or obvious composition does not become patentable simply because it has been described as somewhat inferior to some other product for the same use.

*In re Gurley*, 27 F.3d 551, 553 (Fed. Cir. 1994). Along the same lines, the mere fact that different types of deformable release devices offer different advantages or disadvantages does not establish a teaching away sufficient to preclude a conclusion of obviousness. “[C]ase law does not require that a

particular combination must be the preferred, or the most desirable, combination described in the prior art in order to provide [the] motivation [or reason] for the current invention.” *In re Fulton*, 391 F.3d 1195, 1200 (Fed. Cir. 2004).

Simply because Lehr discloses some disadvantages associated with the use of mechanical shearing devices, such as the shearing threads taught by Cockrell, does not mean that one with ordinary skill in the art would not have appreciated that Cockrell’s shearing threads are a viable substitute for Lehr’s retaining pins 31. Moreover, Magnum does not provide sufficient or credible evidence indicating that any debris resulting from the release of Cockrell’s shearing threads, which as we explained above may be substituted for Lehr’s retaining pins 31, would impact substantially the operation of Lehr’s deformable release device 30 and packer assembly 70. Absent contrary evidence, we are not persuaded that Lehr teaches away from Cockrell and, as a result, we are not persuaded that Lehr teaches away from the claimed invention.

*e. Secondary Considerations of Non-Obviousness—Copying*

In its Patent Owner Response, Magnum contends that, not only are there internal documents indicating that McClinton copied the plug embodied in the claimed invention, but there also is evidence that McClinton disassembled the plug embodied in the claimed invention and attempted to replicate it. PO Resp. 29. Magnum then provides a side-by-side picture comparison of the plug embodied in the claimed invention and an alleged infringing plug made by McClinton before asserting that such evidence clearly indicates that McClinton made a concerted effort to copy and replicate its claimed invention. *Id.* at 29–30.

In its Reply, McClinton contends that there is no evidence of record to support Magnum's side-by-side picture comparison of the plug embodied in the claimed invention and the alleged infringing plug made by McClinton. Pet. Reply 12–13. McClinton asserts that the pictures reproduced in Magnum's Patent Owner Response only provide a partial view of the plugs and do not show the significant differences between the two products. *Id.* at 13.

To be of relevance, evidence of non-obviousness—in this case, copying—must be commensurate in scope with the claimed invention. *In re Kao*, 639 F.3d 1057, 1068 (Fed. Cir. 2011) (citing *In re Tiffin*, 448 F.2d 791, 792 (CCPA 1971)); *In re Hiniker*, 150 F.3d 1362, 1369 (Fed. Cir. 1998). In that regard, in order to be accorded substantial weight, there must be a nexus between the merits of the claimed invention and the evidence of secondary considerations. *GPAC*, 57 F.3d at 1580. “Nexus” is a legally and factually sufficient connection between the objective evidence and the claimed invention, such that the objective evidence should be considered in determining non-obviousness. *Demaco Corp. v. F. Von Langsdorff Licensing Ltd.*, 851 F.2d 1387, 1392 (Fed. Cir. 1988). The burden of showing that there is a nexus lies with the patent owner. *Id.*; *Paulsen*, 30 F.3d at 1482.

The evidence of non-obviousness presented by Magnum falls short of demonstrating the required nexus. Although Magnum provides a side-by-side comparison of the alleged infringing plug made by McClinton with a plug Magnum asserts embodies the claimed invention, Magnum does not establish that its plug is directed to the claimed subject matter recited in claims 1–3, 5–8, 12, and 13. Nor does Magnum direct us to testimony from

its expert, Mr. Trahan, that establishes a connection between its plug that allegedly embodies the claimed invention and claimed subject matter recited in claims 1–3, 5–8, 12, and 13. In the absence of an established nexus with the claimed invention, Magnum’s allegation of copying is entitled to little weight, and generally has no bearing on the legal issue of obviousness. *See In re Vamco Machine & Tool, Inc.*, 752 F.2d 1564, 1577 (Fed. Cir. 1985).

After weighing the evidence of obviousness based on the combination of Lehr, Cockrell, and Kristiansen, as well as the evidence of secondary considerations regarding copying, on balance, we conclude that the strong evidence of obviousness outweighs the weak evidence of non-obviousness.

*f. Summary*

Based on the record before us, we conclude that McClinton has demonstrated by a preponderance of the evidence that independent claims 1 and 7 are obvious over the combination of Lehr, Cockrell, and Kristiansen.

*6. Claim 2*

Dependent claim 2 recites “the outer surface of the insert has a larger diameter and a smaller diameter forming a shoulder therebetween, the shoulder adapted to anchor the insert within the body.” Ex. 1001, 14:8–11.

In its Petition, McClinton reproduces an annotated version of Figure 9D of Lehr, and then contends that the shoulder and corresponding diameters illustrated in that figure render obvious the claimed subject matter recited in dependent claim 2. Pet. 47 (citing Ex. 1007, fig. 9D; Ex. 1020 ¶ 80—specifically, pages 67–69). For convenience, Figure 9D of Lehr and the annotations added by McClinton are reproduced below.

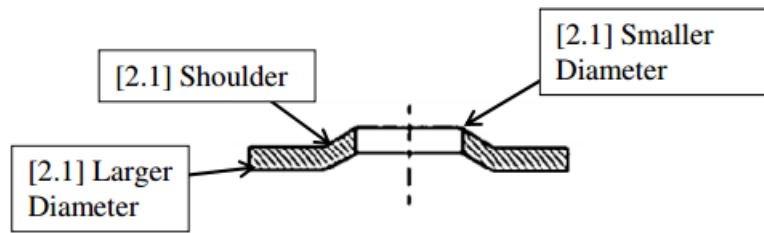


Figure 9D of Lehr illustrates one embodiment of deformable release device 30.

In its Patent Owner Response, Magnum first relies upon essentially the same arguments presented against independent claim 1 to rebut the explanations provided by McClinton as to how the combination of Lehr, Cockrell, and Kristiansen teach the claimed subject matter recited in dependent claim 2. PO Resp. 31–32. For the same reasons discussed above with respect to independent claim 1, Magnum’s arguments are not persuasive.

Next, Magnum contends that Lehr does not teach “the outer surface of the insert has a larger diameter and a smaller diameter forming a shoulder therebetween,” as recited in dependent claim 2. PO Resp. 32. In particular, Magnum argues that the annotated version of Figure 9D of Lehr, reproduced above, does not depict the claimed “shoulder” on the outer surface of Lehr’s deformable release device 30, as required by dependent claim 2. *Id.* Instead, Magnum argues that the shoulder identified in the annotated version of Figure 9D of Lehr, and corroborated by Dr. Wooley, is on the top surface of Lehr’s deformable release device 30—not the outer surface. *Id.*

In its Reply, McClinton contends that Magnum merely attempts to correct the record and does not contest the explanations provided by McClinton as to how the combination of Lehr, Cockrell, and Kristiansen

teach the claimed subject matter recited in dependent claim 2. Pet. Reply 13.

At the outset, we disagree with McClinton that Magnum merely attempts to correct the record. Instead, we view Magnum's position as a separate and distinct patentability argument. Notwithstanding, we are persuaded that McClinton has presented sufficient evidence to support a finding that Lehr teaches "the outer surface of the insert has a larger diameter and a smaller diameter forming a shoulder therebetween," as recited in dependent claim 2.

Magnum's argument is predicated on the notion that the outer surface of Lehr's deformable release device 30 somehow excludes the top surface. As we explained previously, we construe the claim phrase "the outer surface of the insert" to be "any surface located on the outside of the insert, including the top, bottom, and sides." Consistent with this claim construction, the annotated version of Figure 9D of Lehr presented by McClinton in its Petition, as well as the related description of deformable release device 30 (Ex. 1007 ¶¶ 50, 57), collectively teaches that beveled portion 32 or the shoulder is located on the outer surface of Lehr's deformable release device 30.

Based on the record before us, we conclude that McClinton has demonstrated by a preponderance of the evidence that dependent claim 2 is obvious over the combination of Lehr, Cockrell, and Kristiansen.

*7. Claims 3, 6, 8, 12, and 13*

In its Petition, McClinton provides contentions and supporting evidence that explain how the combination of Lehr, Cockrell, and Kristiansen teaches the claimed subject matter recited in dependent claims 3, 6, 8, 12, and 13. Pet. 48–49 (citing Ex. 1020 ¶ 80—specifically, pages 69–70, 72–73). In our view, McClinton presents sufficient evidence to support a finding that the proffered combination teaches the claimed subject matter recited in these dependent claims. In its Patent Owner Response, Magnum relies upon essentially the same arguments presented against independent claims 1 and 7 to rebut the explanations provided by McClinton as to how the combination of Lehr, Cockrell, and Kristiansen teaches the claimed subject matter recited in dependent claims 3, 6, 8, 12, and 13. PO Resp. 31–34. For the same reasons discussed above with respect to independent claims 1 and 7, Magnum’s arguments are not persuasive. Based on the record before us, we conclude that McClinton has demonstrated by a preponderance of the evidence that dependent claims 3, 6, 8, 12, and 13 are obvious over the combination of Lehr, Cockrell, and Kristiansen.

*8. Claim 5*

Dependent claim 5 recites “the predetermined axial force to release the setting tool is less than an axial force required to break the body.” Ex. 1001, 14:22–24.

In its Petition, McClinton contends that the claimed subject matter of dependent claim 5 would have been obvious because, if the body of the plug were to fail before the plug is set, the plug would be inoperable as it would not be set within the wellbore. *See, e.g.*, Pet. 34, 48 (citing Ex. 1020 ¶ 45—



specifically, page 33). McClinton also argues that all prior art frac plugs have this feature, otherwise, they would be useless. *Id.*

In its Patent Owner Response, Magnum contends that the combination of Lehr, Cockrell, and Kristiansen does not teach the claimed subject matter recited in dependent claim 5. PO Resp. 32. In particular, Magnum argues that neither the Petition nor Dr. Wooley adequately explain why this claim limitation would have been obvious to one with ordinary skill in the art. *Id.* at 32–33. Instead, Magnum argues that McClinton simply relies upon a conclusory statement from Dr. Wooley to support its position. *Id.* at 33.

In its Reply, McClinton contends that Magnum does not rebut Dr. Wooley’s position that, if the body of the plug were to fail before the plug is set, the plug would be inoperable as it would not be set within the wellbore. Pet. Reply 13. McClinton argues that Magnum did not cross examine Dr. Wooley. *Id.* McClinton also argues that Magnum’s expert, Mr. Trahan, admitted during cross-examination that McClinton’s position regarding dependent claim 5 was correct. *Id.* at 13–14 (citing Ex. 1026, 26:18–27:8, 41:1–9).

We credit the testimony of Dr. Wooley that, if the body of the plug were to fail before the plug is set, the plug would be inoperable as it would not be set within the wellbore. Ex. 1020 ¶ 45—specifically, page 33. Dr. Wooley’s testimony is consistent with the disclosure in Lehr that, if deformable release device 30 is used with packer assembly 70, one with ordinary skill in the art would have appreciated that the deformation force needs to be greater than the setting force required to set packer assembly 70. Ex. 1007 ¶ 57; Ex. 1020 ¶ 80—specifically, pages 69–70. Other than mere

attorney argument, Magnum does not provide sufficient or credible evidence that contradicts Dr. Wooley's testimony.

Based on the record before us, we conclude that McClinton has demonstrated by a preponderance of the evidence that dependent claim 5 is obvious over the combination of Lehr, Cockrell, and Kristiansen.

*D. Remaining 35 U.S.C. § 103(a) Grounds of Unpatentability Based in Part on Lehr, Cockrell, and Kristiansen*

In its Petition, McClinton provides contentions and supporting evidence that explain how the combinations of Lehr, Cockrell, Kristiansen, and various other prior art references teach the claimed subject matter recited in independent claim 17, as well as dependent claims 4, 9–11, 14–16, and 18–20. Pet. 49–54 (citing Ex. 1020 ¶¶ 81–104). In our view, McClinton presents sufficient evidence to support a finding that the proffered combinations teach the claimed subject matter recited in these claims. In its Patent Owner Response, Magnum relies upon essentially the same arguments presented against independent claims 1 and 7 to rebut the explanations provided by McClinton as to how the combinations of Lehr, Cockrell, Kristiansen, and various other prior art references teach the claimed subject matter recited in independent claim 17, as well as dependent claims 4, 9–11, 14–16, and 18–20. PO Resp. 34–37. For the same reasons discussed above with respect to independent claims 1 and 7, Magnum's arguments are not persuasive.

Based on the record before us, we conclude that McClinton has demonstrated by a preponderance of the evidence that: (1) dependent claims 4 and 9–11 are obvious over the combination of Lehr, Cockrell, Kristiansen, and Slup; (2) dependent claims 14 and 16 are obvious over the combination

of Lehr, Cockrell, Kristiansen, and Streich; (3) dependent claim 15 is obvious over the combination of Lehr, Cockrell, Kristiansen, Streich, and McKeachnie; (4) independent claim 17, as well as dependent claims 18 and 19, are obvious over the combination of Lehr, Cockrell, Kristiansen, Slup, and Streich; and (5) dependent claim 20 is obvious over the combination of Lehr, Cockrell, Kristiansen, Slup, Streich, and McKeachnie.

### III. CONCLUSION

McClinton has demonstrated by a preponderance of the evidence that claims 1–20 of the '413 patent are unpatentable based on the grounds of unpatentability set forth in the table below.

<b>Claims</b>	<b>Basis</b>	<b>References</b>
1–3, 5–8, 12, and 13	§ 103(a)	Lehr, Cockrell, and Kristiansen
4 and 9–11	§ 103(a)	Lehr, Cockrell, Kristiansen, and Slup
14 and 16	§ 103(a)	Lehr, Cockrell, Kristiansen, and Streich
15	§ 103(a)	Lehr, Cockrell, Kristiansen, Streich, and McKeachnie
17–19	§ 103(a)	Lehr, Cockrell, Kristiansen, Slup, and Streich
20	§ 103(a)	Lehr, Cockrell, Kristiansen, Slup, Streich, and McKeachnie

### IV. ORDER

In consideration of the foregoing, it is  
ORDERED that, based on a preponderance of the evidence, claims 1–20 of the '413 patent are held unpatentable; and

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

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