

**United States Court of Appeals  
for the Federal Circuit**

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**EMERACHEM HOLDINGS, LLC,**  
*Appellant*

**v.**

**VOLKSWAGEN GROUP OF AMERICA, INC.,**  
*Appellee*

**JOSEPH MATAL, PERFORMING THE FUNCTIONS  
& DUTIES OF THE UNDER SECRETARY OF  
COMMERCE FOR INTELLECTUAL PROPERTY  
AND DIRECTOR, U.S. PATENT & TRADEMARK  
OFFICE,**  
*Intervenor*

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2016-1984

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Appeal from the United States Patent and Trademark  
Office, Patent Trial and Appeal Board in No. IPR2014-  
01558.

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Decided: June 15, 2017

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MICHAEL J. BRADFORD, Ludeka Neely Group, PC,  
Knoxville, TN, argued for appellant. Also represented by  
JACOBUS C. RASSER, Amsterdam, The Netherlands.

STEVEN F. MEYER, Locke Lord LLP, New York, NY, argued for appellee. Also represented by SETH J. ATLAS, JOSEPH ANTHONY FARCO.

FRANCES LYNCH, Office of the Solicitor, United States Patent and Trademark Office, Alexandria, VA, argued for intervenor. Also represented by NATHAN K. KELLEY, SCOTT WEIDENFELLER, MONICA BARNES LATEEF.

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Before MOORE, CLEVINGER, and CHEN, *Circuit Judges*.

MOORE, *Circuit Judge*.

EmeraChem Holdings, LLC (“EmeraChem”) appeals from a decision of the Patent Trial and Appeal Board (“Board”) that claims 1–14 and 16–20 of U.S. Patent No. 5,599,758 (“the ’758 patent”) would have been obvious over U.S. Patent No. 5,451,558 (“Campbell ’558”), Japanese Patent Application No. 62-106826 (“Saito”), and U.S. Patent No. 5,362,463 (“Stiles”). For the reasons set forth below, we affirm the Board’s decisions as to claims 1–2, 4–14, and 17–19 and vacate and remand as to claims 3, 16, and 20.

#### BACKGROUND

The ’758 patent claims methods for regenerating a devitalized catalyst/absorber that has absorbed and oxidized nitrates and nitrites after extended exposure to pollutants in the combustion gases of engines. ’758 patent at Abstract, 1:6–9. The catalyst/absorber is revitalized for reuse by passing a regeneration gas over it. *Id.* at 2:47–50. The regeneration gas consists of a reactant gas that reduces and removes the oxidized pollutants from the catalyst/absorber and an inert carrier gas. *Id.* at 2:55–3:3. Regeneration can be carried out in situ, without removing and replacing the catalyst with a fresh, unreacted one. *Id.* at 2:19–24, 2:38–41.

The application for the '758 patent was filed on December 23, 1994, and the patent issued on February 4, 1997. Eugene D. Guth and Larry E. Campbell are named co-inventors. The '758 patent incorporates Campbell '558 in its entirety. The application for Campbell '558 was filed on February 4, 1994, and the patent issued on September 19, 1995. Mr. Campbell, Robert Danziger, Mr. Guth, and Sally Padron are named co-inventors of Campbell '558. Mr. Guth is deceased. Campbell '558 discloses a catalyst/absorber used to absorb and oxidize pollutants from exhaust gas. '758 patent at 1:57–2:15. Unlike the '758 patent's invention that allows for in situ regeneration of the catalyst/absorber, Campbell '558 requires removal of the catalyst/absorber from the exhaust system when it ceases to be effective. *Id.* at 2:16–33.

Volkswagen Group of America, Inc. ("Volkswagen") petitioned for inter partes review ("IPR") of claims 1–14 and 16–20 of the '758 patent on four grounds. Grounds 1–3 alleged anticipation of various claims by U.S. Patent No. 5,406,790 ("Hirota"), European Patent App. Publ. No. 560,991 ("Takeshima"), and Saito. Ground 4 alleged claims 1–14 and 16–20 would have been obvious under 35 U.S.C. § 103(a) over the combination of Campbell '558 and either Hirota or Saito, in view of Stiles.

Volkswagen included in its petition a claim chart specifically identifying the grounds for each challenged claim. It introduced the claim chart by stating, "Claim charts identifying specific portions of Campbell (Ex. 1003) that support, in combination with Hirota (Ex. 1006) or Saito (Ex. 1008), a showing that claims 1–14 and 16–20 are obvious over the combination of Campbell and either Hirota or Saito, are provided below." J.A. 118. Relevant to this appeal, the claim chart only cited to Saito for dependent claims 3, 16, and 20. J.A. 123, 127, 129.

The Board instituted review on all four grounds. Its Institution Decision provided an itemized list of challenged claims and identified specific references as grounds for rejection as to each. J.A. 175–76. Relevant to this appeal, it only identified Saito for claims 3, 16, and 20. *Id.*

The Board rejected claims in its final written decision based only on Volkswagen’s fourth ground. It determined Campbell ’558 is prior art under 35 U.S.C. § 102(e), rejecting Mr. Campbell’s inventor declaration (the “Campbell Declaration”) that stated he and Mr. Guth solely invented the subject matter relied upon by Volkswagen from Campbell ’558. It noted that EmeraChem did not call Mr. Danziger or Ms. Padron as witnesses and did not offer any contemporaneous documentary evidence in support of the Campbell Declaration. It agreed with Volkswagen that EmeraChem failed to explain the inventorship assertions in the Campbell Declaration and determined that the Campbell Declaration was “2015 *uncorroborated* testimony by an *interested* witness about events occurring prior to 1995—a period of at least *twenty years*.” J.A. 31 (emphasis in original). It determined “Hirota need not be relied upon when analyzing obviousness vis-à-vis the prior art combination of Campbell, Saito, and Stiles,” and concluded that “claims 1–14 and 16–20 of the ’758 patent are unpatentable under 35 U.S.C. § 103(a).” J.A. 43, 54. It relied on Stiles to disclose claim 3’s carbon dioxide gas limitation and claims 16 and 20’s steam limitation. J.A. 44–45.

EmeraChem appeals. It argues Campbell ’558 is not § 102(e) prior art and that it did not have sufficient notice and opportunity to respond to Stiles as grounds for rejecting dependent claims 3, 16, and 20. The Director of the United States Patent and Trademark Office (“PTO”) intervened to defend the Board’s decision. We have jurisdiction pursuant to 28 U.S.C. § 1295(a)(4)(A).

## DISCUSSION

We review the Board’s legal conclusions de novo and its factual findings for substantial evidence. *In re Gartside*, 203 F.3d 1305, 1316 (Fed. Cir. 2000). Whether a reference qualifies as prior art under 35 U.S.C. § 103 is a legal question we review de novo. *Riverwood Int’l Corp. v. R.A. Jones & Co.*, 324 F.3d 1346, 1352 (Fed. Cir. 2003). We review the Board’s procedures for compliance with the Administrative Procedure Act (“APA”) de novo, under which we must “hold unlawful and set aside agency action . . . not in accordance with the law [or] . . . without observance of procedure required by law.” 5 U.S.C. § 706; *Dell Inc. v. Acceleron, LLC*, 818 F.3d 1293, 1298 (Fed. Cir. 2016); *In re NuVasive, Inc.*, 841 F.3d 966, 970 (Fed. Cir. 2016).

## A. Campbell ’558 Is § 102(e) Prior Art

Section 102(e) provides, “A person shall be entitled to a patent unless—(e) the invention was described in a patent granted on an application for patent *by another* filed in the United States before the invention thereof by the applicant for patent . . . .” 35 U.S.C. § 102(e) (emphasis added).<sup>1</sup> The statute’s reference to “by another” means that an application issued to the same inventive entity cannot qualify as § 102(e) prior art. *Riverwood Int’l Corp.*, 324 F.3d at 1355–56. Here, the patents were issued to different groups of listed inventors. Campbell ’558 issued to Mr. Campbell, Mr. Danziger, Mr. Guth, and Ms. Padron. The ’758 patent issued to Mr. Guth and Mr. Campbell. However, the relevant question is not

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<sup>1</sup> Because the ’758 patent has an effective filing date before the enactment of the Leahy-Smith America Invents Act (“AIA”), Pub. L. No. 112–29, 125 Stat. 284 (2011), the pre-AIA version of 35 U.S.C. § 102(e) applies in this appeal.

whether the references list different inventors, but “whether the portions of the reference relied on as prior art, and the subject matter of the claims in question, represent the work of a common inventive entity.” *Id.* at 1356.

EmeraChem argues the cited portions of Campbell ’558 are not “by another” and do not qualify as § 102(e) prior art because the Campbell Declaration unequivocally states that Mr. Campbell and Mr. Guth solely conceived of and invented the subject matter in Campbell ’558 that is cited against the ’758 patent. It argues the Campbell Declaration alone is sufficient to demonstrate a common inventive entity. Relying on this reasoning, it argues the Board erred in holding Campbell ’558 is § 102(e) prior art. We do not agree.

The Campbell Declaration by itself fails to demonstrate that the portions of Campbell ’558 relied upon as prior art and the subject matter at issue in the ’758 patent share a common inventive entity. In addition to declaring “Eugene D. Guth and I are the sole inventors of all inventions claimed in U.S. Patent No. 5,599,758,” Mr. Campbell stated, “Eugen [sic] D. Guth and I solely conceived of and invented the following subject matter disclosed in U.S. Patent No. 5,451,558.” J.A. 1105. This declaration amounts to a naked assertion by an inventor that he and a co-inventor are the true inventors of the passages cited. Nothing in the declaration itself, or in addition to the declaration, provides any context, explanation, or evidence to lend credence to the inventor’s bare assertion.

We do not hold that corroboration of an inventor’s declaration is required in every case, but we recognize that corroborating an inventor’s testimony is a well-established principle in our case law. *See e.g., Coleman v. Dines*, 754 F.2d 353, 359 (Fed. Cir. 1985); *Price v. Symsek*, 988 F.2d 1187, 1194 (Fed. Cir. 1993); *Sandt Tech., Ltd. v.*

*Resco Metal & Plastics Corp.*, 264 F.3d 1344, 1350 (Fed. Cir. 2001). For example, where an inventor tries to prove prior conception, the “inventor’s testimony, standing alone, is insufficient to prove conception—some form of corroboration must be shown.” *Price*, 988 F.2d at 1194. We have treated uncorroborated testimony from an alleged inventor asserting priority with skepticism. *Id.* This concept stems from the concern that “inventors . . . would be tempted to remember facts favorable to their case by the lure of protecting their patent or defeating another’s patent.” *Mahurkar v. C.R. Bard, Inc.*, 79 F.3d 1572, 1577 (Fed. Cir. 1996). These concerns particularly arise when uncorroborated testimony comes from an interested person recalling long-past events. *Woodland Trust v. Flowertree Nursery, Inc.*, 148 F.3d 1368, 1369 (Fed. Cir. 1998); cf. *T.H. Symington Co. v. Nat’l Malleable Castings Co.*, 250 U.S. 383, 386 (1919) (“This court has pointed out that oral testimony tending to show prior invention as against existing letters patent is, in the absence of models, drawings, or kindred evidence, open to grave suspicion; particularly if the testimony be taken after the lapse of years from the time of the alleged invention.” (citation omitted)).

There are similar concerns in this case. Mr. Campbell did not call Mr. Danziger or Ms. Padron as witnesses or produce any contemporaneous documentary evidence in support of the Campbell Declaration. Relying on the declaration alone entails relying on an assertion by an inventor with an interest at stake that the portions of a patent issued years earlier, and relied upon now as prior art, were not “by another.” The Board acknowledged this same concern when it stated, “[w]e decline to credit the Campbell [Declaration], principally because there is *no contemporaneous documentary evidence confirming events taking place a long time ago* reported to us via a witness having an *interest* in the case.” J.A. 32 (emphasis in original).

EmeraChem relies upon our predecessor court's decision in *In re DeBaun*, 687 F.2d 459 (C.C.P.A. 1982), to argue Mr. Campbell did not need to corroborate his declaration. In *DeBaun*, Appellant Kenneth DeBaun sought reissue of a patent. *Id.* at 460. The claims for the "equalizer honeycomb section 4" were rejected over an earlier-filed patent that issued to Mr. DeBaun and Robert Noll. *Id.* The CCPA reaffirmed that, absent a time bar to his application, Mr. DeBaun's own work could not be used against him as a reference. *Id.* at 462.

To overcome the rejection, Mr. DeBaun filed an inventor declaration to which he attached drawing No. 73-315. *Id.* at 461. He explained that the drawing "illustrates . . . an apparatus having open-ended honeycomb velocity equalizing sections as originally conceived by [him]" and that the drawing was provided to patent counsel to prepare a patent application for the system he co-invented with Mr. Noll which resulted in the '678 patent. *Id.* He declared that, "[i]nsofar as the invention of [his] pending application Serial No. 952,695 is suggested by drawing No. 73-315, or by anything contained in [the '678 patent], it was originally conceived by [him] and described to patent counsel prior to June 1, 1973." *Id.* at 461-62. The CCPA held that "[o]n the basis of the record here, which includes appellant's unequivocal declaration that he conceived anything in the '678 patent disclosure which suggests the invention claimed in his present application, th[e] question [of whether what was constructively reduced to practice was appellant's own conception] has been satisfactorily answered." *Id.* at 463.

*DeBaun* does not stand for the proposition that a declaration alone is always sufficient to support an inventor's claim to inventorship. The CCPA recognized that "it was incumbent on appellant to provide satisfactory evidence, in light of the total circumstances of the case, that the reference reflected his own work." *Id.* at 463. It concluded that Mr. DeBaun had successfully done so, noting that

“[o]n the basis of the record here,” Mr. DeBaun made a sufficient showing that what was allegedly constructively reduced to practice was his own conception. *Id.* (emphasis added). EmeraChem relies on the Board’s indication that the record included Mr. DeBaun’s unequivocal declaration, but EmeraChem fails to recognize that the record also included Mr. DeBaun’s drawing.

The CCPA’s decision in *In re Katz*, 687 F.2d 450 (C.C.P.A. 1982), does not alter our conclusion. In *Katz*, Appellant David Katz challenged the PTO’s rejection of his patent application in light of an article published by him and two co-authors eight months before his effective filing date. *Id.* at 452–53. Mr. Katz filed a declaration to demonstrate that the article’s description of the subject matter in his application was a description of his own work, and not that of his co-authors. *Id.* at 452. He declared that while he was a co-author of the publication at issue, “he is the sole inventor of the subject matter which is disclosed in said publication.” *Id.* Moreover, he declared that “[t]he other authors of the publication . . . were students working under [his] direction and supervision . . . and while coauthoring the publication, are not co-inventors of the subject matter described therein.” *Id.*

In holding that the publication was not prior art, the CCPA relied on Mr. Katz’s explanation that his co-authors were students under his direction and supervision: “This statement is of significance since it provides a clear alternative conclusion to the board’s inference that their names were on the article because they were coinventors.” *Id.* at 455. Based on this record and the totality of the circumstances, it concluded Mr. Katz made a sufficient showing that the publication disclosed his invention. *Id.* at 456.

In light of *DeBaun* and *Katz*, the Campbell Declaration is insufficient to demonstrate that the cited portions

of Campbell '558 are not “by another.” Both *DeBaun* and *Katz* required more than a naked assertion by the inventor. Mr. DeBaun included an attached drawing, and Mr. Katz provided an additional explanation as to the facts in his case.

We do not suggest that an inventor must produce contemporaneous documentary evidence in every case to support his or her declaration. A number of factors may guide the corroboration assessment, including the time period between the event and trial and the interest of the corroborating witness in the subject matter in suit. *Woodland*, 148 F.3d at 1371. We have recognized that contemporaneous documentary evidence can serve as “the most reliable proof that the inventor’s testimony has been corroborated.” *Sandt*, 264 F.3d at 1351. But it is “[a]n evaluation of *all* pertinent evidence [that] must be made so that a sound determination of the credibility of the inventor’s story may be reached.” *Price*, 988 F.2d at 1195 (emphasis in original).

And it cannot be the case that the high degree of corroboration emphasized in *Woodland Trust* and *Sandt* is required across the board, especially since those cases did not overrule *Katz*. In certain cases, we have recognized that even non-documentary, circumstantial evidence may sufficiently corroborate. See *Knorr v. Pearson*, 671 F.2d 1368, 1373–74 (C.C.P.A. 1982) (concluding that sufficient circumstantial evidence of an independent nature corroborated the junior party’s testimony as to actual reduction to practice in an interference proceeding); *In re Jolley*, 308 F.3d 1317, 1328 (Fed. Cir. 2002) (stating “corroboration may be provided by sufficient independent circumstantial evidence” and such evidence included testimony of other witnesses as to an inventor’s reasonable diligence in an interference proceeding).

We merely hold in this case that the Campbell Declaration is insufficient to demonstrate that the cited por-

tions of Campbell '558 are not “by another.” The Board did not err in holding Campbell '558 is § 102(e) prior art. For these reasons, and because EmeraChem does not challenge claims 1–2, 4–14, and 17–19 on any other grounds, we affirm the Board’s decision as to these claims.<sup>2</sup>

#### B. APA Notice and Opportunity to Respond

EmeraChem contends the Board violated the APA’s requirements of notice and an opportunity to respond because it did not receive adequate notice of or an opportunity to respond to the Board’s reliance on Stiles for determining claims 3, 16, and 20 of the '758 patent would have been obvious. We agree.

In a formal adjudication, like an IPR, the APA imposes particular procedural requirements on the USPTO. *Dell*, 818 F.3d at 1301. The agency must timely inform the patent owner of “the matters of fact and law asserted,” give all interested parties the opportunity to submit and consider facts and arguments, and allow a party “to submit rebuttal evidence . . . as may be required for a full and true disclosure of the facts.” 5 U.S.C. §§ 554(b)–(c), 556(d); *Dell*, 818 F.3d at 1301. Here, the Board denied EmeraChem its procedural rights guaranteed by the APA by relying on Stiles for its disclosure of limitations in dependent claims 3, 16, and 20.

We reject Volkswagen and PTO Intervenor’s arguments that EmeraChem had sufficient notice because the

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<sup>2</sup> EmeraChem cites to various provisions from the PTO’s Manual of Patent Examining Procedure (“MPEP”), which EmeraChem contends provide a different reading of *DeBaun* and *Katz* than our opinion today. See MPEP §§ 715.01(a), 715.01(c)(I), and 2136.05. To the extent the MPEP describes our case law differently, however, that interpretation does not control.

petition for IPR included broad, general statements concerning obviousness that mention Stiles. Although Volkswagen’s petition stated broadly that “[c]laims 1–14 and 16–20 are obvious under 35 U.S.C. § 103(a) over the combination of Campbell [’558] and either Hirota or Saito, in view of Stiles,” J.A. 81, 114, it went on in a detailed claim chart to identify, claim-by-claim and element-by-element, the specific portions of the prior art references it believed supported obviousness. For claim 3, Volkswagen cited Saito as disclosing the claim’s carbon dioxide gas limitation. J.A. 123. For claims 16 and 20, it cited to a different portion of Saito as disclosing the claims’ steam limitation. J.A. 127, 129. For these dependent claims, Saito was the only reference listed. Yet for claim 17, Volkswagen cited to portions of Saito, Hirota, and Stiles as disclosing the claim’s nitrogen and hydrogen gas limitations. J.A. 128.

We likewise reject Volkswagen and PTO Intervenor’s argument that the Institution Decision provided EmeraChem with sufficient notice of the Board’s reliance on Stiles. The Board declared in its Institution Decision that “claims 1–14 and 16–20 of the ’758 patent [are] likely unpatentable under 35 U.S.C. § 103(a) over Campbell, Hirota, Saito, and Stiles.” J.A. 177. Stiles is identified as a potentially contributing reference in this broad statement regarding obviousness. But the Institution Decision likewise listed claims 2–20 and identified, claim-by-claim, specific portions of the prior art references on which it was instituting review. For claims 3 and 16, the Board expressly cited Saito. J.A. 175–76. For claim 20, it cited to page 60 of Volkswagen’s petition, which set out the claim chart identifying a portion of Saito for claim 20. *Id.* For these three dependent claims, the Board never referenced anything other than Saito. Yet for claims 8–10, 18, and 19, it cited Stiles, and for claim 17, it cited to page 59 of Volkswagen’s petition, which set out the claim chart identifying Saito, Hirota, and Stiles for claim 17. *Id.*

Given the specificity with which the petition's claim chart and the Institution Decision's list of claims expressly identified particular references' disclosures for some claims and not for others, it cannot be the case that the general statements Volkswagen relies upon provided sufficient notice that Stiles could be applied to all claims. Where the petitioner uses certain prior art references to target specific claims with precision, or the Board does the same in its decision to institute, the patent owner is directed to particular bases for alleged obviousness. A general statement that lists all challenged claims and all asserted prior art is not a separate, additional articulation that *each* of the claims may be obvious over any combination of *all* listed prior art.

For it to be true that these general statements provided sufficient notice that Stiles may be relied upon for obviousness as to claims 3, 16, and 20, in addition to the specific grounds for rejection listed in the petition's claim chart or the Institution Decision's list of claims, it would have been necessary to reject every one of the claims listed in the general statement based on the listed combination of all the references. That did not occur in this case. For example, the general statements in the petition and the Institution Decision include claim 14 within the range of challenged claims and include Hirota within the list of asserted prior art. But no party argues that, in addition to Saito cited in the petition's claim chart and the Institution Decision for claim 14, Hirota also discloses claim 14's limitations.

Volkswagen relies upon *In re Cuozzo Speed Technologies, LLC*, 793 F.3d 1268 (Fed. Cir. 2015), *aff'd*, 136 S. Ct. 2131 (2016), to argue that the Board is not barred from holding claims unpatentable based on a reference the petition did not identify as grounds for those claims. It points out that in *Cuozzo*, the IPR petition set out specific grounds of unpatentability for challenged claims 10, 14, and 17, and while the petition identified the combination

of Evans and Wendt as grounds for claim 17, it did not identify that same combination for claims 10 and 14. *Id.* Volkswagen notes that the Board in its final written decision determined claims 10 and 14 would have been obvious over combinations of prior art that included Evans and Wendt. *Id.* It relies upon *Cuozzo*'s language that:

The fact that the petition was defective is irrelevant because a proper petition could have been drafted. . . . There was no bar here to finding claims 10 and 14 unpatentable based on the Evans and/or Wendt references. The failure to cite those references in the petition provides no ground for setting aside the final decision.

*Id.* at 1274.

But *Cuozzo* is distinguishable. There, the Board instituted IPR and expressly stated in the institution decision that "Petitioner also has shown a reasonable likelihood that it would prevail on demonstrating that claims 10 and 14 would have been obvious over the combined teachings of Aumayer, Evans, and Wendt." *Garmin Int'l, Inc. v. Patent of Cuozzo Speed Techs. LLC*, No. IPR2012-00001, 2013 WL 5947691 (P.T.A.B. Jan. 9, 2013). The Board recognized that the petition did not "specifically articulate a ground of unpatentability against claims 10 and 14 based on Aumayer, Evans, and Wendt," but stated "we exercise discretion to recognize that the assertion was implicitly made by Petitioner's alleging that claim 17 would have been obvious over Aumayer, Evans, and Wendt." *Id.* Thus, in *Cuozzo*, the institution decision gave the patentee notice of the prior art combination that the final decision relied upon. In this case, neither the petition nor the Institution Decision put the patentee on notice that Stiles would be used to reject claims 3, 16, and 20. Rather than identify a reasonable likelihood that Volkswagen would prevail on demonstrating that

claims 3, 16, and 20 would have been obvious over Stiles, the Board expressly adopted the specific grounds Volkswagen proposed for each of these claims, which only cited Saito.

We also reject Volkswagen and PTO Intervenor's arguments that EmeraChem had sufficient notice because the petition block quoted the portion of Stiles the Board ultimately relied upon in its final written decision. In its petition, Volkswagen provided a general summary of what Campbell '558, Stiles, Hirota, and Saito disclose. J.A. 116–17. Among this discussion, it noted “Stiles also discloses that the saturated absorbent can be ‘regenerated for reuse by passing a gas containing from .05 to 10% hydrogen in nitrogen; both carbon dioxide and water vapor can also be present.’” *Id.* at 117 (quoting Stiles at 5:52–55). Volkswagen then restated this same passage from Stiles in its claim chart only for claim 17. It did not reproduce this passage for any of claims 3, 16, or 20. By directing the patent owner to how it believed this portion of Stiles discloses limitations of claim 17 and no other claims, Volkswagen did not suggest that the same block quote would be relied upon for limitations of claims 3, 16, and 20.

The Board's block quoting from Stiles in its Institution Decision likewise did not sufficiently notify EmeraChem that it would later rely on Stiles for claims 3, 16, and 20. In describing what Stiles teaches, the Board stated “[t]he nitrogen oxides can be quickly reduced in situ or be evolved from the adsorbent as a concentrated stream by passing *a gas containing N<sub>2</sub> plus 0.5 to 10% hydrogen* at a temperature of 300° to 350° C.” J.A. 173 (emphasis in original) (quoting Stiles at 4:13–36). It also block quoted the passage from Stiles it ultimately relied upon in its final written decision for disclosing claim 3's carbon dioxide limitation and claims 16 and 20's steam limitation. It stated, “Stiles further teaches: ‘The adsorbent now containing more than 0.2% NO<sub>x</sub> by weight is

regenerated for reuse by passing a *gas containing from .05 to 10% hydrogen in nitrogen*; both carbon dioxide and water vapor can also be present.” J.A. 173–74 (emphasis in original) (quoting Stiles at 5:52–55).

Although this block quote discloses elements that may be relevant to claims 3, 16, and 20, the decision placed this quote in a discussion regarding only claim 1 of the ’758 patent. This discussion of Stiles followed shortly after the Board’s statement that “Hirota, Saito, and Stiles likely overcome any differences between Campbell [’558] and the subject matter of claim 1 of the ’758 patent.” J.A. 168. And immediately following the block quote from Stiles, the Institution Decision explained that “[t]he prior art likely establishes that Patent Owner’s claim 1” would have been obvious. J.A. 174. It is not until a separate, subsequent section titled “[o]ther ’758 patent claims,” that the decision addressed claims 3, 16, and 20. We conclude that EmeraChem was not put on notice that Stiles would be used as grounds for rejecting claims 3, 16, and 20.

Relying on *Genzyme*, Volkswagen contends that the Board can rely on prior art references that were not cited in the Institution Decision. *Genzyme Therapeutic Products L.P. v. Biomarin Pharm. Inc.*, 825 F.3d 1360, 1366 (Fed. Cir. 2016) (“There is no requirement . . . for the institution decision to anticipate and set forth every legal or factual issue that might arise in the course of the trial.”). We do not agree that *Genzyme* permits the Board to rely on Stiles to reject claims 3, 16, and 20. In *Genzyme*, the patent owner alleged the Board violated the APA’s requirements of notice and an opportunity to respond because the Board cited two references in its final written decisions (Kikuchi and van der Ploeg ’91) that were not specifically included in the combinations of prior art on which the Board instituted review. *Id.* at 1366. We determined that “Genzyme had actual notice of the [Kikuchi and van der Ploeg ’91] references and an opportunity to respond to them—an opportunity that Genzyme

took advantage of in arguing that those references could be used only for limited purposes.” *Id.* at 1368. Unlike *Genzyme*, EmeraChem did not have the same notice and opportunity to respond to the Board’s ultimate usage of Stiles against claims 3, 16, and 20, and the prior art was used to establish a claim limitation.

By holding EmeraChem did not receive adequate notice or opportunity to respond with regard to Stiles, we do not hold that the Board is constricted in its final written decision to citing only the portions of a reference cited in its Institution Decision. We do not require “word-for-word parity between the institution and final written decisions.” *Genzyme*, 825 F.3d at 1368 n.4. But in the case before us, the question is not whether the Board cited a *different* passage of Stiles than what it specifically cited in the Institution Decision. *Cf. id.* The question is whether the Board provided adequate notice and opportunity to respond to Stiles being used to reject claims 3, 16, and 20, given the specificity with which the Board itemized the challenged claims with specific grounds for rejection in the Institution Decision. On this question, we find it did not.

Moreover, we note that following the Institution Decision, neither party addressed in briefing or argument Stiles’ application to claims 3, 16, and 20. In its Patent Owner’s Response, EmeraChem addressed Volkswagen’s asserted grounds for obviousness. With respect to claim 3, EmeraChem acknowledged that Volkswagen “cites Saito as disclosing a regenerating gas containing 1 to 15 vol. % of carbon dioxide gas,” and it repudiated this challenge. J.A. 230. With respect to claims 16 and 20, EmeraChem acknowledged that Volkswagen “relies on Saito for disclosure of a regenerating gas comprising steam,” and it repudiated this challenge. J.A. 231–32. Absent from these responses is any mention of Stiles. In contrast, EmeraChem rebutted Volkswagen’s reliance on Stiles with respect to claim 17, for which the petition’s

claim chart and the Institution Decision identified Stiles as a grounds for rejection. J.A. 231. The petitioner's reply also lacked argument that claims 3, 16, and 20 would have been obvious over disclosures in Stiles. At oral argument, Volkswagen conceded that it did not cite Stiles in its petitioner's reply for teaching the carbon dioxide and steam limitations relevant to claims 3, 16, and 20. Oral Arg. at 34:57–35:08.

The fact that neither party ever mentioned Stiles in the context of discussing claims 3, 16, and 20, helps make the point that neither party was on notice that Stiles was at issue as to those challenged claims. We note that Volkswagen's petition did identify Stiles as a motivation to combine, and that the parties debated this issue in the patent owner's response and the petitioner's reply. J.A. 118; J.A. 350 (petitioner's reply stating, "Patent Owner argues that Stiles cannot provide the motivation to combine . . . . See Response at p.30 . . . . Patent Owner is simply wrong."). However the parties' discussion of Stiles is not in the same context as the Board's using it specifically as grounds for rejecting claims 3, 16, and 20. *Cf. Novartis AG v. Torrent Pharm. Ltd*, 853 F.3d 1316 (Fed. Cir. 2017) (determining there was no "surprise" where the parties debated a reference throughout the proceeding in regards to a motivation to combine and the Board's final written decision discussed the reference in the same context and only used the reference as additional evidence to reinforce its finding that a person of ordinary skill in the art would have expected compatibility among two pharmaceutical components). While the nature of the parties' IPR briefing after the Institution Decision cannot change the decision itself, it makes clear in this case that the Institution Decision did not put EmeraChem on notice that Stiles would be used as a grounds for rejecting claims 3, 16, and 20.

### CONCLUSION

For the foregoing reasons, we hold that Campbell '558 is prior art under 35 U.S.C. § 102(e) and affirm the Board's decision as to claims 1–2, 4–14, and 17–19. We hold that the Board violated the APA's requirements of notice and an opportunity to respond with regard to Stiles. EmeraChem argues Stiles was not a part of the grounds for rejection of claims 3, 16, and 20 in either the petition or the Institution Decision. Nor was it the subject of any parties' briefing before the Board in this IPR. Under these circumstances, EmeraChem argues the Board's final written decision should be reversed. While Volkswagen and PTO Intervenor dispute whether there was sufficient notice, neither dispute the proper remedy. Therefore, we consider them to have waived any argument that any remedy other than reversal is appropriate when a new rationale for unpatentability is adopted by the Board in its final written decision. Because we are unable to discern whether the Board found Saito does not disclose the dependent limitations in claims 3, 16, and 20, we vacate the Board's decision as to these claims and remand for clarification.

### **AFFIRMED-IN-PART, VACATED-IN-PART, AND REMANDED**

#### COSTS

Costs to Appellant.