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Paper 40
Entered: October 9, 2015

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

CHURCHILL DRILLING TOOLS US, INC.,
Petitioner,

v.

SCHOELLER-BLECKMANN OILFIELD EQUIPMENT AG,
Patent Owner.

Case IPR2014-00814
Patent 7,866,397 B2

Before JAMES P. CALVE, MITCHELL G. WEATHERLY, and GEORGIANNA W. BRADEN, *Administrative Patent Judges*.

BRADEN, *Administrative Patent Judge*.

FINAL WRITTEN DECISION
35 U.S.C. § 318 and 37 C.F.R. § 42.73

I. INTRODUCTION

We have jurisdiction to hear this *inter partes* review under 35 U.S.C. § 6(c). This Final Written Decision is issued pursuant to 35 U.S.C. § 318(a) and 37 C.F.R. § 42.73. For the reasons that follow, we determine that Petitioner has shown by a preponderance of the evidence that claims 13-15, 17, and 18 of U.S. Patent No. 7,866,397 B2 (Ex. 1001, "the '397 patent") are unpatentable. We also address Petitioner's Motion to Exclude.

A. Procedural History

Churchill Drilling Tools US, Inc. ("Petitioner") filed a Petition (Paper 1, "Pet.") to institute an *inter partes* review of claims 13-15, 17, and 18 of the '397 patent. Schoeller-Bleckmann Oilfield Equipment AG ("Patent Owner") filed a Corrected Preliminary Response (Paper 7, "Prelim. Resp."). Pursuant to 35 U.S.C. § 314(a), we instituted an *inter partes* review of claims 13-15, 17, and 18 on the following grounds alleged in the Petition.

Reference(s)	Basis	Claims Challenged
WO 02/14650[1]	§ 102	13-15, 17, and 18
Bourgoyne[2]	§ 102	13-15, 17, and 18
WO 02/14650 and Bourgoyne	§ 103	13-15, 17, and 18

Paper 8 ("Dec. to Inst."), 29.

[1] WO 02/14650 A1, PCT/GB01/03492, Feb. 21, 2002 ("WO 02/14650," Ex. 1015).
[2] U.S. Patent No. 4,310,050, iss. Jan. 12, 1982 ("Bourgoyne," Ex. 1017).

After institution of trial, Patent Owner filed a Corrected Patent Owner Response (Paper 20, "PO Resp."), to which Petitioner filed a Reply (Paper 22, "Reply").

In addition, Petitioner filed a Motion to Exclude. Paper 27. Patent Owner filed an Opposition to Petitioner's Motion to Exclude, Paper 31, and Petitioner filed a Reply, Paper 33. Petitioner also filed observations on the cross-examination of Petitioner's declarant (Paper 26), to which Patent Owner filed a response (Paper 32).[3]

An oral argument was held on June 11, 2015. A transcript ("Tr.") of the oral argument is included in the record.[4] Paper 38.

B. Related Proceedings

The parties have identified one district court case between the parties relating to the '397 patent: *Schoeller-Bleckmann Oilfield Equipment AG v. Churchill Drilling Tools US, Inc*., 3:13-cv-00100 (S.D. Tex.). Pet. 1; Paper 4, 2. Patent Owner also has indicated that a reissue application, U.S. Appl. No. 14,745,324, was filed for the '397 patent on June 19, 2015. Paper 39, 1.

[3] The party taking the cross-examination of a declarant may file observations and the opposing party may file a response to an observation. *See* Office Patent Trial Practice Guide, 77 Fed. Reg. 48,756, 48,768 (Aug. 14, 2012). The opposing party may not file observations without express prior authorization from the Board. *Id.* Petitioner filed observations on the cross-examination of its own declarant. Paper 27. Such observations were filed without the authorization of the Board and will not be considered for this Final Written Decision.

[4] Patent Owner filed Objections to Demonstrative Exhibits. Paper 37. In this Final Written Decision, we rely directly on the arguments presented properly in the parties' briefs and the evidence of record. The demonstrative exhibits were considered only to the extent they are consistent with those arguments and evidence, therefore, the objections are overruled.

C. The '397 Patent

The '397 patent, titled "Activating Mechanism for Controlling the Operation of a Downhole Tool," relates to a mechanism for activating and de-activating a tool, called a bypass sub-assembly tool (or circulation sub) downhole on a drill string. Ex. 1001, Abstract. By-pass tools are used to pump drilling fluids or materials down a drill string. The '397 patent discloses a by-pass tool that includes a sliding sleeve which, upon activation, shifts to open ports to the wellbore. An embodiment of a by-pass tool is shown in Figures 3(a)–3(d), reproduced below.

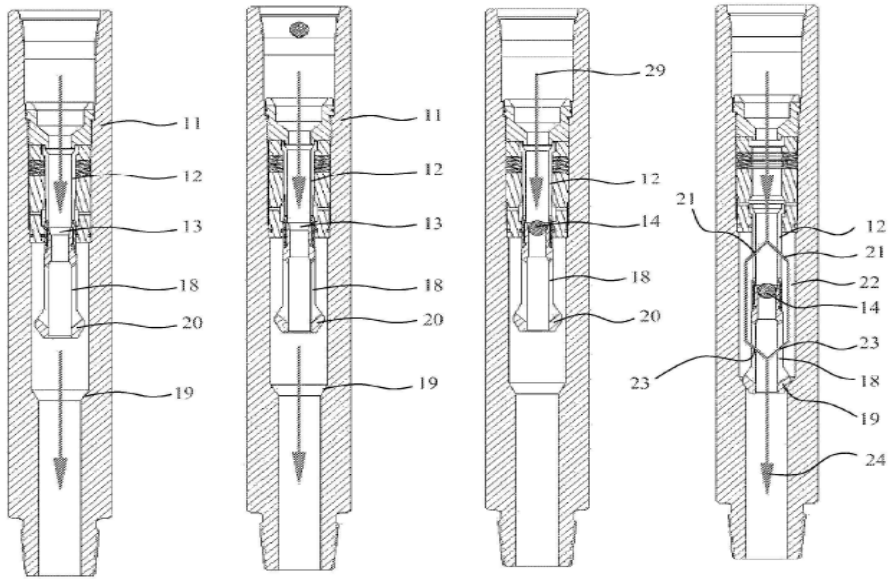
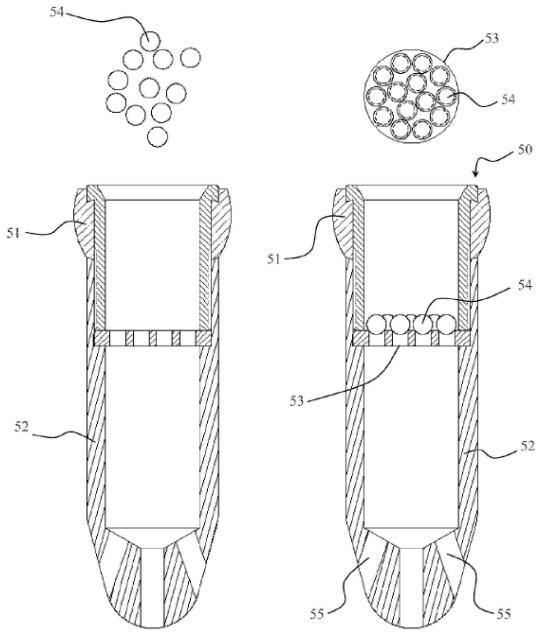


FIG. 3(a) FIG. 3(b) FIG. 3(c) FIG. 3(d)

Figures 3(a)–(d) illustrate a longitudinal sectional view of a by-pass tool, where sleeve 18 is opened using ball activator 14. *Id.* at 1:17-21; 1:30-34; 7:64-8:33; 9:1-5. Ball activator 14 is pumped down into a drill string to land on seat 13, restricting fluid flow (see arrows), and thus, allowing pressure upstream of seat 13 to build up within the drill string. *Id.* at 8:23-33; 9:1-3. Once a specific pressure threshold is achieved in the drill string, ball

activator 14 forces sleeve 18 to slide downward, thereby exposing ports 23. *Id.* The open ports allow for all fluid to flow into space 22. *Id.*

Certain embodiments in the Specification of the ’397 patent teach that an activator can be a large deformable ball (*id.* at 1:30-34) or a cluster of hard, non-deformable activator balls (*id.* at 1:35-36; 1:58-61). In other embodiments, the Specification teaches that the activator can be a ball-dart combination. *Id.* at 5:44-48. The ’397 patent specifically discloses that “a deformable activator in the form of ball-dart combination” can take the place of a large non-deformable ball. *Id.* at 8:59-61. Figures 8 and 9, reproduced below, illustrate an embodiment from the ’397 patent that uses a ball-dart combination as an activator.



As shown in Figures 8 and 9, activators 50 have ball-like portion 51 (deformable ring) at its upper end and dart-like portion 52 at its lower end. Ex. 1001, 8:62-65. Ball-like portion 51 engages a seat in the by-pass tool (not shown), as dart-like portion 52 projects downwardly through the seat. *Id.* at 8:65-9:1. Activator 50 incorporates flow control device 53 comprising

a ring formed with a number of ports forming separate restricted passageways. *Id.* at 9:14-17. When the deformable activator rests on the landing seat of the by-pass tool, the flow of fluid through the by-pass tool becomes restricted. *Id.* at 9:1-2. Pressure upstream of the deformable activator in the by-pass tool causes downward movement of the tool sleeve and the deformable activator until the by-pass port of the sleeve aligns with the by-pass port of the drill string wall. *Id.* at 9:3-5. In this manner, the ports are open and fluid in the drill string will pass outwardly through the by-pass ports. *Id.* at 9:6-10. According to the '397 patent, even when the ports of the by-pass tool are open, continued—though restricted—flow of fluid can be maintained to the drilling tool to lubricate and prevent it from overheating. *Id.* at 5:5-7; 9:11-13.

To deactivate the by-pass tool, small actuator balls 54 are introduced into the fluid at the upper end of the drill string and settle into the seats of flow control device 53, as shown in both the top view and cross-sectional side views of Figure 9. *Id*. at 9:22-41. The pressure upstream causes downward movement of activator 50 (accompanied by sufficient inward deformation of actuator 50) through the by-pass tool seat. *Id.* at 9:35-38. The sleeve of the by-pass tool then returns to its original position closing the ports of the by-pass tool. *Id.* at 9:39-41.

Another embodiment of an activator is illustrated below in Figure 9(a), which shows a by-pass tool mounted in a section of a drill string down a well.

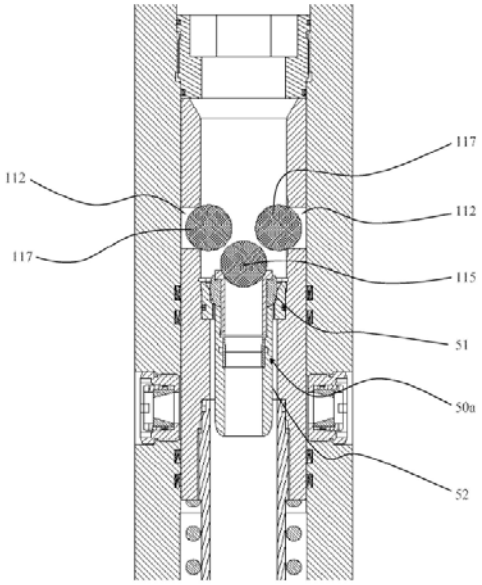


FIG. 9(a)

The by-pass tool in Figure 9(a) has a slidable sleeve with outlet ports 112 and a landing seat for receiving and engaging ball-like portion 51 of activator 50a. *Id.* at 9:65-10:1; Fig. 9(a). As shown, activator 50a has a single passageway with a diameter smaller than that of the drill string or the by-pass tool, thereby allowing a restricted flow of fluid through the activator. *Id.* at Fig. 9(a). Activator 50a has a conical landing seat at its upper end for receiving a single large activating ball. *Id.* In Figure 9(a), activating ball 115 nests in the seat and completely blocks flow of fluid through the deformable activator, causing increased pressure upstream which results in downward movement of activator. *Id.* at 10:3-7. The movement of the activator and ball results in the by-pass tool sleeve moving until the by-pass ports and drill string wall are aligned. *Id.* at 10:6-9. To return to normal flow through the drill string, deactivating balls 117 are introduced into the drill string. *Id.* at 10:14-18. Deactivating balls 117 descend and plug the outlet ports of the sleeve as shown in Figure 9(a), blocking the flow of fluid out of outlet ports 112 and further increasing the

pressure within the drill string. *Id.* at 10:17-19. When the pressure is sufficiently high, ball-like portion 51 will deform to a reduced outer diameter enabling ball-like portion 51 to be pushed past the landing seat of the by-pass tool. *Id.* at 10:18-20. The activator then drops through the interior of the by-pass tool and can be recovered. *Id.* at 20-21. This opens the interior passageway of the drill string and allows full fluid flow through the drill string. *Id.* at 21-22.

D. Illustrative Claim

As noted above, an *inter partes* review was instituted as to claims 13-15, 17, and 18 of the '397 patent, of which claim 13 is the only challenged independent claim. Claim 13 is representative of the challenged claims and is reproduced below:

> 13. An activating mechanism for controlling the operation of a downhole tool and which comprises:
> a hollow main body adapted for mounting in a drill-string and through which fluid to the tool can be routed;
> an actuating sleeve defining a through-flow passage and slidably mounted in the main body for movement between positions corresponding to a through-flow mode and a by-pass mode of the mechanism;
> biasing means acting on the sleeve to urge it to its position corresponding to the through-flow mode of the mechanism;
> a seat providing access to said passage in the through-flow mode of the mechanism; and
> a deformable activator capable of being launched down the drill-string to engage the seat and thereby cause pressure upstream of the seat to increase so that the activator moves the sleeve to its position corresponding to the by-pass mode of the mechanism;
> in which the activator and the seat are arranged to co-operate with each other, when the activator engages the seat, in such a way that restricted flow of fluid through the sleeve

> is maintained when the mechanism is in its by-pass mode.

Ex. 1001, 15:22-44.

II. DISCUSSION

A. Claim Construction

In an *inter partes* review, claim terms in an unexpired patent are interpreted according to their broadest reasonable construction in light of the Specification of the patent in which they appear. 37 C.F.R. § 42.100(b); *see also In re Cuozzo Speed Techs., LLC*, 793 F.3d 1268, 1278–79 (Fed. Cir. 2015) ("Congress implicitly approved the broadest reasonable interpretation standard in enacting the AIA," and "the standard was properly adopted by PTO regulation."), *reh'g en banc denied*, 793 F.3d 1297 (Fed. Cir. 2015). Under that standard, and absent any special definitions, we give claim terms their ordinary and customary meaning, as would be understood by one of ordinary skill in the art at the time of the invention. *In re Translogic Tech., Inc.*, 504 F.3d 1249, 1257 (Fed. Cir. 2007).

1. "deformable activator"

Independent claim 13 recites a "deformable activator." In the Decision to Institute, we construed this claim limitation as "an activating device that changes shape at a predetermined pressure." *See* Dec. to Inst. 9–10.

Patent Owner contests our construction and contends "deformable activator" should be construed as "an activating device having a dart portion and an external deformable ring around the circumference of the dart portion that can change shape at a predetermined pressure to allow the entire device to pass downwardly through the seat." PO Resp. 13–27; Tr. 38:3–40:2,

43:4–44:7. According to Patent Owner, its construction should be adopted by the Board because a person of skill in the art, familiar with the intrinsic evidence and pertinent extrinsic evidence, would understand that the term "deformable activator" as used in the '397 patent does not encompass deformable balls. *Id.*

Patent Owner argues that the '397 patent discloses two types of activating elements: (1) an activation ball which may be deformable or non-deformable, and (2) a deformable activator that has a dart portion and a deformable ring extending around the dart portion. *Id.* at 14–15. Patent Owner specifically argues that the '397 patent uses the term "non-deformable activation ball" to describe the activating element shown Figures 1–7, but uses the term "deformable activator" to describe the activating element shown in Figures 8 and 9. *Id.* (citing Ex. 1001, 1: 12–16: 1, 1:22–29, 4:37–49, 6:25–28, 11:17–29, 11:53–60; 8:52–54, Figs. 2, 3(a)–3(d), 5,6, 8, 9, 9(a), 9(b)). Patent Owner further argues that the term "deformable activator" is used only to describe an activator with a dart portion and a deformable ring that can pass through the seat of a downhole tool, and therefore, does not include deformable activator balls. *Id.* at 15–16.

Patent Owner supports its position with the declaration of Dr. Hofstatter, who testifies that:

> A person of ordinary skill in the art, having read the '397 patent and considered the use of the term "deformable activator" in the written description and particularly in connection with Figs. 8, 9, 9(a) and 9(b), would understand that the patentee is using "deformable activator," not to include everything that is "deformable" and may generally be considered to be an "activating element," but rather to identify the class of new activating elements shown in Figs. 8, 9, 9(a) and 9(b).

Ex. 2001 ¶ 38. Dr. Hoffstatter further testifies that the inventor of the '397 patent was acting as his own lexicographer when using the term "deformable activator." *Id.* ¶ 48. According to Dr. Hoffstatter, the term "deformable activator" did not have "a recognized ordinary meaning when the application that issued as the '397 patent was filed in 2006." *Id.* Rather, Dr. Hofstatter opines that the consistent use of the term in the Specification defines the term to mean "an activating element having a dart portion and an external deformable ring that will change shape at a predetermined pressure to allow the activating element in its entirety to pass through the seat." *Id.* Patent Owner, thus, concludes that the term "deformable activator" does not include everything that is "deformable" and that generally could be considered to be an "activating element" (e.g., activating balls), but rather, the term is limited to the identified class of "new activators" illustrated in Figures 8, 9, 9(a), and 9(b) in the '397 patent. PO Resp. 16–17.

Petitioner disagrees and proposes that we maintain the construction of "deformable activator" from the Decision to Institute as "'an activating device which changes shape at a predetermined pressure.'" Tr. 6:20–7:7; Pet. 14-15; Ex. 1002 ¶ 56. Petitioner contends that Patent Owner improperly imports limitations from the Specification of the '397 patent to define "deformable activator" narrowly. Reply 1–2. According to Petitioner, the '397 patent provides no limitations on the scope of "deformable activator" and offers multiple examples of activators, such as balls and ball-dart combinations, that fall within the scope of the limitations. Pet. 15. Petitioner notes that the Specification states "FIGS. 8 and 9 are longitudinal sectional views of a deformable activator **in the form of** ball-dart combination." Reply 4 (citing Ex. 1001, 8:59-61). Petitioner reasons that

the use of "in the form of" indicates that a ball-dart combination is but one possible form that the activator may take. *Id.* (citing Ex. 1052 ¶ 5, 9). Petitioner argues that, in describing the activator, the Specification expressly indicates that a ball-dart combination is only a preference: "**[p]referably**, the deformable activator comprises a ball-dart combination." *Id.* (citing Ex. 1001, 5:45-46).

Petitioner supports its position with the declaration of Mr. George Medley, who testifies that, in describing the activator, the '397 patent expressly indicates that a ball-dart combination is only a preference: "[p]referably" the "deformable activator comprises a ball-dart combination." Ex. 1052 ¶ 4. Mr. Medley further testifies that "[t]he term 'activator' would be understood by a person of ordinary skill in the art to simply mean an 'activating device,'" and that the uses of the term "deformable activator" and "deformable actuator" interchangeably in the '397 patent demonstrates to a that the term "deformable activator" is not a uniquely defined term in the '397 patent, as alleged by Patent Owner. *Id.* ¶¶ 6, 7.

Petitioner further contends that claim 17's limiting "deformable activator" to a "ball-dart combination" indicates that claim 13's "deformable activator" must be broader than the scope proposed by Patent Owner. According to Petitioner, Patent Owner's proposed construction makes claim 17 superfluous because the deformable activator of claim 13 would possess every additional limitation from claim 17. Reply 5. As support for its position, Petitioner cites to Dr. Hofstatter's deposition testimony regarding the elements of the deformable activator of the '397 patent and the limitations of claim 17 (i.e., a ball-dart combination, an external deformable

ring sitting on the seat, and a dart portion projecting downwardly through the seat). *Id.* (citing Ex. 1051, 224:9-226:23).

Petitioner further explains that the two types of disclosed deformable activators described in the '397 patent function in the same manner; each land on a seat, and when a "predetermined threshold pressure is exceeded" (Ex. 1001, 4:5), the activator changes shape and passes downwardly through the seat. Pet. 15 (citing Ex. 1001, 1:22-28; 3:39-51; 4:3-7; 4:29-36; 5:12-29; 5:45-53; 9:18-38; 9:44-62; 10:23-29; 11:3-28, 12:54-13:6); Ex. 1002 ¶¶ 61-62. Petitioner argues that Patent Owner improperly narrows the term "deformable activator" by requiring "the entire device" to pass through the seat and by asserting that "deformable" requires changing shape under pressure, but not breaking apart. Reply 8 (citing PO Resp. 13, 17). Petitioner notes, however, there is no language of manifest exclusion justifying the inclusion of these requirements. As indicated by Petitioner, in one embodiment of the '397 patent, the Specification discloses the entire activator passing through the seat, Ex. 1001, 10:18–23, but in another, the Specification distinguishes between the activator's dart and ring, describing the deformable ring as "shear[ing] under load" to allow the dart to pass through the seat, *id.*, 10:23–29. Reply 8. According to Petitioner, there is no indication in this latter case that the ring is required to follow the dart through the seat. *Id.* (citing Ex. 1052 ¶ 10). Petitioner, thus, concludes that "deformable activator" encompasses mechanisms that have pieces that shear or break off. Pet. 17–18.

We are charged with interpreting claim terms according to their broadest reasonable construction in light of the Specification of the patent in which they appear. 37 C.F.R. § 42.100(b). As a general rule, "there is a

strong presumption against a claim construction that excludes a disclosed embodiment." *See In re Katz Interactive Call Processing Patent Litig.*, 639 F.3d 1303, 1324 (Fed. Cir. 2011). Several exceptions to this presumption apply. For example, a claim may be interpreted to exclude embodiments "where those embodiments are clearly disclaimed in the Specification . . . or prosecution history." *Oatey Co. v. IPS Corp.*, 514 F.3d 1271, 1277 (Fed. Cir. 2008). Otherwise, "where claims can reasonably [be] interpreted to include a specific embodiment, it is incorrect to construe the claims to exclude that embodiment, absent probative evidence [to] the contrary." *Oatey Co.*, 514 F.3d at 1277.

In this case, the '397 patent discloses multiple embodiments of a system for activating and deactivating a mechanism which controls the operation of the downhole tool. *See e.g.*, Ex. 1001, 8:1-60. Neither the '397 patent (Ex. 1001), nor the prosecution history (Ex. 1003), appear to disclaim any of the embodiments disclosed in the Specification. Nor does the Specification appear to provide a special definition for the term "deformable activator." Therefore, we do not agree with Patent Owner's position. Rather, we find Patent Owner's proposed construction to be unnecessarily narrow in scope and inconsistent with the Specification of the '397 patent, which discloses merely a preference for the use of "a deformable activator in the form of a ball-dart combination, which takes the place of the large non-deformable ball 14 . . . ." Ex. 1001, 8:59-61.

Furthermore, if claim 13 were read to require "an activating device having a dart portion and an external deformable ring around the circumference of the dart portion that can change shape at a predetermined pressure to allow the entire device to pass downwardly through the seat,"

then claim 17 would be entirely superfluous. Such a claim construction is "presumptively unreasonable." *See Beachcombers, Int'l Inc. v. Wildewood Creative Prods., Inc.*, 31 F.3d 1154, 1162, (Fed. Cir. 1994) (holding that a claim construction that renders dependent claim superfluous is presumptively unreasonable).

Accordingly, given the disclosure of the '397 patent, we agree with Petitioner's position and determine that the broadest reasonable construction of "deformable activator" to be "an activating device that changes shape at a predetermined pressure."

2. "ball-like portion"

Dependent claim 17 directly depends from independent claim 13, and recites a "deformable activator compris[ing] a ball-dart combination, in which a ball-like portion at least is deformable and is capable of seating on said seat." Petitioner contends the claim element "'ball-like portion'" should be given its plain and ordinary meaning, which would encompass a ball. Pet. 26-27; Tr. 7:15-8:20. Patent Owner, to the contrary, contends "ball-like portion" cannot include a ball, but instead means "a ring structure having an outer curve." PO Resp. 28-29; Tr. 44:22-46:23. According to Patent Owner, "at no point does the patent ever use ball-like to mean a ball . . . but for any of the structures, ball-like is always a ring. And it is only a ring." Tr. 50:6-10.

We do not agree with Patent Owner's position. Even if we were to accept Patent Owner's construction of the phrase "ball-like" to exclude balls but to include rings, a ball that is cut into a portion that only includes the outer diameter of the ball would have a ball-like curvature similar to a ring (if the ring is cut into a portion that only includes the outer diameter of the

ring). Thus, Patent Owner's contention is unpersuasive. Furthermore, we reject Patent Owner's contentions as inconsistent with the '397 patent. *See, e.g.*, Ex. 1001, 8:59-64; Fig. 9, item 51. Specifically, the '397 patent discloses that "the deformable activator comprises a ball-dart combination" in which the "ball" engages the seat of the downhole tool. *Id.* at 5:45-53. Therefore, given the disclosure of the '397 patent, the broadest reasonable construction of "ball-like" is a "structure with at least one outer curve" and, thus, encompasses a ball or a ring, among other structures.

3. "the activator and the seat are arranged to cooperate with each other, when the activator engages the seat, in such a way that restricted flow of fluid through the sleeve is maintained when the mechanism is in its bypass mode"

In the Decision to Institute, we construed the term "restricted flow" as "less — including zero — flow." *See* Dec. to Inst. 10–11. During the course of the trial, neither party challenged our construction of this claim term. PO Resp. 11–30; Reply 1–11. We, therefore, see no reason to alter the construction of this claim term as set forth in the Decision to Institute, and we incorporate our previous analysis for purposes of this decision. Accordingly, we maintain our construction from the Decision to Institute, and determine that the broadest reasonable construction of "restricted flow" is "less — including zero — flow."

4. Other Claim Limitations

All other claim terms will be given their ordinary and customary meaning, as would be understood by one of ordinary skill in the art at the time of the invention.

B. Principles of Law

To prevail in its challenges to the patentability of the claims, a petitioner must establish facts supporting its challenges by a preponderance of the evidence. 35 U.S.C. § 316(e); 37 C.F.R. § 42.1(d).

1. 35 U.S.C. § 102

A claim is unpatentable under 35 U.S.C. § 102 if a prior art reference discloses every limitation of the claimed invention, either explicitly or inherently. *Glaxo Inc. v. Novopharm Ltd.*, 52 F.3d 1043, 1047 (Fed. Cir. 1995). Furthermore, the prior art reference—in order to be anticipatory—must disclose every limitation of the claimed invention arranged or combined in the same way, as in the claim. *Net MoneyIN, Inc. v. VeriSign, Inc*., 545 F.3d 1359, 1371-72 (Fed. Cir. 2008).

2. 35 U.S.C. § 103

A claim is unpatentable under 35 U.S.C. § 103(a) if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). The question of obviousness is resolved on the basis of underlying factual determinations, including: (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of skill in the art; and (4) objective evidence of nonobviousness, i.e., secondary considerations. *See Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

We analyze the instituted grounds of unpatentability in accordance with the above-stated principles.

C. Level of Ordinary Skill in the Art

In determining whether an invention would have been obvious at the time it was made, we consider the level of ordinary skill in the pertinent art at the time of the invention. *Graham*, 383 U.S. at 17. "The importance of resolving the level of ordinary skill in the art lies in the necessity of maintaining objectivity in the obviousness inquiry." *Ryko Mfg. Co. v. Nu-Star, Inc.*, 950 F.2d 714, 718 (Fed. Cir. 1991).

According to Mr. Medley, a person of ordinary skill in the art relevant to the '397 patent "would need at least a bachelor's degree in civil, mechanical, chemical, or petroleum engineering, and have at least 5 years of experience, including 'hands on' experience in the field of oil and gas well drilling operations" or alternatively, "a person may not need a college degree, but may have at least 10 years of experience, including 'hands on' experience in the field of oil and gas drilling operations." Ex. 1002 ¶ 15. Petitioner also contends that Patent Owner has advanced similar qualifications for a person of ordinary skill in the relevant art. Pet. 14 (citing Ex. 1005 ¶ 10).

Patent Owner does not disagree with Petitioner's assertion regarding the level of skill in the art, nor does Patent Owner offer a contrary explanation regarding who would qualify as a person of ordinary skill in the art relevant to the '397 patent. Therefore, based on our review of the '397 patent, the types of problems and solutions described in the '397 patent and cited prior art, and Mr. Medley's testimony, we conclude that a person of ordinary skill in the art at the time of the claimed invention would have had a degree in civil, mechanical, chemical, or petroleum engineering, and at least five years of work experience in oil and gas well drilling operations.

D. Asserted Anticipation by WO 02/14650

Petitioner contends claims 13-15, 17, and 18 of the '397 patent are unpatentable under 35 U.S.C. § 102(b) in view of WO 02/14650. Pet. 28-36; Ex. 1002 ¶¶ 84-94. Patent Owner disputes Petitioner's position, arguing that WO 02/14650 does not disclose the combination of a dart portion and an external deformable ring extending around the outer circumference of the dart portion as required by the challenged claims. PO Resp. 33-34. We have reviewed the Petition, the Patent Owner Response, and Petitioner's Reply, as well as the relevant evidence discussed in those papers. For reasons that follow, we determine that Petitioner has shown by a preponderance of the evidence that claims 13-15, 17, and 18 of the '397 patent are unpatentable in view of WO 02/14650.

1. Overview of WO 02/14650

WO 02/14650 discloses an activator for moving a sleeve on a by-pass tool. Ex. 1015, Abstract. One embodiment of an activator is shown in Figure 5, reproduced below.

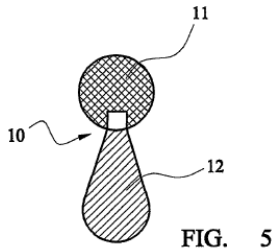


FIG. 5

Figure 5 illustrates an activator comprising a deformable ball with a weight (i.e., a dart) attached to enhance the effect of gravity on the ball. *Id.* at 3.[5]

[5] The cited page numbers for Ex. 1015 refer to the page number at the bottom center of each page.

WO 02/14650 specifically discloses use of a deformable ball with an attached weight as an activator in Figures 10a and 10b, reproduced below.

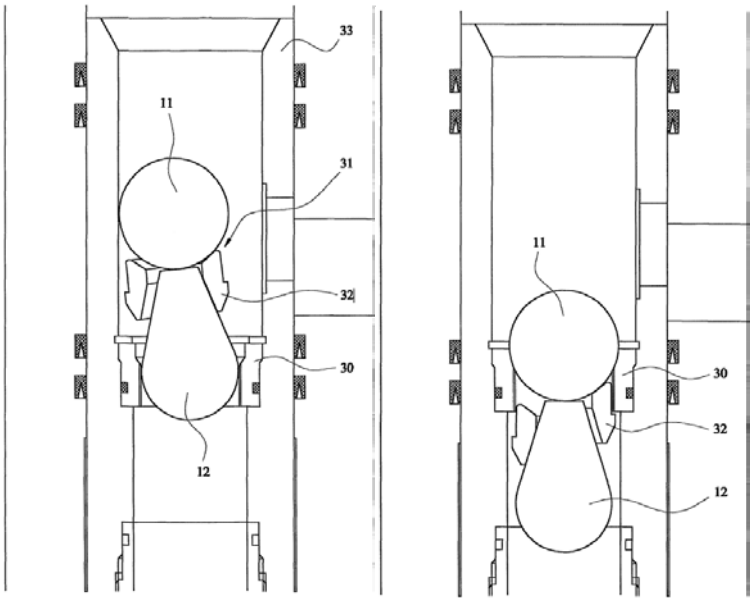


FIG. 10a FIG. 10b

As shown in Figures 10a and 10b, deformable ball 11 is captured by valve seat 30 and weight 12 moves downward through valve seat 12 to pull deformable ball 11 into engagement with valve seat 30. *Id.* at 4.

For certain embodiments, WO 02/14650 discloses that the deformable ball completely engages with the valve seat so as to create a seal preventing fluid flow through the housing and diverting all fluid flow through the by-pass ports. *Id.* In other embodiments, WO 02/14650 discloses use of a deformable ball with a centrally located hollow channel through which fluid flows even when the ball completely engages the valve seat. *Id.* at 4; 8-9; Fig. 6.

WO 02/14650 teaches that once the activator is engaged with the valve seat, pressure above the by-pass tool increases. *Id.* at 7. According to WO 02/14650, "pump pressure in the drillstring causes the ball (20) to push the sleeve (6) downwardly" which opens the by-pass ports and alters fluid

flow. *Id.* at 7; Fig. 2. In order to close the by-pass ports, a small non-deformable metal ball is dropped into the drill string. *Id.* at 7; Fig. 3. Pumping is continued, thereby increasing the pressure and causing the small metal ball to push against the activator engaged with the valve seat until the small metal ball and the activator are forced downwardly through the valve seat and into a ball catcher device. *Id.* at 7; Fig. 4.

2. Analysis

Independent claim 13 requires a deformable activator capable of launching down the drill string to engage with the valve seat in such a way that restricted flow of fluid through the sleeve is maintained.

Petitioner contends WO 02/14650, which discloses a by-pass tool with a slidable sleeve, a valve seat, a deformable activator, and by-pass ports, meets each limitation of claims 13-15, 17, and 18 of the '397 patent. Pet. 28-32 (citing Ex. 1002 ¶¶ 86-89). Petitioner contends WO 02/14650 discloses a deformable activator comprising a ball with an attached weight, where the ball is "'deformable so as to subsequently be capable of being forced downwardly through the valve seat.'" Pet. 31 (citing Ex. 1015, 7). Petitioner further contends WO 02/14650 discloses a deformable activator with an open-ended narrow passage that extends the length and weight of the ball, so as to allow continued fluid flow when the ball is engaged with the valve seat. Pet. 31-32 (citing Ex. 1015, 7-8); Ex. 1002 ¶ 90. Petitioner explains that the ball with a central passage qualifies as a "ring" situated around the circumference of a dart, specifically, the portion of the dart threaded into the ball. Reply 12 (citing Ex. 1015, 17; Ex. 1052 ¶ 17).

In support of its contentions, Petitioner cites the testimony of Mr. Medley, Ex. 1002 ¶¶ 86-90, and Mr. Paul Bernard Lee, the inventor,

Ex. 1009, 59:11-64:13. Pet. 32-33. Petitioner argues that Mr. Lee testified that the ball-dart assembly shown in Figure 6 of WO 02/14650 is a "deformable activator" that allows for restricted flow of fluid through the sleeve to be maintained when it engages the seat. Pet. 32 (citing Ex. 1009, 62:15–63:15).

Petitioner also contends that the limitations of dependent claims 14-15, 17, and 18 of the '397 patent are disclosed by WO 02/14650. Pet. 33-36. For example, claim 14 recites that the slidable sleeve be "moved by the deformable actuator so as to allow access to the by-pass port." Ex. 1001, 15:45–16:5. According to Petitioner, WO 02/14650 meets claim 14 because WO 02/14650 states that the "'pump pressure in the drillstring causes the ball (2[0]) to push the sleeve (6) downwardly against the force of the spring (16) until the shoulder (10) engages the ledge (12)'" thereby opening the by-pass ports. Pet. 30 (citing Ex. 1015, 7).

Another example is claim 17, which recites a deformable activator comprising "a ball-dart combination, in which a ball-like portion at least is deformable." Ex. 1001, 15:45–16:5. Petitioner argues that WO 02/14650 meets claim 17, because it discloses an activating ball assembly that combines a deformable ball "of a size sufficient to engage and be held captive by the valve seat" and an un-deformable weight, which "may take the form of a 'dart' when attached to the ball." Pet. 34-35 (citing Ex. 1015, 4, 8). Therefore, Petitioner reasons that the activating ball assembly of WO 02/14650 possesses all the characteristics required by claim 17 for the ball-dart combination. Pet. 35; Ex. 1002 ¶ 93. Petitioner, thus, concludes that the deformable ball-weight combination disclosed in WO 02/14650 falls within the scope of the challenged claims.

Patent Owner disagrees with Petitioner's conclusion that WO 02/14650 discloses a deformable activator as recited in the challenged independent and dependent claims. PO Resp. 33-34. Patent Owner contends that WO 02/14650 does not anticipate claim 13 because it does not disclose the combination of a dart portion and an external deformable ring extending around the outer circumference of the dart portion. *Id.* (citing Ex. 2001 ¶ 65). According to Patent Owner, claim 13, if construed as proposed by Patent Owner, "requires that the deformable ring around the outer circumference of the dart portion must be able to change shape at a predetermined pressure to allow the entire deformable activator (including the entire deformable ring) to pass downwardly through the seat." *Id.* at 34. Patent Owner supports its position with the declaration of Dr. Hofstatter, who testifies that WO 02/14650 fails to meet the claim language as construed by Patent Owner. Ex. 2001 ¶ 65.

As discussed above, we construed "deformable activator" to be "an activating device that changes shape at a predetermined pressure." *See supra* Section II.A.1. Patent Owner's contentions, however, are unpersuasive because that are based on a narrow scope of the claim that is inconsistent with our interpretation of the claim term. *See In re ICON Health & Fitness, Inc.*, 496 F.3d 1374, 1379 (Fed. Cir. 2007). Patent Owner has not offered evidence or an explanation as to why WO 02/14650's disclosure of a deformable ball-weight activator does not fall within the scope of the challenged claims as we have construed the claims. Therefore, we agree with Petitioner's position that the claims, when read in light of the Specification, encompass the deformable ball-weight combination disclosed in WO 02/14650. Furthermore, we find that WO 02/14650 discloses every

limitation of the claimed invention arranged in the same way as in claim 13. *See* Pet. 29-32. Accordingly, we hold that Petitioner has shown by a preponderance of the evidence that independent claim 13 is anticipated under 35 U.S.C. § 102 by WO 02/14650.

For similar reasons, we are persuaded Petitioner has shown by a preponderance of the evidence that dependent claims 14-15, 17, and 18 are unpatentable under 35 U.S.C. § 102. Specifically regarding claim 17, which recites "a ball-dart combination, in which a ball-like portion at least is deformable," we find nothing in the claim excluding balls as being ball-like or restricting claim 17 to covering only the embodiments shown in Figures 8, 9, 9(a), or 9(b). *See supra* Section II.A.2. As discussed above, we have determined that the broadest reasonable construction of "ball-like" encompasses a ball. Thus, based on the record before us, Patent Owner's argument is not commensurate with the scope of claim 17 as we have interpreted it.. Furthermore, we find that WO 02/14650 discloses every limitation of the claimed invention arranged in the same way as in claims 14-15, 17, and 18. *See* Pet. 33-36.

Accordingly, we hold that Petitioner has shown by a preponderance of the evidence that dependent claims 14-15, 17, and 18 are anticipated under 35 U.S.C. § 102 by WO 02/14650.

E. Asserted Anticipation by Bourgoyne

Petitioner contends claims 13-15, 17, and 18 of the '397 patent are unpatentable under 35 U.S.C. § 102(b) in view of Bourgoyne. Pet. 36-44. Patent Owner disputes Petitioner's position, arguing that Bourgoyne does not disclose the combination of a dart portion and an external deformable ring extending around the outer circumference of the dart portion as required

by the challenged claims. PO Resp. 33-34. We have reviewed the Petition, the Patent Owner Response, and Petitioner's Reply, as well as the relevant evidence discussed in those papers. For reasons that follow, we determine that Petitioner has shown by a preponderance of the evidence that claims 13-15, 17, and 18 of the '397 patent are unpatentable in view of Bourgoyne.

1. Overview of Bourgoyne

Bourgoyne discloses mounting a "flow diverting device" in a drill string, through which drilling fluid or mud is pumped. Ex. 1017, 7:55-68; 9:43-47. The flow diverting device comprises a diverter and an actuator. Figure 11, reproduced below, illustrates Bourgoyne's diverter.

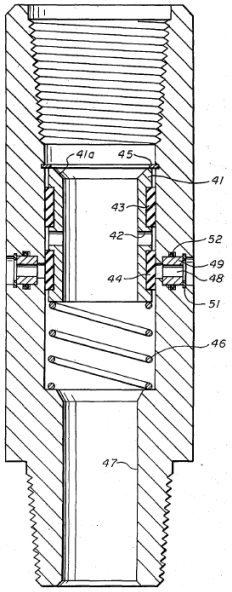


fig.11

As shown in Figure 11, the diverter of Bourgoyne includes sliding sleeve 41 that seals off side ports 48. *Id.* at 9:47-61. Sliding sleeve 41 is beveled at 41*a* to accept the upper portion of an actuator. *Id.* at 9:53-55. An actuator is dropped from the surface down a drill string to engage with the diverter. *Id.* at 9:65-68. An embodiment of an actuator is illustrated in Figure 12, reproduced below.

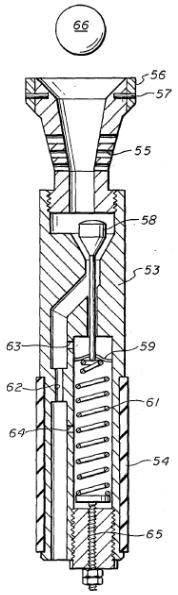


fig.12

As shown in Figure 12, actuator body 53 has seal element 54 surrounding its bottom portion that seals against bore 47 of the diverter and forces all fluid through the actuator. *Id.* at 9:68-10:5. Figure 12 further illustrates that, at the upper end of the actuator, catching sleeve 56 is pinned to actuator body 53 by one or more shear pins 57. *Id.* at 10:8-10. Bourgoyne discloses that, when desirable to deactivate the device without pulling the drill string from the hole, ball 66 is dropped from the surface down the drill string. Ball 66 forms a seal on the top portion of the actuator, and then pump pressure is applied to the completely closed system. The increased pressure causes shear pins 57 to fail so that catching sleeve 56 separates from actuator body 53, thus allowing the actuator to pass through the body of the diverter. *Id.* at 10:35-44.

2. Analysis

Petitioner contends Bourgoyne's disclosure of a landing diverter used in combination with an actuator meets each limitation of claims 13-15, 17, and 18 of the '397 patent. Pet. 37-34; *see* Ex. 1002 ¶¶ 94–113. Petitioner

reasons that the diverter functions as the hollow main body mounted to the drill string, Pet. 36, and the actuator qualifies as a deformable activator, *id.* at 39; Ex. 1002 ¶ 103. Petitioner further explains that, when the actuator engages with beveled edge 41*a* of sliding sleeve 41, sliding sleeve 41 moves to open side ports 48 so that fluid flows through the ports in the actuator. Pet. 39 (citing Ex. 1017, 9:57-61; 10:26-35). According to Petitioner, when an operator wants to deactivate the mechanism (return to through-flow mode from by-pass mode), a deactivating ball is dropped and blocks flow through the actuator causing a pressure increase. *Id.* at 39-40 (citing Ex. 1017, 10:35-45). Petitioner notes that the increased pressure breaks the shear pins, which permits the catching sleeve to separates from the actuator body, so the actuator body can then be pumped through the diverter. *Id.* at 40 (citing Ex. 1017, 10:35-45). Petitioner argues that when the shear pins fail and the catching sleeve separates from the actuator body, the actuator is changing shape or deforming. Petitioner supports its position with the declaration of Mr. Medley, who testifies that

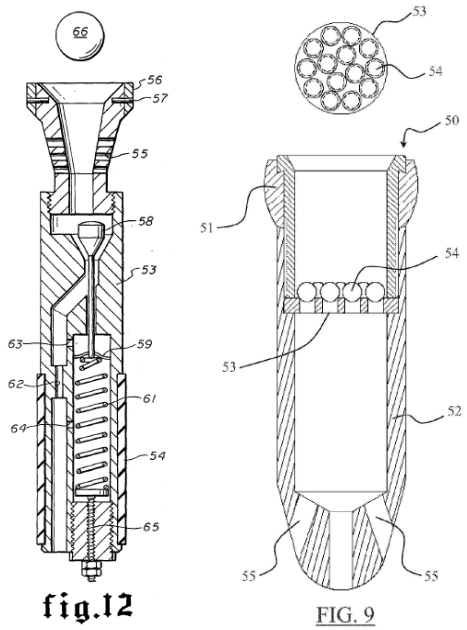
> [t]he activators [from Figures 12 and 13 of Bourgoyne] are also deformable in several ways. First, they are deformable because they have a catching sleeve or ring 56 that can break away or shear from the activator body 53 entirely. Therefore, the activator's shape is changed by virtue of the fact that the ring is sheared off. Second, the actuators are deformable in the sense that they both include a shear pin 57 which is part of both the actuator body and the catching sleeve (*i.e.*, shear ring), which is designed to deform by breaking at a predetermined pressure or force. In that way, the actuators are deformable when the shear ring breaks.

Ex. 1002 ¶ 104. Petitioner then explains that the challenged claims do not require the actuator to remain as a unitary component. Reply 12. Thus,

Petitioner concludes that Bourgoyne's actuator is a deformable activator and falls within the scope of the challenged claims. Pet. 40.

Patent Owner disagrees with Petitioner's contention that Bourgoyne anticipates any of the challenged claims. Prelim. Resp. 33-34. Patent Owner first argues that the actuator in Bourgoyne does not remain as a unitary component when the shear pins fail and the catching sleeve separates from the actuator body, and thus, does not qualify as a deformable activator. *Id.* at 31. Patent Owner then argues that Bourgoyne does not disclose either (1) a combination of a dart portion and an external deformable ring, or (2) an external ring which can deform under a predetermined pressure to allow the entire deformable activator (including the entire deformable ring) to pass downwardly through the seat as required under Patent Owner's proposed claim construction. *Id.* at 34 (citing Ex. 2001 ¶ 69).

Despite Patent Owner's argument, we agree Petitioner's position that challenged claims 13-15, 17, and 18 are anticipated by Bourgoyne. First, we have construed "deformable activator" to be "an activating device that changes shape at a predetermined pressure." *See supra* Section II.A.1. The actuator disclosed in Bourgoyne changes shape when a pressure increase causes the shear pins to fail and the catching sleeve to separate from the actuator body. Thus, Bourgoyne's actuator deforms under pressure. Second, a comparison of Figure 12 in Bourgoyne, reproduced below, with Figure 9 in '397 patent, also reproduced below, indicates certain similarities.



Specifically, both actuator body 53 in Bourgoyne and activator 52 in the '397 patent (i) are dart shaped, (ii) engage a seat in a hollow body mounted in a drill string, (iii) alter fluid flow, and (iv) change shape in response to pressure increase. Lastly, we agree with Petitioner's position that Bourgoyne discloses the elements recited in the challenged claims directed to a downhole tool mounted on a drill-string, where the tool has (i) a slidable actuating sleeve that can alter flood flow through the tool, (ii) a seat, and (iii) an activator that lands on the seat thereby moving the actuating sleeve on the tool. *See* Pet. 37-44. Therefore, we find that Bourgoyne discloses every limitation of the claimed invention arranged in the same way as in claims 13-15, 17, and 18.

Accordingly, we hold that Petitioner has shown by a preponderance of the evidence that claims 13-15, 17, and 18 are anticipated under 35 U.S.C. § 102 by Bourgoyne.

F. Asserted Obviousness by Bourgoyne and WO 02/14650

Petitioner contends claims 13-15, 17, and 18 of the '397 patent are unpatentable under 35 U.S.C. § 103 in view of Bourgoyne and WO 02/14650. Pet. 55-60. Patent Owner disputes Petitioner's position, arguing that neither Bourgoyne nor WO 02/14650 discloses a deformable activator having a dart portion and an external ring made of a deformable material, *i.e.*, a material that changes shape without breaking when subject to a predetermined pressure, that extends around the circumference of the dart portion. PO Resp. 36. Additionally, Patent Owner argues that a person of ordinary skill in the art would not have had a reason to combine Bourgoyne and WO 02/14650 to achieve the claimed invention. *Id.* at 37. We have reviewed the Petition, the Patent Owner Response, and Petitioner's Reply, as well as the relevant evidence discussed in those papers. For reasons that follow, we determine that Petitioner has shown by a preponderance of the evidence that claims 13-15, 17, and 18 of the '397 patent are unpatentable in view of Bourgoyne and WO 02/14650.

1. Overview of WO 02/14650

The disclosure of WO 02/14650 is discussed in detail above in Section II.D.1.

2. Overview of Bourgoyne

The disclosure of Bourgoyne is discussed in detail above in Section II.E.1.

3. Analysis

Petitioner contends Bourgoyne in combination with WO 02/14650 teaches or suggests each limitation of claims 13-15, 17, and 18 of the '397 patent. According to Petitioner, a person of skill in the art would have

reason to look to both the teachings of WO 02/14650 and Bourgoyne because the disclosures share the common goal of preventing problems during well drilling operations due to differences in pressure between the formation being drilled and the hydrostatic pressure exerted by the drilling mud in the well bore, specifically, "blow-outs" and well kicks. Pet. 56. Petitioner argues that well kicks are a common occurrence in the oil field. Tr. 35:12-14; *see* Reply 13 (citing Ex. 1052 ¶¶ 19-20). Petitioner, thus, contends that a person of skill in the art would have had reason to combine the teachings of WO 02/14650 with Bourgoyne in order to substitute a deformable plastic material (from WO 02/14650) for the catching sleeve (from Bourgoyne), thereby making a reusable device. Pet. 58; Tr. 35:14-19. Petitioner then argues that a skilled artisan would have had a reasonable expectation of success based on the use of the plastic material in deformable activator balls and ball darts. Pet. 59; *see* Ex. 1002 ¶¶ 148-153. Petitioner concludes that the substitution of the plastic material use in WO 02/14650 for Bourgoyne's catching sleeve creates a combination meeting every limitation of the challenged claims. Pet. 60.

Petitioner supports its position with Mr. Medley's testimony that combining the teachings of Bourgoyne and WO 02/14650 would "require nothing more than the combination of familiar elements according to a known method to achieve predictable results." Ex. 1002 ¶ 147. Mr. Medley further testifies that modifying the actuator of Bourgoyne by replacing its catching sleeve (*i.e.*, a shear ring) and shear pins with the plastic material from which the ball of the ball-dart assembly in WO 02/14650 is made would have entailed only the shaping of the plastic material into a catching sleeve attached to the actuator body. *Id.* According to Mr. Medley, a person

of ordinary skill in the art would have had a design incentive to combine the teachings of Bourgoyne and WO 02/14650 in order to create a device that would shear and leave pieces (or portions) of an activator in the drill string. *Id.* ¶ 148. Mr. Medley then testifies that a skill artisan would have found a multi-use tool to be highly desirable and, thus, would have had further reason to modify Bourgoyne's device from a single use to a multi-use tool using the teachings of WO 02/14650. Ex. 1052 ¶ 21. Mr. Medley concludes that such a modification would have been accomplished using technical details well known in the mechanical arts at the time of the invention. Ex. 1002 ¶ 147.

Patent Owner disagrees with Petitioner's contention, arguing that neither WO 02/14650 nor Bourgoyne discloses a deformable activator having a dart portion and a ball-like portion in the form of an external deformable ring that extends around the circumference of the dart portion. PO Resp. 36. According to Patent Owner, given the needs of application for the Bourgoyne actuator, the use of a rigid detachable catching sleeve pinned to the actuator body by shear pins was the simplest solution. *Id.* at 37. Patent Owner, thus, argues that there was no need for the catching sleeve to be made of a deformable material. *Id.* Patent Owner further argues that the only deformable devices known were deformable balls (with or without an attachable weight) and deformable seats, so there was nothing to motivate a person of ordinary skill in the art to modify Bourgoyne as a one-time use device into a multi-use device using the disclosure of WO 02/14650. *Id.* at 37-38. Patent Owner concludes that a combination of WO 02/14650 and Bourgoyne is based on impermissible hindsight because a skilled artisan would not combine a by-pass tool (from WO 02/14650) with a single-use

device, as disclosed by Bourgoyne, to control well kicks, which occur infrequently. *Id.* at 37-40.

Despite Patent Owner's arguments, we agree with Petitioner's analysis, as supported by Mr. Medley's testimony, that one of ordinary skill would have had reason to combine the teachings of Bourgoyne with the teachings of WO 02/14650 and have been led to the apparatus recited in challenged claims 13-15, 17, and 18 with a reasonable expectation of success. Bourgoyne teaches that catching sleeve 56 is a ring that is pinned to actuator body 53 by shear pins 57. *See* Ex. 1017, 10:8-10, Figs. 12, 13. Based on Mr. Medley's testimony, we are satisfied by that one of skill in the art would have been motivated to replace the catching sleeve (*i.e.*, a shear ring) and shear pins with the plastics material from which the plastic ball of the ball-dart assembly in WO 02/14650 in order to have a multi-use downhole tool with a plastic deformable catching sleeve attached to an actuator body. Thus, we agree that a skilled artisan would look to the teachings of Bourgoyne and WO 02/14650 to solve the problem of well kicks, and we determine that a skilled artisan would have found the teachings of Bourgoyne compatible with the teachings of WO 02/14650 and used the disclosures in combination.

We also are not persuaded by Patent Owner's arguments, as they narrowly focus on differences between Bourgoyne and WO 02/14650 and fail to consider the collective teachings of Bourgoyne and WO 02/14650 from the perspective of one of ordinary skill in the art. *See KSR*, 550 U.S. at 420 ("[F]amiliar items may have obvious uses beyond their primary purpose, and in many cases a person of ordinary skill will be able to fit the teachings of multiple patents together like pieces of a puzzle."). The fact that

Bourgoyne uses a circular catching sleeve, which separates from the actuator body, weighs in favor of finding that a person of ordinary skill in the art would have "fitted the teachings" of Bourgoyne together with the plastic deformable ball of WO 02/14650, rendering the challenged claims obvious. Additionally, the arguments presented by Patent Owner attack Bourgoyne and WO 02/14650 individually, rather than in combination. *See* PO Resp. 36-41. Nonobviousness cannot be established by attacking the references individually when a challenge is predicated upon a combination of prior art disclosures. *See In re Merck & Co., Inc.*, 800 F.2d 1091, 1097 (Fed. Cir. 1986). In attacking Bourgoyne and WO 02/14650 individually, Patent Owner fails to address Petitioner's actual challenges or, therefore, establish an insufficiency in the combined teachings of the references.

Accordingly, we conclude Petitioner has established by a preponderance of evidence that claim 13 would have been obvious under 35 U.S.C. § 103 in view of the disclosures of WO 02/14650 and Bourgoyne. For similar reasons, we are persuaded Petitioner has established by a preponderance of evidence that dependent claims 14-15, 17, and 18 are unpatentable as obvious.

III. MOTION TO EXCLUDE EVIDENCE

Petitioner filed a Motion to Exclude Evidence seeking to exclude portions of the Declaration of Dr. Herbert Hofstatter submitted by Patent Owner. Paper 27. The party moving to exclude evidence bears the burden of proving that it is entitled to the relief requested—namely, that the material sought to be excluded is inadmissible under the Federal Rules of Evidence. *See* 37 C.F.R. §§ 42.20(c), 42.62(a). Even without excluding this evidence, we have determined that Petitioner has established, based on a

preponderance of the evidence, the unpatentability of claims 13-15, 17, and 18 of the '397 patent. Furthermore, Petitioner's arguments on these items go to the weight to be accorded to the evidence. The Board is capable of determining and assigning the appropriate weight to the evidence.

For these reasons, we *deny* Petitioner's motion.

IV. CONCLUSION

We conclude Petitioner has shown by a preponderance of the evidence that claims 14-15, 17, and 18 of the '397 patent are unpatentable under 35 U.S.C. § 102 as anticipated by both Bourgoyne and WO 02/14650, and are unpatentable under 35 U.S.C. § 103(a) for obviousness over Bourgoyne in view of WO 02/14650.

Petitioner's Motion to Exclude portion of the Declaration of Dr. Herbert Hofstatter is denied.

V. ORDER

For the reasons given, it is

ORDERED that, by a preponderance of the evidence, claims 14-15, 17, and 18 of the '397 patent are unpatentable;

FURTHER ORDERED that Petitioner's Motion to Exclude portion of the Declaration of Dr. Herbert Hofstatter is denied;

FURTHER ORDERED that because this is a Final Written Decision, 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.

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