

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

FMC TECHNOLOGIES, INC.,
Petitioner,

v.

ONESUBSEA IP UK LIMITED,
Patent Owner.

Case IPR2016-00467
Patent 8,776,893 B2

Before JOSIAH C. COCKS, CARL M. DEFRANCO, and
MICHELLE N. WORMMEESTER, *Administrative Patent Judges*.

DEFRANCO, *Administrative Patent Judge*.

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

I. INTRODUCTION

OneSubsea IP UK Limited (“OneSubsea”) is the owner of U.S. Patent No. 8,776,893 B2 (“the ’893 patent”). FMC Technologies, Inc. (“FMC”) filed a Petition (Paper 2, “Pet.”) seeking *inter partes* review of claims 1, 2, 4–9, 11–15 and 17–19 of the ’893 patent. We instituted *inter partes* review of all the challenged claims (Paper 8, “Inst. Dec.”) because FMC demonstrated a “reasonable likelihood” of prevailing on “at least 1 of the claims challenged in the petition.” 35 U.S.C. § 314(a).

After institution, OneSubsea filed a Patent Owner Response (Paper 13, “PO Resp.”), and FMC followed with a Reply (Paper 18, “Pet. Reply”). With our authorization, OneSubsea filed a Sur-Reply in response to certain claim construction arguments raised by FMC’s Reply. Paper 24, “PO Sur-Reply.” Each party had an opportunity to present its case in a hearing conducted on March 29, 2017, a transcript of which is in the record. Paper 28 (“Tr.”).

We have jurisdiction over these proceedings under 35 U.S.C. § 6(b). After considering the evidence and arguments of the parties, we determine that FMC has proven by a preponderance of the evidence that claims 1, 2, 4–9, 11–15 and 17–19 of the ’893 patent are unpatentable. *See* 35 U.S.C. § 316(e). We issue this Final Written Decision pursuant to 35 U.S.C. § 318(a).

II. BACKGROUND

A. *The Related District Court Action*

The ’893 patent is involved in a concurrent district court case, *OneSubsea IP UK Limited v. FMC Technologies, Inc.*, Case No. 4:16-cv-00051 (S.D. Tex.), which commenced March 30, 2015, as transferred from

Case No. 2:15-cv-00445 (E.D. Tex.). Paper 6. The district court case is currently stayed pending resolution of this proceeding and three related proceedings.

B. The '893 Patent

The '893 patent relates to a subsea Christmas tree system for an oil or gas well. Ex. 1001, 1:51–58. Subsea Christmas trees are well known in the oil and gas well art, and comprise an assembly of pipes, valves, and fittings installed on a wellhead for controlling the flow of oil and gas from the wellhead bore to a production flow line. *Id.* The particular subsea Christmas tree system of the '893 patent includes a retrievable “module,” connected to a “wing branch” of the tree, for diverting fluid flow from its “usual path” in the tree to a “processing device,” followed by recovery and return of the processed fluid to the branch of the tree for communication with the production flow line. *Id.* at 4:63–67, 7:29–47.

C. The Challenged Claims

Of the challenged claims, six are independent—claims 1, 5, 8, 12, 15, and 19. Each of the independent claims is directed to a “module” assembly for fluidly connecting a subsea tree to a production flow line. Ex. 1001, 10:65–12:67. Three of the independent claims—claims 5, 12, and 19—include the additional element of a “flow measuring” device on the module. *Id.* Claim 1 is illustrative of the challenged claims:

1. An assembly mountable to a subsea tree and a subsea production flowline, the subsea tree including a production line, comprising:
a module comprising a production line connector and a production flowline connector, the production line connector being disposed on a lateral branch of the subsea tree, operable for connection and fluid communication with said subsea tree and

with said production flow line, respectfully, said module defining a fluid flow passageway therein, whereby said subsea tree is in fluid communication with said production flowline only through said module and only after said module is connected to said subsea tree and said production flowline.

Ex. 1001, 10:65–11:10 (emphasis added).

D. The Instituted Grounds

In its Petition, FMC challenges the claims on four grounds, one based on anticipation under 35 U.S.C. § 102 and three based on obviousness under 35 U.S.C. § 103. Pet. 3. We instituted *inter partes* review on only two of the asserted grounds, however, our institution on those two grounds encompassed all the challenged claims. Inst. Dec. 8. The grounds on which we granted *inter partes* review are as follows.

Reference(s)	Basis	Claims Challenged
Kelly ¹	§ 102	1, 2, 4, 6–9, 11, 15, and 17
Kelly and Andersen ²	§ 103	1, 2, 4–9, 11–15, and 17–19

The grounds on which we denied review include Clair³ as a primary reference in combination with Andersen. In further support of the asserted grounds, FMC proffers the declaration of Robert Herrmann (Ex. 1003).

III. ANALYSIS

A. APA Due Process

We instituted *inter partes* review of the challenged claims because, pursuant to 35 U.S.C. § 314(a), FMC demonstrated a “reasonable likelihood” of proving that “at least 1 of the claims challenged in the

¹ U.S. Patent No. 4,589,493, iss. May 20, 1986 (Ex. 1004, “Kelly”).

² PCT WO 00/47864 A1, pub. Aug. 17, 2000 (Ex. 1006, “Andersen”).

³ U.S. Patent No. 2,638,917, iss. May 19, 1953 (Ex. 1005, “Clair”).

petition” is unpatentable, namely, claims 1 and 15. Inst. Dec. 3–5. After deciding that claims 1 and 15 met the threshold for institution, we exercised our discretion under 37 C.F.R. § 42.108(b) to institute on *all* the challenged claims. *Id.* at 5–6 (citing *Intex Recreation Corp. v. Bestway Inflatables & Material Corp.*, IPR2016-00180, Paper 13, at 8–11 (PTAB June 6, 2016)).

OneSubsea argues that we overstepped our statutory authority and violated its due process rights “[b]y failing to perform a claim-by-claim analysis” for all the claims in our institution decision and by failing to provide it “with notice of the facts and arguments” in support thereof. PO Resp. 49–52. Citing 35 U.S.C. § 314, OneSubsea argues that “[t]he Board is required to first determine that there is a reasonable likelihood that the petitioner will prevail with respect to *the claims* being challenged” before instituting an *inter partes* review. *Id.* at 51 (emphasis added). We disagree.

OneSubsea ignores the critical language of the statute. The statute does not require that the threshold for institution must be met for “the claims,” as OneSubsea urges. Instead, the statute requires simply that the threshold must be met with respect to “*at least 1* of the claims challenged in the petition.” 35 U.S.C. § 314(a) (emphasis added). Thus, contrary to what OneSubsea argues, we did not need to analyze all the challenged claims individually, for the statutory threshold need only be applied to one claim, not all the claims.

Nor did we need to analyze all the asserted grounds individually, for again, the statute requires simply that one claim “in the petition” meet the threshold, not one claim in each ground. *Id.* Indeed, section 314(a) of the statute omits the term “ground” altogether, despite its express mention in preceding sections of the statute. *See, e.g.*, 35 U.S.C. § 311(b) (“a petitioner

. . . may request to cancel . . . claims of a patent only on *a ground* that could be raised under section 102 or 103”) (emphasis added); 35 U.S.C. § 312(a) (“A petition . . . may be considered only if— . . . the petition identifies . . . *the grounds* on which the challenge to each claim is based.”) (emphasis added). That clear omission of the term “ground” from section 314(a) supports that the threshold for institution need only be met for one claim in the petition, not one claim in each ground. As such, our substantive analysis of only a subset of the challenged claims as a precursor to exercising our discretion to institute on all the challenged claims satisfies our statutory obligation of determining a reasonable likelihood for “at least 1 of the claims challenged in the petition.”

Our discretionary decision to institute on all the challenged claims after analyzing only a subset of those claims is also consistent with our regulatory authority. For instance, 37 C.F.R. § 42.108(c) tracks the language of the statute and precludes institution on “a ground of unpatentability unless the Board decides that *the petition* supporting the ground would demonstrate that there is a reasonable likelihood that at least one of the claims challenged in *the petition* is unpatentable.” (Emphases added.) Like 35 U.S.C. § 314(a), the purpose of that rule is simple—it sets a minimum threshold for exercising our discretion to institute an *inter partes* review. While subsections (a) and (b) of the rule permit us discretion to institute on “all or some” of the claims and grounds, subsection (c) limits that discretion by requiring that “at least one claim in the petition” satisfy the “reasonable likelihood” standard. In other words, the rule is permissive—it does not state that we *must* address the merits of each challenged claim and asserted ground, only that we do so for at least one claim in *the petition*.

Had the rule meant to invoke a more stringent requirement that one claim *in each ground* meet the threshold, the rule would have omitted reference to “the petition” and, instead, required “*the ground* would demonstrate that there is a reasonable likelihood” and “one of the claims challenged *in the ground* is unpatentable.” It does not. An interpretation that emphasizes mention of “the ground” over “the petition,” in essence, reduces the latter term to nothing more than unnecessary surplus verbiage. We cannot interpret our rules in a manner that renders words meaningless.⁴ As such, 37 C.F.R. § 42.108(c) is best understood to require that at least one claim in the petition meet the minimum threshold, not one claim in each asserted ground.

In exercising our discretion under 37 C.F.R. § 42.108, we grouped the grounds in the Petition along the lines of where we perceived a significant overlap or meaningful distinction in terms of the references relied upon. *Cf. Shaw Indus. Grp, Inc. v. Automated Creel Sys., Inc.*, 817 F.3d 1293, 1298–99 (Fed. Cir. 2016) (expressing concern with Board’s exercise of discretion where it “made no specific findings that the three grounds overlapped with one another”). We found that some grounds overlapped significantly in terms of the primary reference relied upon, while other grounds differed sufficiently despite some overlap of secondary references. Specifically, we divided the grounds into two groups—(1) the grounds that overlap in terms of Kelly as a primary reference, and (2) the grounds that overlap in terms of Clair as a primary reference. Inst. Dec. 4, 6, respectively. At the outset, we

⁴ Each word must have meaning and purpose. An interpretation that would render a word in our rules redundant or meaningless is rarely, if ever, correct.

denied the Clair-based grounds for lack of clarity and adequate notice as to the basis of the challenge. *Id.* at 6–7. We then analyzed the merits of two claims in the remaining group—claims 1 and 15 as anticipated by Kelly—and found that they met the “reasonable likelihood” threshold for institution. *Id.* at 4–5.

Upon determining that at least one claim in the Kelly-based grounds met the statutory threshold, we then explained our reason for exercising discretion to institute on all the remaining claims and grounds under challenge—to achieve consistency and efficiency between the related district court action and the instant proceeding. *See id.* at 5–6; *cf. Shaw Indus.*, 817 F.3d at 1304 (concurring op.) (expressing concern that the Board’s institution decision “say[s] nothing about efficiency” as rationale for exercising discretion); *see also Synopsys, Inc. v. Mentor Graphics Corp.*, 814 F.3d 1309, 1325 (Fed. Cir. 2016) (dissenting op.) (expressing concern that partial institution “negates the AIA’s purpose of providing an alternative and efficient forum for resolving patent validity issues”). We further explained that “concerns of fairness and efficiency in this case” persuade us to institute on the asserted grounds of anticipation *and* obviousness that rely on Kelly. Inst. Dec. 6 (citing *HP Inc. v. MPHJ Tech. Inv., LLC*, 817 F.3d 1339, 1347 (Fed. Cir. 2016) (holding that petitioner was “not estopped from raising the obviousness of claim 13 in a subsequent court or Board proceeding” where Board instituted only on grounds of anticipation of claim 13)).

An analysis of each and every claim, and each and every ground, in the petition is not a prerequisite to institution. *See Genzyme Therapeutic Prods. Ltd. v. Biomarin Pharm. Inc.*, 825 F.3d 1360, 1366 (Fed. Cir. 2016)

(“There is no requirement, either in the Board’s regulations, in the APA, or as a matter of due process, for the institution decision to anticipate and set forth every legal or factual issue that might arise in the course of the trial.”) (citing *Boston Carrier, Inc. v. ICC*, 746 F.2d 1555, 1560 (D.C. Cir. 1984) (quotation omitted)). In granting institution, we addressed FMC’s first ground and explained why Kelly sufficed as proof of a reasonable likelihood of anticipation of claims 1 and 15. Inst. Dec. 4–5. And, because that first ground overlapped significantly with FMC’s obviousness ground relying on Kelly, we exercised our discretion under 37 C.F.R. § 42.108 to institute on *all* claims challenged within those grounds, namely, claims 1, 2, 4–9, 11–15, and 17–19. *Id.* at 5–6. Our decision to streamline the institution proceeding by analyzing substantively only a subset of the challenged claims is fully within our statutory and regulatory authority, as discussed above, and, thus, is reasonable.

Moreover, our institution decision provided the parties with full notice of “the matters of fact and law asserted” to permit them “to submit rebuttal evidence, and to conduct such cross-examination as may be required for a full and true disclosure of the facts.” *Belden Inc. v. Berk-Tek LLC*, 805 F.3d 1064, 1080 (Fed. Cir. 2015) (citations omitted). The Board is not precluded from “relying on arguments made by a party and doing its job, as adjudicator, of drawing its own inferences and conclusions from those arguments . . . *subject, of course, to the provision of adequate notice and opportunity to be heard.*” *Roalma, S.A. v. Bohler-Edelstahl GmbH & Co. KG*, Appeal No. 2016-2233, slip op. at 14 (Fed. Cir. May 11, 2017) (emphasis added). Here, we considered the parties’ arguments and concluded they warranted exercising our discretion to institute on all the

challenged claims. That our institution decision came at the outset of the proceeding, and informed the parties of the claims and grounds on which trial would proceed, gave the parties adequate notice and opportunity to be heard on the pertinent facts and issues to be resolved at trial. See Inst. Dec. 8 (“Order” specifying grounds for trial).

Our final written decision today does not depart from, nor is it inconsistent with, the initial theory laid out in our institution decision. See *Belden*, 805 F.3d at 1080 (“‘[A]n agency may not change theories in midstream without giving respondents reasonable notice of the change’ and ‘the opportunity to present argument under the new theory.’”) (quoting *Rodale Press, Inc. v. FTC*, 407 F.2d 1252, 1256–57 (D.C. Cir. 1968)).

B. Claim Construction

In an *inter partes* review, we give claim terms in an unexpired patent their broadest reasonable construction in light of the specification of the patent in which they appear. *Cuozzo Speed Techs. LLC v. Lee*, 136 S. Ct. 2131, 2144–46 (2016). Under that standard, we ascribe claim terms their ordinary and customary meaning, as understood by a skilled artisan in the context of the entire disclosure. *In re Translogic Tech., Inc.*, 504 F.3d 1249, 1257 (Fed. Cir. 2007). Our construction of claim terms “cannot be divorced from the specification and the record evidence.” *Microsoft Corp. v. Proxyconn, Inc.*, 789 F.3d 1292, 1298 (Fed. Cir. 2015) (quoting *In re NTP, Inc.*, 654 F.3d 1279, 1288 (Fed. Cir. 2011)).

In its Petition, FMC does not propose any claim terms for construction. Pet. 4–5. OneSubsea, in turn, proposes four claim terms for construction, relying primarily on constructions advanced in the related district court case. PO Resp. 6–10. FMC replies that two of the

constructions proposed by OneSubsea are improper because they differ from what OneSubsea argued in the district court case and are narrower than the “broadest reasonable interpretation” mandated by our proceedings. Pet. Reply 3–6; *see Cuozzo*, 136 S. Ct. at 2144–46. We address each of the claim terms in question.⁵

1. “tree”

Each of independent claims 1, 5, 8, 12, 15, and 19 recites the term “tree.” The specification of the ’893 patent explains that:

[T]rees (sometimes called Christmas trees) are well known in the art of oil and gas wells, and generally comprise *an assembly of pipes, valves and fittings installed in a wellhead* after completion of drilling and installation of the production tubing to control the flow of oil and gas from the well.

Ex. 1001, 1:51–56 (emphasis added). To that end, the parties agreed in the related district court action that the proper construction of “tree” is “an assembly of pipes, valves and fittings installed between the wellhead and the flowline.” Ex. 2009, 3. We see no reason to depart from the parties’ agreed-upon construction of the term “tree” in the district court action, which comports with the specification’s definition of the term. As such, we adopt that same construction here.

⁵ OneSubsea argues that FMC “had the opportunity to construe these terms in its Petition,” and thus, “the affirmative constructions in FMC’s Reply are untimely.” PO Sur-Reply 3. We disagree. Our rules provide that a reply may only respond to arguments raised in the “patent owner response.” 37 C.F.R. § 42.23(b). We consider FMC’s arguments to be a timely and proper response to OneSubsea’s proposed claim constructions. In any event, we afforded OneSubsea an opportunity to reply substantively to FMC’s arguments and evidence on the issue of claim construction. *See* PO Sur-Reply 4. As such, we reject OneSubsea’s “Objections” to FMC’s evidence on this point. *See* Paper 19.

2. “*lateral branch*”

Challenged independent claims 1, 5, 8, and 12 recite the term “lateral branch.” We note that, in a *Markman* ruling, the district court construed the term “lateral branch” to mean “an offshoot from a flowpath such as the production bore or the annulus bore, but does not include the production bore or the annulus bore.” Ex. 2012, 7. That construction is consistent with the definition in the specification of the ’893 patent, which explains that “by ‘branch’ we mean any branch of the manifold, other than a production bore of a tree . . . typically a lateral branch of the tree.” Ex. 1001, 3:36–40. It is also consistent with the plain and ordinary meaning of the term—“a secondary shoot or stem (as a bough) arising from a main axis (as of a tree) . . . something that extends from or enters into a main body.” Ex. 3002 (Merriam-Webster’s Collegiate Dictionary). Accounting for the district court’s construction and keeping in mind the BRI⁶ standard of our proceedings, we construe the term “lateral branch” to mean “an offshoot from a main flowpath or axis of a tree, such as a production bore or annulus bore, that encompasses but is not necessarily limited to a portion extending laterally from the main flowpath or axis.”

3. “*flowline*”

Each of the challenged independent claims recites the term “flowline.” The ’893 patent does not impart any special definition to this term. Ex. 1001, 3:20–27, 6:49–53. At the district court, the parties agreed that the proper construction is “a pipeline extending outbound of the terminus of a subsea tree.” Ex. 2009, 3. OneSubsea’s expert testifies that this

⁶ BRI stands for “broadest reasonable interpretation.”

construction is consistent with how a skilled artisan would have understood the term. Ex. 2006 ¶ 65. We see no reason to depart from the parties’ agreed-upon construction of “flowline” in the district court action. As such, we adopt that same construction here.

4. “connector”

Each of independent claims 1, 5, 8, 12, 15, and 19 recites the term “connector.” The district court’s *Markman* ruling held that the term “connector” should be construed to mean “a device that attaches things together.” Ex. 2012, 11. The specification of the ’893 patent, however, uses the term “connector” in a slightly broader sense to describe a fluid connection for providing sealed continuity between two conduits—

the first mandrel extension conduit 5*b* has a socket to receive the male end of the well-bore mandrel 5 that extends through the upper surface of the second plate 25*b* as shown in FIG. 2. The socket has *connection devices to seal the extension conduit 5b to the mandrel 5 . . . so that the inner bore of the mandrel 5 is continuous with the inner bore of the mandrel extension conduit 5b and is sealed thereto.*

Ex. 1001, 8:28–36. Likewise, the specification elsewhere describes “fluid connectors” in the form of “sockets and seals in order to connect to the first mandrel extension conduit just as the first extension conduit 5*b* connects to the mandrel 5, so the mandrel effectively extends continuously through the two processing units 35*b* and 35*c*.” *Id.* at 9:16–30. Those descriptions indicate that the term “connector” encompasses a device that seals two conduits together to form a continuous flowpath. Thus, accounting for the district court’s construction and keeping in mind our BRI standard of construing claim terms consistent with the specification, we construe the

term “connector” to mean “a device that attaches things together or joins them together in a fluid-tight sealed manner.”

C. Anticipation by Kelly

FMC challenges claims 1, 2, 4, 6–9, 11, 15, and 17 as anticipated by Kelly. Pet. 5–17. For the reasons discussed below, we are persuaded that FMC has demonstrated by a preponderance of the evidence, including annotated figures, a detailed claim chart, and expert testimony, that Kelly anticipates the challenged claims. Pet. 6–12, 16–17, 32–37; Ex. 1003 ¶¶ 18–24.

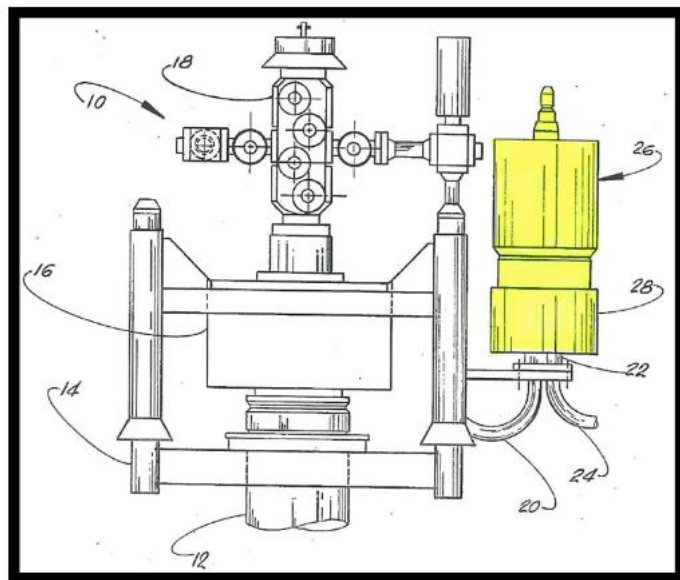
1. Independent Claim 1

Claim 1 recites a “module” mounted on a “subsea tree.” Ex. 1001, 10:65–11:10. The module is installed on a “lateral branch” of the tree and defines a “fluid flow passageway” from a “production line” on the tree to a “production flow line” at the outlet of the tree. *Id.* Central to this dispute is the claim limitation requiring that the module include a first “connector” for connecting with the lateral branch of the tree and a second “connector” for connecting with the production flowline. *Id.*

FMC explains in its Petition how Kelly discloses each element of claim 1. Pet. 6–12. OneSubsea does not dispute that Kelly discloses a module for a subsea tree that provides a fluid flow passageway from a production line to a production flow line. OneSubsea contends, however, that Kelly does not disclose a “connector” for either the production line or the production flowline. PO Resp. 23–28. OneSubsea also contends that, even if Kelly discloses a connector for the production line, it is not “disposed on a lateral branch of the subsea tree,” as also required by claim 1. We address each of these limitations in turn.

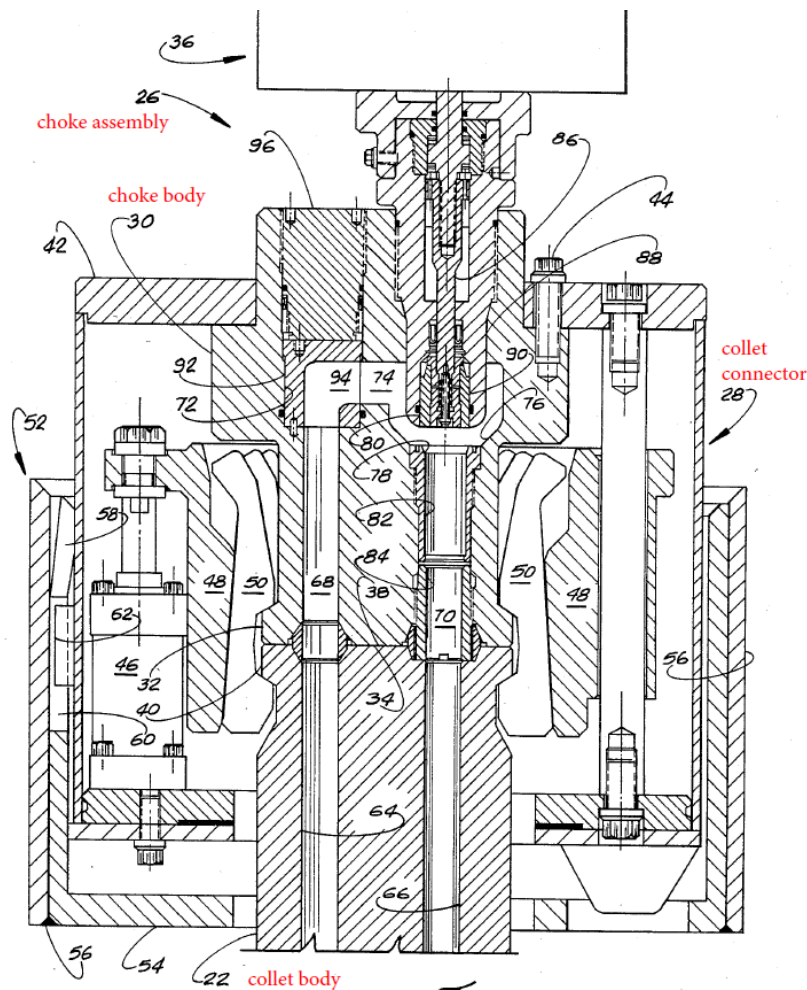
“a module comprising a production line connector and a production flowline connector . . . operable for connection and fluid communication with said subsea tree and with said production flowline, respectfully”

For the claimed “module” element, FMC relies on Kelly’s disclosure of “retrievable subsea choke assembly 26.” Pet. 6–9. According to FMC, Kelly’s retrievable choke is a module because it “may be lowered, landed and installed on a subsea wellhead and also may be independently retrievable from such subsea wellhead.” *Id.* at 6 (quoting Ex. 1004, 1:63–65). FMC further explains that retrievable choke module 26 is mounted on a branch of subsea tree 18 “via the collet body 22.” *Id.* at 7 (citing Ex. 1003 ¶¶ 18–19, 21). When connected to collet body 22, retrievable choke module 26 provides a fluid flow passage from “well production string” (line 20) to “production flowline” (at the end of line 24). Ex. 1004, 2:21–33. Annotated figure 1 of Kelly, reproduced below, depicts Kelly’s retrievable choke module 26 mounted on collet body 22 between flow lines 20 and 24.



Kelly, Fig. 1 (annotated)

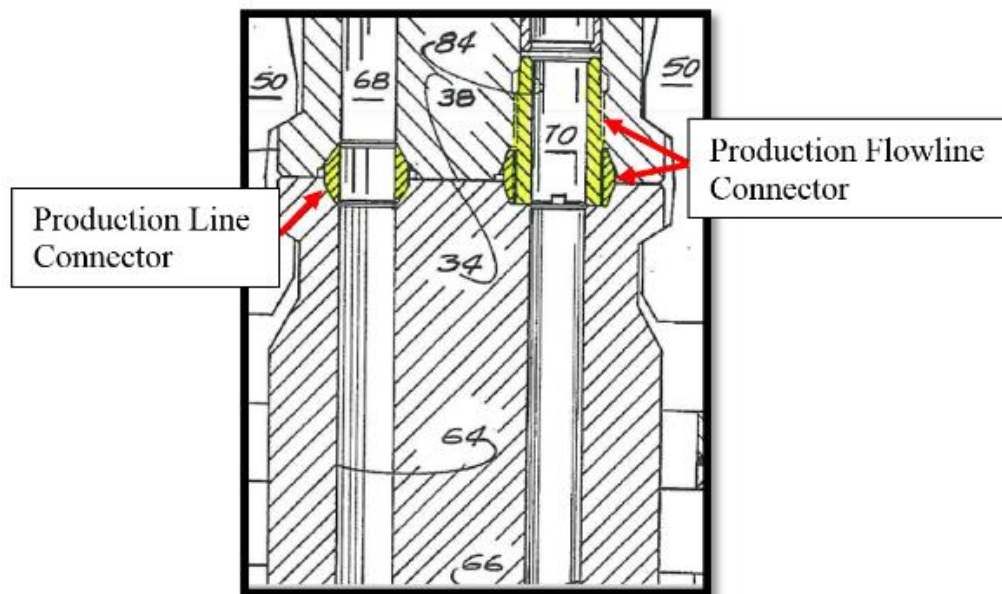
With respect to the claimed “connector” elements, FMC points to Kelly’s disclosure of “connection means” and “sealing means” for connecting fluid flow lines in retrievable choke module 26 to corresponding flow lines in collet body 22. Pet. 9–10 (citing Ex. 1004, 2:34–37, 2:58–65). Specifically, Kelly explains that upper surface 38 of collet body 22 “is adapted to mate with” lower surface 34 of choke module 26, 30 by any suitable “connection means” and discloses “collet connector 28” as an example of such a connection means. Ex. 1004, 2:26–46. Annotated figure 3 of Kelly, shown below, depicts a sectional view of retrievable choke module 26, 30 in mating connection with collet body 22.



Kelly further describes “sealing means” for making “these connections” between the flow line passages in collet body 22 and choke module 26.

The structure of collet body 22 includes passage 64 which is connected to line 20 and passage 66 which is connected to line 24. Both passages 64 and 66 extend to and are open at surface 38. When [choke] body 30 has been landed on collet body 22, *passage 64 is aligned with inlet 68 and passage 66 is aligned with outlet 70 and suitable sealing means, as shown, are provided to maintain sealed communication between these connections.*

Id. at 2:58–65 (emphasis added). Annotated figure 3 of Kelly, shown below, illustrates the “connections” of the flow lines passages.



Kelly, Fig. 3 (annotated)

Despite Kelly’s disclosure of “connections” and “sealing means” for retrievable choke module 26, OneSubsea argues that Kelly fails to disclose any “connectors” for its retrievable choke module. PO Resp. 23. We disagree. To the extent OneSubsea requires a more detailed disclosure than Kelly’s use of the term “connections,” we

note that claim 1 uses the similar term “connector” for each of the claimed flow lines. We discern no difference between claim 1’s recitation of a “connector” for each of the lines in its module and Kelly’s disclosure of “connections” for “sealed communication” of each of the passages in its choke module 26. *See In re Bond*, 910 F.2d 831, 832 (Fed. Cir. 1990) (anticipation is not an “*ipsissimis verbis*” test). As such, we find that Kelly’s disclosure of providing “connections” in the form of “suitable sealing means . . . to maintain sealed communication” between the flow passages in collet body 22 and choke module 26 meets the “connector” limitations of claim 1.

OneSubsea faults FMC’s reliance on Kelly’s “seals” for meeting the “connector” elements of claim 1. PO Resp. 23–28. In particular, OneSubsea points to testimony from FMC’s expert that “[t]o your engineers these [seals] are not connectors.” *Id.* at 25 (quoting Ex. 2004, 162:11–163:8). That testimony, however, must be viewed in the context of the same expert’s preceding testimony that “in a broad interpretation you can say these [seals] are connectors.” Ex. 2004, 162:11–21. Indeed, that broader interpretation is consistent with our interpretation of “connector” as “a device that attaches things together or *joins them together in a fluid-tight sealed manner.*” Moreover, a broader interpretation of “connector” as a “fluid-tight seal” is consistent with the specification of the ’893 patent, which speaks in terms of “connection devices” that “seal” two conduits together. Ex. 1001, 8:28–36 (“connection devices to seal the extension conduit 5b to the mandrel 5 . . . so that the inner bore of the mandrel 5 is continuous with the inner bore of the mandrel extension conduit 5b and is sealed thereto.”); *id.* at 9:16–30 (“sockets and seals in order to connect to the

first mandrel extension conduit just as the first extension conduit 5*b* connects to the mandrel 5, so the mandrel effectively extends continuously through the two processing units 35*b* and 35*c*.”). Given that the ’893 patent itself defines a connector in terms of a “seal,” we are not persuaded by OneSubsea’s contention that Kelly’s disclosure of similar structure somehow fails to meet the broad language of claim 1. To the contrary, we find that Kelly’s disclosure of “connections” for maintaining “sealed communication” between the flow passages in choke module 26 and collet body 22 meets the claimed “connector” elements for the module and flow lines of claim 1.

*“the production line connector being **disposed on a lateral branch** of the subsea tree”*

For this limitation, FMC explains that, when choke module 26 is landed on and connected to collet body 22, “the entire assembly, including the sealing means and the sleeve 84, is supported by, and thus disposed on, the tree.” Pet. 11 (citing Ex. 1003 ¶ 21). More specifically, FMC’s expert testifies that a skilled artisan would view Kelly’s choke as disposed on the subsea tree “because the choke is physically supported on [the] tree’s lateral branch and receives fluid flow from the tree via the collet body 22.” Ex. 1003 ¶ 21.

OneSubsea responds that Kelly’s choke module 26 is “disposed on Kelly’s production flowline and not a lateral branch of the tree.” PO Resp. 28. We disagree. OneSubsea’s argument is premised on the false assumption that Kelly’s lines 20 and 24 are “flowlines and not a lateral branch of [] Kelly’s tree because they extend outside the subsea tree . . .” *Id.* at 29; *see also id.* at 32 (“they are pipelines extending outside the tree”).

That assumption is wrong for the notable reason that Kelly states expressly that “line 24 connects from collet body 22 to the subsea flowline (not shown).” Ex. 1004, 2:24–25 (emphasis added). That disclosure in Kelly indicates that the flowline, unseen in figure 1, begins at the terminus of line 24, while the components actually shown, comprise the tree. And, given our construction of “tree” as the assembly of components “installed between the wellhead and the flowline,” it follows that choke module 26 is disposed on Kelly’s tree rather than on the unseen flowline.

Indeed, Kelly recognizes that “adjustable chokes could be installed directly onto the subsea trees” and identifies collet body 22 as the location where Kelly’s retrievable choke 26 is landed and installed on the tree. Ex. 1004, 1:35–36 (emphasis added), 1:60–64. That Kelly’s collet body 22 lies outside of Kelly’s guide posts 14 runs counter to OneSubsea’s argument that “the tree frame” defines the “bounds” of the subsea tree. PO Resp. 33–37 (annotating figures 1 and 2 of Kelly to depict collet body 22 and choke module 26 outside of subsea frame 14). As such, we find that a skilled artisan would have considered Kelly’s line 20, collet body 22, and line 24 to be a lateral branch of the subsea tree to which Kelly’s retrievable choke module 26 is connected. We are not persuaded by OneSubsea’s argument to the contrary.⁷

⁷ Equally unpersuasive is OneSubsea’s argument that Kelly alternatively refers to collet body 22 as a “flowline body.” PO Resp. 31. That argument falls short because, as mentioned earlier, anticipation is not an “*ipsissimis verbis*” test. *In re Bond*, 910 F.2d at 832. Moreover, even OneSubsea’s expert acknowledges that the term “flowline” is used interchangeably in the art with a host of other terms (*e.g.*, flowpath or pipe) that simply refer to fluid conduits carrying flow. Ex. 1016, 54:20–55:4 (“[I]t’s just a pipe. Sometimes it would be called a flow line. Sometimes it would just be called

Aside from the limitations discussed above, OneSubsea does not further dispute FMC's analysis of how Kelly anticipates claim 1. PO Resp. 23. We have considered fully the evidence and arguments presented by FMC mapping Kelly's disclosure to the remaining elements of claim 1. *See* Pet. 6–7 (“An assembly mountable to a subsea tree and a subsea production flowline”); 7–8 (“the subsea tree including a production line”); 11–12 (“said module defining a fluid flow passageway therein, whereby said subsea tree is in fluid communication with said production flowline only through said module and only after said module is connected to said subsea tree and said production flowline”). We find persuasive FMC's analysis of the remaining elements of claim 1, and adopt FMC's reasoning as our own. As such, we find that, in addition to the claim limitations discussed above, Kelly also meets the remaining limitations of claim 1. Accordingly, after considering the parties' evidence and arguments, we determine that FMC has demonstrated by a preponderance of the evidence that claim 1 is unpatentable for anticipation by Kelly.

2. *Claims 2, 4, 6–9, 11, 15, and 17*

FMC argues that each of independent claims 8 and 15, as well as dependent claims 2, 4, 6, 7, 9, 11, and 17, are also anticipated by Kelly. Pet. 12–17. OneSubsea does not dispute FMC's evidence of anticipation with respect to these claims beyond the reasons it advances for patentability of claim 1. PO Resp. 39–41. We have considered fully the evidence and arguments presented by FMC explaining how Kelly discloses each of the elements of challenged claims 2, 4, 6–9, 11, 15, and 17. *See* Pet. 12–17

a passage, a pipe connecting the bottom of the wing block to the next component.”).

(citing Ex. 1003 ¶¶ 15, 18, 20, 21, 24). We find FMC’s evidence and arguments persuasive, and adopt FMC’s reasoning as our own.

Accordingly, we determine that the preponderance of the evidence weighs in favor of FMC’s proof that, like claim 1 above, claims 2, 4, 6–9, 11, 15, and 17 also are unpatentable as anticipated by Kelly.

D. Obviousness Over Kelly and Andersen

FMC contends that claims 1, 2, 4–9, 11–15, and 17–19 are unpatentable for obviousness over Kelly and Andersen. Pet. 17. For the most part, FMC relies on Kelly as disclosing the elements of the challenged claims and refers back to its anticipation analysis in support thereof. *Id.* at 17–33. But for the claimed “connector” elements, FMC additionally relies on Andersen’s teaching of “connectors and hubs” for attaching a retrievable choke module between a subsea tree and production flowline. *Id.* at 18–20 (citing Ex. 1006, Fig. 17).

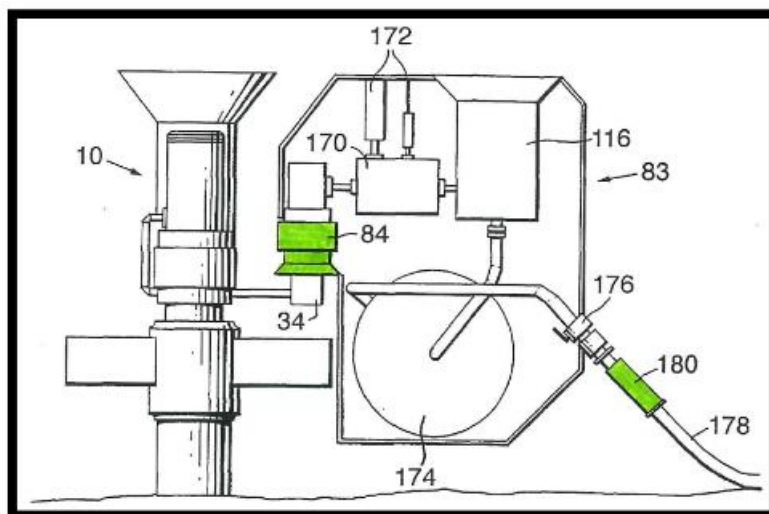
OneSubsea, in turn, raises two points of contention with FMC’s combination of Kelly and Andersen, *first*, that FMC’s combination does not teach the limitation of “the production line connector being disposed on a lateral branch of the subsea tree,” and, *second*, that a skilled artisan “would not combine the references as argued by FMC.” PO Resp. 41–42. To begin, we address each of these contentions in the context of independent claim 1.

1. Independent Claim 1

For the claimed “connector” elements of claim 1, FMC begins by noting that Kelly’s “collet body 22 and seal assemblies” provide the necessary “hubs and connectors for fluidically coupling” a retrievable choke module to the branch of a subsea tree (line 20) and a production flowline (not shown). Pet. 18 (referencing its anticipation analysis). If Kelly alone is

not sufficient, however, FMC points to Andersen for teaching the claimed “connector” elements. *Id.* According to FMC, “[i]t also would have been obvious, in view of Andersen, to provide a module with connectors and hubs at opposing sides of the module.” *Id.*

Similar to Kelly’s retrievable choke module, FMC identifies Andersen’s “flow control package” as a module, and further notes Andersen’s disclosure that the flow control package “may be installed and retrieved independently” of other components within the subsea tree and “may also contain a production choke.” *Id.* (citing Ex. 1006, 6:6–24, 8:2–5). For meeting the claimed “connector” elements, FMC proffers annotated figure 17 of Andersen, reproduced below, to illustrate how Andersen’s flow control module 83 is connected, first, to a branch of subsea tree 10 via “hub connector 84,” and to production flowline 178 via “flowline connector 180.” Pet. 19 (citing Ex. 1006, 16:10–21); *see also* Ex. 1006, 10:9–15, 11:20–21, 12:30–13:4.



Andersen, Fig. 17 (annotated)

Annotated figure 17 above shows Andersen's connectors (highlighted in green) at opposing sides of the flow control module. According to FMC, Andersen's retrievable flow control module 83 is "analogous" to Kelly's retrievable choke module 26 such that a skilled artisan would have modified Kelly's retrievable module 26 "to include the arrangement of connectors and hubs disclosed by Andersen." Pet. 18, 20. FMC explains that, rather than utilizing Kelly's collet body 22 to make a unitary fluid connection with the twin passages in Kelly's retrievable module, a skilled artisan would have recognized the benefit of using Andersen's hub connector 34, 84 to form a separate fluid connection between Kelly's branch line 20 and choke module 26, and using Andersen's flowline connector 180 to form another separate fluid connection with Kelly's branch line 24 and unseen subsea flowline. *Id.* at 18–20. Alternatively, FMC argues that a skilled artisan also would have understood that the entirety of Andersen's retrievable module (*i.e.*, flow control package 83) could be substituted for Kelly's retrievable module 26 so as to include Andersen's arrangement of connections at opposite sides of the module (*i.e.*, connectors 84, 180). *Id.* at 20.

We agree with FMC that a skilled artisan would have recognized the benefit of modifying Kelly's retrievable module to incorporate Andersen's teachings of separate and independent connectors for the module. More specifically, a skilled artisan would have understood that substituting Andersen's independent connectors for Kelly's unitary collet body-type connection "increases flexibility of the installation by allowing the subsea flowline to be connected and disconnected from the module separately from connecting and disconnecting the module from the tree." See Pet. 21 (citing Ex. 1003 ¶ 27); see also Ex. 1006, 5:25–27 (explaining that separate

connectors “provid[e] greater flexibility as regards installation and retrieval and which reduce the interdependence between key components during such procedures”). In other words, using Andersen’s separate and independent connectors would permit the unseen production flowline in Kelly to be disconnected from the module without also having to disconnect the module from the tree.

In essence, FMC’s proposed modification of Kelly involves nothing more than dividing Kelly’s integrally-formed passages 64 and 66 into separate parts such that they are connected independently to the module rather than part of the same structure. Moreover, replacing Kelly’s retrievable choke module with Andersen’s flow control module involves nothing more than the simple substitution of one known element for another to obtain predictable result of separate connections that “facilitate installation of the system by allowing the tree, module and flowline to be installed as smaller, more easily handled, separate pieces.” Ex. 1003 ¶ 27. Accordingly, we find that a skilled artisan would have had sufficient reason to combine Kelly and Andersen.

OneSubsea argues in response that, even if Kelly was modified to include Andersen’s connectors, the modification would not result in the production line connector “being disposed on a lateral branch of the subsea tree,” as required by the claims. PO Resp. 41, 47. We disagree. As discussed above with respect to Kelly alone, we find that collet body 22 is incorporated on a “branch” of Kelly’s tree, which, properly construed, is simply an “offshoot from a main flowpath or axis of a tree.” *See supra* section III.C.1. We further find that Andersen likewise teaches positioning its hub connectors 34, 84 on a lateral branch of the tree by disclosing “a

wellhead from which extends a production fluid conduit . . . *characterised [sic] in that a continuation of the production fluid conduit extending away from the well head is releasably coupled to the flow control package.*” Ex. 1006, 6:6–7 (emphasis added). That the “production fluid conduit” and its “continuation” are described as “extending away from the well head” suggests they are a “branch” or “offshoot” of the well head. Accordingly, we find that Kelly as modified to incorporate Andersen’s connectors 34, 84 meets the limitation of “the production line connector being disposed on a lateral branch of the subsea tree,” as required by claim 1.

OneSubsea also argues that a skilled artisan would not have combined Kelly and Andersen because such a modification would have undermined the central aspect of Kelly—the easy and independent retrieval of the subsea choke assembly. PO Resp. 42. We disagree for the simple reason that Andersen has the same objective. OneSubsea ignores that Andersen is directed specifically to wellhead components that “provid[e] greater flexibility as regards installation and retrieval and which reduce the interdependence between key components during such procedures.” Ex. 1006, 5:25–27. Moreover, in keeping with that express objective, Andersen explains that “[t]he flow control package may be installed or retrieved *independently* of completion components located within the wellhead.” *Id.* at 6:22–24. Thus, far from undermining Kelly’s primary objective, a skilled artisan would have understood that the modification of Kelly to include Andersen’s connectors actually bolsters, not hinders, independent retrieval of Kelly’s choke module by providing greater flexibility in terms of separate and independent connections to the tree and flowline.

With respect to the other limitations of claim 1, OneSubsea fails to present any further arguments to support patentability beyond challenging the reason to combine Kelly and Andersen and the combination's lack of disclosing the connector "being disposed on a lateral branch of the subsea tree." See PO Resp. 47. We have fully considered the evidence and arguments presented by FMC explaining how Kelly, either alone or as modified by Andersen, teach the other limitations of claim 1. See Pet. 19–23, 35, 44–47. We find FMC's reasoning persuasive and adopt it as our own. Accordingly, we determine that the preponderance of the evidence weighs in favor of FMC's proof that claim 1 is unpatentable for obviousness over Kelly and Andersen.

2. *Independent Claims 5, 8, 12, 15, and 19 and Dependent Claims 2, 4, 6, 7, 9, 11, 13, 14, 17, and 18*

FMC argues that each of independent claims 5, 8, 12, 15, and 19, as well as dependent claims 2, 4, 6, 7, 9, 11, 13, 14, 17, and 18, also would have been unpatentable for obviousness over Kelly and Andersen. Pet. 24–33; Pet. Reply 28. OneSubsea does not dispute FMC's evidence of obviousness with respect to these claims except to repeat the same arguments it advances for patentability of claim 1 over Kelly and Andersen, which we reject as discussed above. See PO Resp. 47–49 (citing Ex. 2006 ¶¶ 105, 106). We have considered fully the evidence and arguments presented by FMC explaining how Kelly, either alone or as modified by Andersen, teaches the limitations of all these claims. See Pet. 24–33 (citing Ex. 1003 ¶¶ 20, 26, 28 and cross-referencing earlier analysis). We find FMC's evidence and arguments persuasive, and adopt FMC's reasoning as our own. Accordingly, we determine that the preponderance of the evidence

weighs in favor of FMC's proof that claims 2, 4–9, 11–15 and 17–19 are unpatentable for obviousness over Kelly and Andersen.

IV. CONCLUSION

After considering the evidence and arguments presented in the Petition and Response, as well as the Reply and Sur-Reply, we determine that FMC has demonstrated by a preponderance of the evidence that challenged claims 1, 2, 4, 6–9, 11, 15, and 17 of the '893 patent are unpatentable as anticipated by Kelly, and claims 1, 2, 4–9, 11–15 and 17–19 are unpatentable for obviousness over Kelly and Andersen.

V. ORDER

Accordingly, it is hereby:

ORDERED that claims 1, 2, 4–9, 11–15 and 17–19 of the '893 patent are *unpatentable*;

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

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