

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

CHINA CHENGDA ENGINEERING CO., LTD.,
Petitioner,

v.

DORIAMO LTD.,
Patent Owner.

IPR2023-00365
Patent 8,591,852 B2

Before JO-ANNE M. KOKOSKI, JEFFREY W. ABRAHAM, and
JANE E. INGLESE, *Administrative Patent Judges*.

ABRAHAM, *Administrative Patent Judge*.

DECISION

Granting Institution of *Inter Partes* Review

35 U.S.C. § 314, 37 C.F.R. § 42.4

Granting Motions to Seal and Entering Protective Order

37 C.F.R. §§ 42.14, 42.54

I. INTRODUCTION

A. *Background and Summary*

China Chengda Engineering Co., Ltd. (“Petitioner”) filed a petition for an *inter partes* review (Paper 2 (“Pet.”)) challenging claims 1–10 of U.S. Patent No. 8,591,852 B2 (Ex. 1001 (“the ’852 patent”)). Doriamo Ltd. (“Patent Owner”) filed a Preliminary Response. Paper 6 (“Prelim. Resp.”).¹ After receiving authorization from the Board, Petitioner filed a Reply to Patent Owner’s Preliminary Response (Paper 8 (“Reply”)) and Patent Owner filed a Sur-reply (Paper 12).² Patent Owner filed a Motion to Seal and For Entry of Protective Order (Paper 7), and Petitioner also filed a Motion to Seal (Paper 9).

We have authority to determine whether to institute an *inter partes* review. 35 U.S.C. § 314 (2018); 37 C.F.R. § 42.4(a) (2022). The standard for instituting an *inter partes* review is set forth in 35 U.S.C. § 314(a), which provides that an *inter partes* review may not be instituted “unless the Director determines . . . there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition.”

For the reasons set forth below, we determine the information presented in the Petition establishes a reasonable likelihood that Petitioner would prevail with respect to at least one of the challenged claims. Accordingly, we institute an *inter partes* review.

¹ Patent Owner filed its Preliminary Response under seal (Paper 6), and filed a public version as well (Paper 11).

² Petitioner filed its Reply under seal (Paper 8), and filed a public version as well (Paper 10). Patent Owner filed its Sur-reply under seal.

B. Real Parties-in-Interest

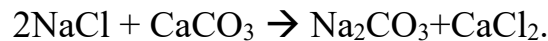
Each party identifies itself as the real party-in-interest. Pet. 1; Paper 4, 2.

C. Related Matters

The parties each state that they are not aware of any related matters. Pet. 1; Paper 4, 2.

D. The '852 Patent (Ex. 1001)

The '852 patent, titled “Method of Producing Soda Ash and Calcium Chloride,” issued on November 26, 2013. Ex. 1001, codes (45), (54). According to the '852 patent, “[t]he most common method of producing soda ash (sodium carbonate) is the Solvay process,” developed during the 1860’s. Ex. 1001, 1:19–22. The Solvay process produces soda ash from brine (as a source of sodium chloride) and limestone (as a source of calcium carbonate) according to the following formula:



Ex. 1001, 1:25–29.

The '852 patent explains that “industrial plants using the Solvay process produce waste and byproducts that may result in environmental problems, such as water pollution from calcium, chloride ions, and salt (NaCl) that accumulates in freshwater streams, ponds, and lakes.” Ex. 1001, 1:30–34. The '852 patent aims to solve this problem by providing an “environmentally friendly” method of producing soda ash and calcium chloride that involves “recovering and recycling effluents and byproducts from a modified Solvay process.” Ex. 1001, 2:16–19.

E. Illustrative Claim

Of the challenged claims, claims 1, 5, and 6 are independent claims. Claim 1 is illustrative and reproduced below.

1. A method of producing soda ash and calcium chloride, comprising the steps of:

providing a source of brine;

providing a source of gaseous ammonia;

ammoniating brine with gaseous ammonia to form ammoniated brine;

heating limestone to produce calcium oxide and carbon dioxide;

reacting the ammoniated brine with the carbon dioxide produced by the step of heating the limestone to produce sodium bicarbonate, ammonium chloride and a brine effluent;

calcining the sodium bicarbonate to decompose the sodium bicarbonate to produce soda ash and gaseous carbon dioxide;

reacting the calcium oxide with the ammonium chloride and brine effluent to produce calcium chloride, brine effluent, and ammonia;

wherein said step of reacting the calcium oxide with the ammonium chloride and brine effluent comprises reacting dry calcium oxide with the ammonium chloride and brine effluent without slaking the calcium oxide produced by heating the limestone;

recycling the ammonia to be used in the step of ammoniating the brine; and

recycling the water from the brine effluent to be used in the step of ammoniating the brine by crystallizing sodium chloride from the mixture of calcium chloride and brine effluent, separating the crystallized sodium chloride from the effluent by centrifuging the effluent, and recycling the crystallized sodium chloride;

evaporating any water remaining to produce water vapor, recovering the produced calcium chloride;

recycling the water vapor and condensing into water;

wherein the crystallized sodium chloride is further used for the providing of fresh brine by combining with the condensed water to continue the method;

collecting the produced calcium chloride;

separating residual salt; and

forming an approximately 77 wt % solution of calcium chloride flakes.

Ex. 1001, 3:14–54.

F. Asserted Unpatentability Challenges

Petitioner asserts that claims 1–10 are unpatentable based on the following challenges:

Claim(s) Challenged	35 U.S.C. §	Reference(s)/Basis
1–10	103	Fu, ³ Xi ⁴
6–9	103	Fu, Hou ⁵
10	103	Fu, Xi, Hou
1–10	103	Fu, Mohler ⁶
10	103	Fu, Mohler, Hou
1–10	103	Du, ⁷ Fu, Hou

Petitioner relies on the declaration of Graeme Norval, Ph.D. (Ex. 1002).

³ PRACTICAL INORGANIC CHEMICAL TECHNOLOGY (Dexue Fu ed., Xi'an Jiaotong University Press, 1999) (Ex. 1003).

⁴ Xi Deli, WASTE-FREE TECHNOLOGICAL PROCESS – A NEW MODE OF INDUSTRIAL DEVELOPMENT (Tsinghua University Press, 1990) (Ex. 1004).

⁵ Hou Debang, Selected Works of Hou Debang (Chen Xinwen ed., Metallurgical Industry Press, 1990) (Ex. 1006).

⁶ US 1,962,150, issued June 12, 1934 (Ex. 1007).

⁷ CN 102145912 A, published October 8, 2011 (Ex. 1005).

II. ANALYSIS

A. *Legal Standards*

“In an [inter partes review], the petitioner has the burden from the onset to show with particularity why the patent it challenges is unpatentable.” *Harmonic Inc. v. Avid Tech., Inc.*, 815 F.3d 1356, 1363 (Fed. Cir. 2016). The burden of persuasion never shifts to Patent Owner. *Dynamic Drinkware, LLC v. Nat’l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015).

A claim is unpatentable under 35 U.S.C. § 103 if “the differences between the claimed invention and the prior art are such that the claimed invention as a whole would have been obvious before the effective filing date of the claimed invention to a person having ordinary skill in the art to which the claimed invention pertains.” 35 U.S.C. § 103. 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 ordinary skill in the art; and (4) when present, objective evidence of nonobviousness. *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

To show obviousness, it is not enough to merely show that the prior art includes separate references covering each separate limitation in a challenged claim. *Unigene Labs., Inc. v. Apotex, Inc.*, 655 F.3d 1352, 1360 (Fed. Cir. 2011). “Rather, obviousness requires the additional showing that a person of ordinary skill at the time of the invention would have selected and combined those prior art elements in the normal course of research and development to yield the claimed invention.” *Id.* (citing *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 421 (2007)). “This is so because inventions in most, if not all, instances rely upon building blocks long since uncovered,

and claimed discoveries almost of necessity will be combinations of what, in some sense, is already known.” *KSR*, 550 U.S. at 418–19. On the other hand, an obviousness analysis “need not seek out precise teachings directed to the specific subject matter of the challenged claim, for a court can take account of the inferences and creative steps that a person of ordinary skill in the art would employ.” *Id.* at 418; *accord In re Translogic Tech., Inc.*, 504 F.3d 1249, 1259 (Fed. Cir. 2007). Nevertheless, “[a] factfinder should be aware . . . of the distortion caused by hindsight bias and must be cautious of arguments reliant upon *ex post* reasoning.” *KSR*, 550 U.S. at 421.

B. Level of Ordinary Skill in the Art

According to Petitioner, a person of ordinary skill in the art would have had “either (i) a Master of Science in Chemical Engineering, or an equivalent field, or (ii) a Bachelor of Science in Chemical Engineering or an equivalent field as well as two years of experience in the manufacturing or process development of inorganic alkali chemicals.” Pet. 14 (citing Ex. 1002 ¶ 41). Patent Owner does not challenge Petitioner’s definition or offer its own.

In light of the record before us, and for purposes of this Decision, we adopt Petitioner’s proposal regarding the level of ordinary skill in the art. Based on our review of the ’852 patent and the prior art of record, we determine that the definition offered by Petitioner comports with the qualifications a person would have needed to understand and implement the teachings of the ’852 patent and the prior art. *See Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001) (explaining that specific findings regarding ordinary skill level are not required “where the prior art itself reflects an appropriate level and a need for testimony is not shown”) (quoting *Litton*

Indus. Prods., Inc. v. Solid State Sys. Corp., 755 F.2d 158, 163 (Fed. Cir. 1985)).

C. Claim Construction

In an *inter partes* review, we construe claim terms according to the standard set forth in *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312–17 (Fed. Cir. 2005) (en banc). 37 C.F.R. § 42.100(b). Under *Phillips*, claim terms are afforded “their ordinary and customary meaning.” *Phillips*, 415 F.3d at 1312. “[T]he ordinary and customary meaning of a claim term is the meaning that the term would have to a person of ordinary skill in the art in question at the time of the invention.” *Id.* at 1313. “Importantly, the person of ordinary skill in the art is deemed to read the claim term not only in the context of the particular claim in which the disputed term appears, but in the context of the entire patent, including the specification.” *Id.*

Petitioner states that for purposes of the Petition, it “interprets all claim terms in accordance with their ordinary and customary meaning.” Pet. 15. Patent Owner does not dispute Petitioner’s statement or offer its own construction for any claim term.

After considering the arguments and information presented in the Petition and Preliminary Response, we determine that we do not need to expressly construe any terms for purposes of this Decision. *See Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017) (citing *Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999) (“[O]nly those terms need be construed that are in controversy, and only to the extent necessary to resolve the controversy.”)).

D. Real Parties-in-Interest

Patent Owner argues that we should deny institution because Petitioner fails to name its “controlling parent corporation” as a real party-

in-interest. Prelim. Resp. 23–24. In particular, Patent Owner contends that Petitioner identifies itself on its own website as a wholly owned subsidiary of China National Chemical Engineering Co., Ltd. (“CNCEC”). Prelim. Resp. 27 (citing Ex. 2017). Patent Owner asserts that a parent-subsidary relationship weighs in favor of finding a parent company to be a real party-in-interest. Prelim. Resp. 27. Patent Owner further asserts that other information that can be “gleaned from public sources” supports a determination that CNCEC is a real party-in-interest. Prelim. Resp. 27–28 (referring to CNCEC’s website (Ex. 2025) that indicates CNCEC is “a share holding company sponsored principally by China National Chemical Engineering Group Corporation in combination with Shen Hua Group Corporation Limited and Sinochem Corporation,” and “is a large comprehensive corporation directly administered by the State Council of China”).

Petitioner argues that it is well established that the Board does not need to consider whether Petitioner has named all real parties-in-interest when “it would not create a time bar or estoppel under 35 U.S.C. § 315.” Reply 3 (quoting *SharkNinja Operating LLC v. iRobot Corp.*, IPR2020-00734, Paper 11 at 18–20 (PTAB Oct. 6, 2019) (precedential)). Petitioner explains that because the ’852 patent has not been asserted in any court and there is no pertinent statutory time bar to any party, the Board does not need consider whether CNCEC must be named as a real party-in-interest at the current stage. Reply 3.

We agree with Petitioner. Here, Patent Owner does not allege that Petitioner’s failure to name all real parties-in-interest has any time bar or estoppel implications. *See* Prelim. Resp. 22–33; Sur-reply 4–5. Accordingly, we do not need to consider whether Petitioner has named all

real parties-in-interest at this stage of the proceeding. *SharkNinja*, Paper 11 at 18–20. We, therefore, decline to exercise discretion to deny institution based on Petitioner’s identification of the asserted real parties-in-interest.

We note, however, that Petitioner bears the burden of persuasion in establishing that all real parties-in-interest have been named. *See Worlds Inc. v. Bungie, Inc.*, 903 F.3d 1237, 1241–1242 (Fed. Cir. 2018).

Petitioner’s identification of the real parties-in-interest is generally accepted at the time of filing the petition, unless the patent owner produces some evidence that tends to show that a particular third party should be named as a real party in interest. *Id.* at 1244. At this preliminary stage of the proceedings, Patent Owner has relied only on public information presently available to it concerning the relationships of CNCEC and Petitioner. *See* Prelim. Resp. 26–28. To the extent necessary, we will consider any requests for related discovery that Patent Owner indicates it may seek during the course of trial. *See, e.g.*, Prelim. Resp. 28–30.

E. [REDACTED]

Patent Owner contends that Petitioner and Patent Owner are bound [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

Prelim. Resp. 9–17. Patent Owner contends [REDACTED]

[REDACTED] and thus argues that we should exercise our discretion under 35 U.S.C. § 314(a) to deny institution because [REDACTED]

[REDACTED] Prelim.

Resp. 10, 14. Patent Owner also argues that the Petition contains a false certification, contrary to the requirement of 37 C.F.R. § 42.104(a), because it

fails to identify that the Petition is [REDACTED]. Prelim. Resp. 14.

Petitioner argues that “[REDACTED]
[REDACTED], would [REDACTED].” Reply 1.
Specifically, Petitioner contends that [REDACTED]

[REDACTED]. Reply 1–2.

Petitioner further contends that [REDACTED]

Petitioner thus argues that Patent Owner [REDACTED]

[REDACTED] Reply 2.

After considering the parties’ arguments and the information of record at this stage of the proceeding, we decline to exercise our discretion under 35 U.S.C. § 314 to deny institution. As Petitioner correctly notes (Reply 1), the Board has consistently refused to deny institution based on [REDACTED]

[REDACTED]. *Samsung Elecs. Am., Inc. v. Kannuu Pty Ltd.*, IPR2020-00738, Paper 22 at 8 (PTAB Sep. 23, 2020); *Bally Gaming, Inc. v. New Vision Gaming & Dev., Inc.*, CBM2018-00006, Paper 47 at 8 (PTAB June 19, 2019) [REDACTED]

[REDACTED]).

Nevertheless, we question whether [REDACTED] applicable to the present proceeding involving the ’852 patent. Patent

Owner's argument that [REDACTED]

[REDACTED]. Prelim.

Resp. 10. As Patent Owner acknowledges, however, [REDACTED]

[REDACTED] Prelim. Resp.

10. Notably, [REDACTED]

Ex. 2002, 1. In view of this, we disagree with Patent Owner's assertion that

[REDACTED] Prelim. Resp. 10.

Additionally, [REDACTED]

[REDACTED] Prelim. Resp. 9.

Furthermore, [REDACTED]

[REDACTED] Ex. 2002, 1. [REDACTED]

[REDACTED] Ex. 2002, 1 (emphasis added).

Accordingly, we agree with Petitioner that [REDACTED]

[REDACTED] Reply 2.

[REDACTED]

Ex. 2002, 5. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED] Prelim Resp. 12 (emphasis added).

Patent Owner directs us to subsequent papers that [REDACTED]

[REDACTED]

[REDACTED]. See Prelim. Resp. 12–14; Ex. 2004;

Ex. 2007; Ex. 2020. But the fact that [REDACTED]

[REDACTED]

does not prove that *Petitioner* considered or understood [REDACTED]

[REDACTED]

[REDACTED]—relates to a United States patent, such that

Petitioner would have expected disputes about the '852 patent [REDACTED]

[REDACTED]. See

Prelim. Resp. 12.

Additionally, Patent Owner notes that the parties [REDACTED]

[REDACTED]

[REDACTED], and asserts that, in view of this, “the Board should not [REDACTED]

[REDACTED].” Prelim. Resp. 22. But contrary to

Patent Owner’s assertions, [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]
[REDACTED] Prelim. Resp. 17–22; Sur-reply 1.

Patent Owner cites several cases in support of its argument that [REDACTED]
[REDACTED], including the Federal Circuit decision
in *Nippon Shinyaku Co. v. Sarepta Therapeutics, Inc.*, 25 F. 4th 998 (Fed.
Cir. 2022). Prelim. Resp. 14–16. The facts in *Nippon*, however, are
distinguishable, as [REDACTED]

[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
Patent Owner also cites to *Kannuu Pty Ltd. v. Samsung Electronics
Co.*, 15 F. 4th 1101, 1106 (Fed. Cir. 2021), to support its argument that [REDACTED]

[REDACTED]
Prelim. Resp. 16. In *Kannuu*, however, the Federal Circuit determined that
inter partes review proceedings did not [REDACTED]

[REDACTED]. *Kannuu*, 15 F. 4th at 1109. [REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

Id. at 1107; Ex. 2002, 1.

In its Sur-reply, Patent Owner argues that [REDACTED]
[REDACTED] because
“Petitioner seeks to cancel the ’852 patent for its benefit, which would allow
U.S. importation of product made by the patented process, without concern
for U.S. patent infringement.” Sur-reply 3. This position, however, is based

solely on attorney argument and speculation that [REDACTED]

[REDACTED]
[REDACTED]
This type of speculation does not warrant a finding [REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

[REDACTED] *See Kannuu*, 15 F. 4th at 1109; *cf. Nippon*, 25 F. 4th at 1002.

For all of the foregoing reasons, we decline to exercise our discretion under 35 U.S.C. § 314 to deny institution based on [REDACTED].

Additionally, because we do not determine that Petitioner is barred from requesting an *inter partes* review based on [REDACTED], Patent Owner's argument that the Petition contains a false certification, contrary to the requirement of 37 C.F.R. § 42.104(a), is moot.

F. Compliance with 37 C.F.R. § 42.63

Patent Owner contends that we should deny institution because Petitioner has failed to comply with Rule 42.63. Specifically, Patent Owner asserts: (1) Petitioner's key translations were not prepared by a sufficiently qualified translator; (2) Petitioner failed to submit complete documents as exhibits; and (3) Petitioner's declarants fail to establish the exhibits are "true and correct" copies of the underlying references. Prelim. Resp. 34–43. Petitioner disputes these assertions, and contends that it has complied with Rule 42.63.

1. Petitioner's Translations

For its challenges, Petitioner relies on several exhibits that contain translations from Chinese into English. *See, e.g.*, Ex. 1003, Ex. 1004, Ex. 1005, Ex. 1006, 1008. Rule 42.63(b) states that "[w]hen a party relies

on a document or is required to produce a document in a language other than English, a translation of the document into English and an affidavit attesting to the accuracy of the translation must be filed with the document.”

37 C.F.R. § 42.63(b).

Patent Owner argues that “[t]o satisfy the Board rules, the translator of the submitted exhibit must be a sufficiently qualified translator.” Prelim. Resp. 34 (citing *Blackberry Corp. v. Zipit Wireless Inc.*, IPR2014-01506, Paper 50 at 8–11 (PTAB Mar. 29, 2016)). Patent Owner asserts that Petitioner’s translations “do not include a verification by a sufficiently qualified translator, such as a professional or certified translator.” Prelim. Resp. 34. Patent Owner further asserts that the verifications Petitioner provides state only that the translator is “*conversant* with the Chinese and English languages,” which is on the “lower end of the [language] proficiency scale.” Prelim. Resp. 35. Accordingly, Patent Owner contends Petitioner’s translator “has not certified to be a sufficiently competent translator, and therefore the offered translations are deficient under 37 C.F.R. § 42.63.” Prelim. Resp. 35.

Petitioner argues that it has complied with the requirements of Rule 42.63 because its translator attested, under penalty of perjury, that each translation was “true and correct,” and declared that he was “a competent translator.” Reply 5 (citing Ex. 1003, 40). Petitioner contends that Patent Owner’s arguments ignore what Rule 42.63 actually requires, and also ignore relevant portions of the translator’s verifications. Reply 5. Patent Owner does not address these arguments in its Sur-reply.

We agree with Petitioner that it has complied with the requirements of Rule 42.63(b), which states that “an affidavit attesting to the accuracy of the translation must be filed with the document.” 37 C.F.R. § 42.63(b). As

Petitioner points out, each translation is accompanied by a signed “Verification” stating the individual is a “competent translator” and declaring “under penalty of perjury” that the translation is “true and correct.” *See, e.g.*, Ex. 1003, 40. Accordingly, we determine Petitioner’s translator has provided an “affidavit attesting to the accuracy of the translation.”

Contrary to Patent Owner’s arguments, there is no requirement that Petitioner must provide a verification by “a sufficiently qualified translator, such as a professional or certified translator.” Prelim. Resp. 34. Nor does Patent Owner direct us to any authority supporting its assertion that a person conversant in a language cannot provide translations in compliance with Rule 42.63(b). Accordingly, we disagree with Patent Owner’s assertion that Petitioner failed to comply with Rule 42.63 because “the verifications submitted with [Petitioner’s] translations do not establish the completeness and accuracy of the translations.” Prelim. Resp. 34.

2. *Translation of Incomplete Documents*

Patent Owner next contends that we should deny institution because Petitioner relies “on translations of incomplete Chinese-language documents” for each ground in the Petition. Prelim. Resp. 36–37 (citing Ex. 1003; Ex. 1004; Ex. 1006, Ex. 1008). According to Patent Owner, Petitioner must provide a translation of the entire document it relies on, not just a portion of it, because Rule 42.63(b) recites that when “a party relies on a document in a language other than English”, it must provide a translation of “*the document*.” Prelim. Resp. 36. Petitioner argues that by omitting portions of the translated documents, Petitioner “hinder[ed] Patent Owner’s ability to evaluate the full meaning of the cited text.” Prelim. Resp. 38, 40. Petitioner cites two Board decisions in support of its arguments: *Shenzhen Aurora Technology Co. v. Putco, Inc.*, IPR2020-00670, Paper 10 at 5 (PTAB

Aug. 27, 2020) and *Ford Motor Co. v. Cruise Control Technologies LLC*, IPR2014-00280, Paper 17 at 6–7 (PTAB July 2, 2014). Prelim. Resp. 36, 41.

Petitioner argues that it has complied with Rule 42.63 because the rule requires only a translation of “the document,” not a translation of “the *entire* document.” Reply 5. Petitioner also asserts that the cases Patent Owner cites do not support Patent Owner’s “unreasonable requirements to translate an entire book.” Reply 5.

We agree with Petitioner that it has sufficiently complied with Rule 42.63. It is not uncommon for parties to present excerpts of books or other lengthy references as exhibits in *inter partes* review proceedings, and Patent Owner does not direct us to any rule or authority expressly prohibiting the submission of excerpts.⁸ As Petitioner points out, Rule 42.63 does not expressly require translation of an entire document. The cases Patent Owner cites do not require otherwise and are distinguishable.

For example, in *Shenzen*, the Board determined the petitioner provided an incomplete translation because “[m]uch of the information that is provided on the front page of [the exhibit], including the publication date and other date information and the names of the applicant and inventor, are not translated.” *Shenzen*, Paper 10 at 5. Here, Petitioner has translated all of the information on the pages it has submitted as exhibits. In *Ford*, the petitioner submitted complete documents as exhibits, but only provided translations of “relevant portions” of those documents. *Ford*, Paper 17 at 6–7. In that case, the Board determined that the petitioner had not provided a

⁸ Our rules permit us to exercise discretion to allow the submission of such exhibits. See 37 C.F.R. § 42.5.

translation of “the documents” submitted as exhibits. *Id.*⁹ Here, however, Petitioner’s exhibits are only excerpts, and Petitioner has provided a complete translation of the entire excerpts it relies on for its challenges.

In view of the foregoing, we have decided to institute *inter partes* review based on the exhibits submitted with the Petition. Patent Owner, however, may submit objections to Petitioner’s evidence pursuant to 37 C.F.R. § 42.64. Additionally, for any portion of the references that Petitioner has omitted from its exhibits, we remind Petitioner of its duty of candor and good faith to the Office (37 C.F.R. § 42.11) as well as its routine discovery obligation to serve relevant information that is inconsistent with a position advanced by Petitioner in the Petition (37 C.F.R. § 42.51(b)(1)(iii)).

3. *Alleged Failure to Provide “True and Correct” Copies of Exhibits*

Exhibits 1003, 1004, 1006, and 1008 are photocopies of pages from books located in China. Petitioner submitted the Declaration of Dr. Sylvia Hall-Ellis to address the authenticity of these exhibits and explain the process followed to obtain these copies. Ex. 1015. Dr. Hall-Ellis testified that the copies were “obtained from Tsinghua University Library under my instruction,” and that the exhibits are “a true and correct copy in a condition that creates no suspicion about its authenticity,” because “the text . . . is complete; no pages are missing, and the text on each page appears to flow seamlessly from one page to the next; further there are no visible alterations to the document.” *See, e.g.*, Ex. 1015 ¶ 44 (discussing Ex. 1003).

Patent Owner contends that Petitioner failed to adequately establish that the foreign-language exhibits are true and correct copies of the

⁹ Notably, despite this deficiency, the Board waived the requirements of Rule 42.63(b) and instituted *inter partes* review.

underlying book references. Prelim. Resp. 42–43. In particular, Patent Owner argues that “Dr. Hall-Ellis lacks the personal knowledge to swear under oath that the photocopies shown as Exhibits 1003, 1004, 1006, and 1008 are ‘true and correct’ copies of obscure textbooks that exist apparently only in China,” because Dr. Hall-Ellis “never inspected, viewed, handled, or had access to the actual hard copies of the references.” Prelim. Resp. 43.

As Petitioner correctly points out, however, Patent Owner does not cite to any authority that requires a declarant to inspect, view, handle, or have access to actual hard copies of references. Reply 5. Nor has Patent Owner directed us to any information that would lead us to question Dr. Hall-Ellis’ testimony. In view of this, we credit the testimony of Dr. Hall-Ellis, and agree with Petitioner that the declaration testimony is sufficient, for purposes of institution, to show that the exhibits are true and correct copies of the underlying book references. After institution, Patent Owner may depose Dr. Hall-Ellis to further explore the authenticity concerns it raises in its Preliminary Response. *See* 37 C.F.R.

§ 42.51(b)(1)(ii) (“Cross examination of affidavit testimony prepared for the proceeding is authorized within such time period as the Board may set.”).

G. Claims 1–10 – Obviousness in view of Fu and Xi

Petitioner contends claims 1–10 are unpatentable as obvious in view of Fu and Xi. *See* Pet. 15–42. Other than stating that “Petitioner’s substantive positions have significant flaws,” Patent Owner does not address the merits of Petitioner’s challenges. Prelim. Resp. 1.

1. Fu (Ex. 1003)

Fu provides an overview of the soda ash industry in China and a description of the process for producing soda ash that includes the specific chemical reactions outlining the various steps in the process. Ex. 1003, 48,

50–52. Fu also contains flow diagrams that illustrate its production process, including Figure 7-1, reproduced below.

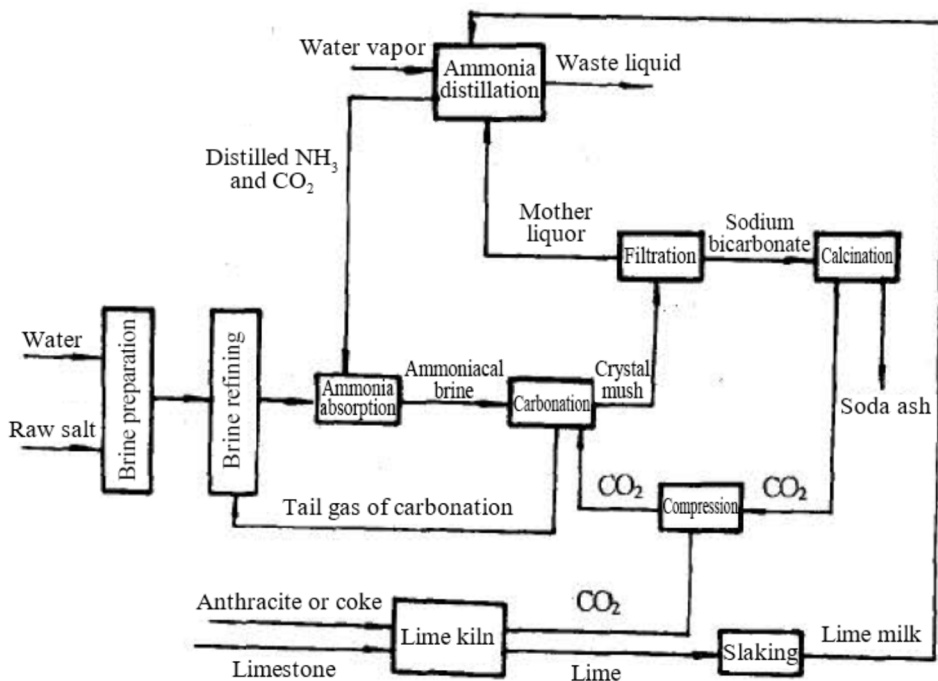


Figure 7-1 of Fu shows the steps in Fu’s ammonia soda process, including introduction of raw materials, brine preparation, brine refining, ammonia absorption and distillation, and production of soda ash. Ex. 1003, 51.

Fu recognizes that chemical production processes can generate waste materials that are harmful to the environment, and teaches “establishing a waste-free process is a reasonable approach, both technically and economically, to solve the problem of environmental protection, and is also a main approach.” Ex. 1003, 75–76.

2. Xi (Ex. 1004)

Xi explains that “[i]t is an urgent task for mankind today to make rational use of resources and protect the environment,” and is directed to “newly developed waste-free technological processes.” Ex. 1004, 14. Among these processes, Xi discloses a method of recovery of CaCl_2 and

NaCl from distillation waste liquor after clarification and methods to reduce water consumption that include using dry quicklime to replace lime milk in ammonia distillation. Ex. 1004, 19.

3. *Analysis*

a) *Independent Claim 1*

Petitioner directs us to portions of Fu and Xi that purportedly disclose or suggest each of the limitations in independent claim 1, and argues that a person of ordinary skill in the art would have been motivated to combine the teachings of Fu and Xi, with a reasonable expectation of success. Pet. 15–32.

For example, Petitioner argues that Fu discloses a method of producing soda ash and calcium chloride, as recited in claim 1, from edible salt and limestone. Pet. 18 (citing Ex. 1003, 50–51, Fig. 7-1; Ex. 1002 ¶ 64); Ex. 1001, 3:14–15. More specifically, Petitioner contends Fu describes the production of soda ash “via an ammonia-soda process (i.e., Solvay process),” and “that calcium chloride is produced from the waste liquid of the ammonia distillation tower.” Pet. 18–19 (citing Ex. 1003, 76–78, Figs. 7-1, 7-7; Ex. 1002 ¶¶ 64–66).

Petitioner further contends that Fu discloses providing a source of brine prepared from solid NaCl and proving gaseous ammonia to ammoniate the brine. Pet. 19–21 (citing Ex. 1003, 51, 57, Fig. 7-7; Ex. 1002 ¶¶ 67–68). Petitioner therefore argues Fu discloses “providing a source of brine; providing a source of gaseous ammonia; ammoniating brine with gaseous ammonia to form ammoniated brine,” as claim 1 requires. Ex. 1001, 3:16–19; Pet. 19–20.

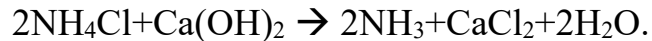
Claim 1 next requires “heating limestone to produce calcium oxide and carbon dioxide.” Ex. 1001, 3:20–21. For this limitation, Petitioner

directs us to Fu's disclosure that "limestone is calcined to produce CO₂ and lime," and Fu's discussion of temperature ranges used for burning limestone. Pet. 21–22 (quoting Ex. 1003, 52–53; citing Ex. 1002 ¶ 69).

Claim 1 recites "reacting the ammoniated brine with the carbon dioxide produced by the step of heating the limestone to produce sodium bicarbonate, ammonium chloride and a brine effluent." Ex. 1001, 3:22–25. Petitioner directs us to equations 7-6, 7-7, and 7-8 of Fu describing the reaction of CO₂ with ammoniated brine to produce sodium bicarbonate and ammonium chloride. Ex. 1003, 51. Petitioner further contends that Fu describes using at least some of the carbon dioxide produced from heating the limestone in these reactions, and that Fu discloses producing a brine effluent after precipitating the sodium bicarbonate. Pet. 22 (citing Ex. 1003, 52; Ex. 1002 ¶¶ 70–71).

Petitioner directs us to Fu's statement that "[a] filter cake containing NaHCO₃ is calcined to obtain final products Na₂CO₃ and CO₂" to support its assertion that Fu discloses "calcining the sodium bicarbonate to decompose the sodium bicarbonate to produce soda ash and gaseous carbon dioxide," as claim 1 requires. Pet. 23; Ex. 1001, 3:26–28.

Claim 1 next recites "reacting the calcium oxide with the ammonium chloride and brine effluent to produce calcium chloride, brine effluent, and ammonia" and "wherein said step of reacting the calcium oxide with the ammonium chloride and brine effluent comprises reacting dry calcium oxide with the ammonium chloride and brine effluent without slaking the calcium oxide produced by heating the limestone." Ex. 1001, 3:29–36. For these limitations, Petitioner contends Fu discloses producing calcium chloride, brine effluent, and ammonia by reacting calcium hydroxide with ammonium chloride and brine effluent according to the following equation:



Pet. 23 (citing Ex. 1003, 52 (Equation 7-12); Ex. 1002 ¶ 73).

Petitioner next contends that it would have been obvious to a person of ordinary skill in the art to “react[] dry calcium oxide with the ammonium chloride and brine effluent without slaking the calcium oxide produced by heating the limestone.” Pet. 23 (Ex. 1002 ¶ 74). In support of this assertion, Petitioner argues, *inter alia*, that “Xi discloses methods to utilize and treat distillation waste liquor and waste residue from the soda ash production process,” including “[u]sing dry quicklime to replace lime milk in ammonia distillation . . . to reduce water consumption.” Pet. 16 (quoting Ex. 1004, 19; citing Ex. 1002 ¶ 61). Petitioner further argues that a person of ordinary skill in the art would have been motivated to follow Xi’s teaching of using dry quicklime (i.e., calcium oxide) to replace the lime milk (i.e., calcium hydroxide) in Fu’s method, in order to reduce water consumption and waste, which was a common goal of both Fu and Xi. Pet. 25 (citing Ex. 1002 ¶ 76; Ex. 1004, 19).

According to Petitioner and Dr. Norval, “[w]hether dry calcium oxide is added to the liquid effluent with or without first slaking the calcium oxide, the chemical reactions remain the same. [Ex. 1002 ¶ 74]. A [person of ordinary skill in the art] would understand that this modification would not interfere with the other aspects of Fu’s processes. *Id.*” Pet. 24 (explaining that the dry calcium oxide will react with water and turn into calcium hydroxide before reacting with ammonium chloride to drive out ammonia).

Claim 1 also requires “recycling the ammonia to be used in the step of ammoniating the brine.” Ex. 1001, 3:37–38. Petitioner contends Fu discloses recycling ammonia based on its teaching that “[t]he NH₃ in the

mother liquor must be distilled out and returned for absorption.” Pet. 25 (quoting Ex. 1003, p. 52).

Additionally, claim 1 requires “recycling the water from the brine effluent to be used in the step of ammoniating the brine by crystallizing sodium chloride from the mixture of calcium chloride and brine effluent, separating the crystallized sodium chloride from the effluent by centrifuging the effluent, and recycling the crystallized sodium chloride.” Ex. 1001, 3:39–44. Petitioner directs us to portions of Fu disclosing sodium chloride being crystallized and separated from the mixture of calcium chloride and brine effluent using a centrifuge, and recycling water by sending it to “a brine preparation field,” which is included in the step of ammoniating the brine. Pet. 26–27 (citing Ex. 1003, 76–79, Fig. 7-25; Ex. 1002 ¶¶ 79–81).

Claim 1 next recites “evaporating any water remaining to produce water vapor.” Ex. 1001, 3:45. Petitioner contends Fu discloses sending its calcium chloride solution to an evaporator, where the solution is concentrated. Pet. 28. Petitioner argues that a person of ordinary skill in the art would have understood that when the solution is “concentrated,” water is evaporated from the solution. Pet. 28 (citing Ex. 1002 ¶ 82).

Petitioner also notes that claim 1 requires forming an end product comprising “an approximately 77 wt % solution of calcium chloride flakes,’ which is calcium chloride dihydrate known to contain water.” Pet. 28 (citing Ex. 1001, claim 1, 2:66–67 (“Any remaining water is evaporated to leave the end product of calcium chloride (CaCl_2)[.]”). Petitioner thus argues that a person of ordinary skill in the art would have understood that “it is not practically possible, nor necessary, to evaporate *all* water remaining.” Pet. 28. Instead, Petitioner argues that a person of ordinary skill in the art would have understood that “any water” in claim 1 refers only to the “amount of

water that needs to be evaporated to arrive at the end calcium chloride products and does not require removal of ‘all’ water.” Pet. 28 (citing Ex. 1002 ¶ 82).

The remaining steps recited in claim 1 are “recovering the produced calcium chloride,” “recycling the water vapor and condensing into water, wherein the crystallized sodium chloride is further used for the providing of fresh brine by combining with the condensed water to continue the method,” “collecting the produced calcium chloride,” “separating residual salt,” and “forming an approximately 77 wt % solution of calcium chloride flakes.” Ex. 1001, 3:46–54. Petitioner directs us to portions of Fu that purportedly disclose or suggest recovering the calcium chloride produced (Ex. 1003, 79), generating water vapor in the evaporators, condensing the vapor into water, and recycling water by sending it to a brine preparation field (Ex. 1003, 79, Fig. 7-25; Ex. 1002 ¶ 84), using the crystallized sodium chloride to produce fresh brine (Ex. 1003, 76; Ex. 1002 ¶¶ 85–87), discharging and conveying calcium chloride into a final product warehouse (Ex. 1003, 79), separating sodium chloride from the distillate/calcium chloride product (Ex. 1003, 77–79; Ex. 1002 ¶¶ 89–91), and forming calcium chloride flakes with 78% calcium chloride (Ex. 1003, 79). Pet. 28–32. Petitioner argues that a person of ordinary skill in the art would have understood that Fu’s disclosure of calcium chloride flakes containing 78% CaCl_2 satisfies the requirement in claim 1 of “approximately 77 wt% solution of calcium chloride flakes.” Pet. 31 (citing Ex. 1002 ¶ 92).

At this stage of the proceeding, Patent Owner does not dispute that Fu and Xi disclose or suggest the limitations in claim 1, or that a person of ordinary skill in the art would have had reason to combine the teachings of the references with a reasonable expectation of success. *See generally*

Prelim. Resp. After reviewing the evidence and arguments Petitioner presents in the Petition regarding claim 1, including the relevant portions of the supporting Norval Declaration, we determine that Petitioner has demonstrated sufficiently, for purposes of institution, that Fu and Xi disclose or suggest each limitation of claim 1, and that a person of ordinary skill in the art would have had reason to combine the teachings of the references with a reasonable expectation of success. Pet. 15–32; Ex. 1002 ¶¶ 64–92. Accordingly, we are persuaded Petitioner has established a reasonable likelihood of prevailing on its challenge that claim 1 is unpatentable as obvious in view of Fu and Xi.

b) Claims 2–10

Claims 2–4 depend, directly or indirectly, from independent claim 1, claims 5 and 6 are independent claims that recite subject matter similar to claim 1, and claims 7–10 depend, directly or indirectly, from independent claim 6. Ex. 1001, 3:55–6:21. In addition to relying on the arguments and evidence presented for claim 1, Petitioner directs us to portions of Fu and XI that purportedly disclose or suggest the limitations in these claims. Pet. 32–42. At this stage of the proceeding, Patent Owner does not dispute Petitioner’s arguments or evidence. *See generally* Prelim. Resp.

After reviewing the evidence and arguments Petitioner presents in the Petition, including the relevant portions of the supporting Norval Declaration, we are persuaded Petitioner has established a reasonable likelihood of prevailing on its obviousness challenge with respect to these claims.

4. *Conclusion*

For all of the foregoing reasons, we determine Petitioner has demonstrated a reasonable likelihood of prevailing with respect to its argument that claims 1–10 are unpatentable as obvious in view of Fu and Xi.

III. MOTIONS TO SEAL

Concurrent with the Preliminary Response, Patent Owner filed a Motion to Seal and For Entry of Protective Order. Paper 7. Patent Owner requests that we seal portions of the Preliminary Response and Exhibits 2001, 2002, 2004–2016, and 2020–2023. Paper 7, 1. Patent Owner contends that certain portions of the Preliminary Response and the aforementioned exhibits contain confidential business information related to [REDACTED]. Paper 7, 1–5. Patent Owner filed its Preliminary Response under seal (Paper 6) and provided a public version of the Preliminary Response (Paper 11). Patent Owner also filed its Sur-reply under seal. Paper 12. Patent Owner indicates that the parties have executed the Board’s Default Protective Order, and moves for entry of the Default Protective Order attached as Appendix A to the motion. Paper 7, 7, Appendix A.

Petitioner filed a Motion to Seal with its Reply to the Preliminary Response. Paper 9. Petitioner requests that we seal portions of Petitioner’s Reply and Exhibit 1017. Paper 9, 1. Petitioner contends that the Reply and Exhibit 1017 contain confidential business information related to [REDACTED]. Paper 9, 1. Petitioner filed its Reply under seal (Paper 8), and also provided a public version (Paper 10).

We find that the parties have established good cause to seal their confidential business information contained in the above-referenced papers and exhibits. Accordingly, we grant both Patent Owner’s and Petitioner’s

Motion to Seal. 37 C.F.R. § 42.14. We also enter the Default Protective Order filed as Appendix A to Paper 7.

Because this Decision refers to material that has been filed under seal by the parties, we enter this Decision under seal. Within two weeks of the entry of this Decision, the parties shall file jointly a redacted version of this Decision that may be made publicly available. Additionally, Patent Owner shall file a redacted version of its Sur-reply that may be made publicly available.

We remind the parties that confidential information that is subject to a protective order ordinarily becomes public forty-five days after denial of a petition to institute trial or 45 days after final judgment in a trial. *See* Consolidated Trial Practice Guide, 21–22. There is an expectation that information will be made public where the existence of the information is referred to in a decision to grant or deny a request to institute a review. *Id.* at 22. A party seeking to maintain the confidentiality of information, however, may file a motion to expunge the information from the record prior to the information becoming public. *Id.*; 37 C.F.R. § 42.56.

IV. CONCLUSION

Because Petitioner has demonstrated a reasonable likelihood that at least one challenged claim of the '852 patent is unpatentable over the prior art of record, we institute an *inter partes* review. And because we find some grounds sufficient for institution, we institute on all grounds in the petition. *See SAS Inst., Inc. v. Iancu*, 138 S. Ct. 1348, 1353 (2018) (“The agency cannot curate the claims at issue but must decide them all.”).

At this stage of the proceeding, we have not made a final determination with respect to the patentability of any challenged claim or any underlying factual or legal issue.

V. ORDER

For the reasons given, it is:

ORDERED that, pursuant to 35 U.S.C. § 314(a), an *inter partes* review is instituted as to claims 1–10 of U.S. Patent No. 8,591,852 B2;

FURTHER ORDERED that pursuant to 35 U.S.C. § 314(c) and 37 C.F.R. § 42.4, notice is hereby given of the institution of a trial, which commences on the entry date of this Order;

FURTHER ORDERED that the pending motions to seal (Papers 7, 9) are *granted*; the Default Protective Order in the form of Attachment A to Paper 9 is entered; and Exhibits 1017, 2001, 2002, 2004–2016, and 2020–2023, and the portions of the Preliminary Response, Reply, and Sur-reply¹⁰ requested to be sealed shall remain sealed until further order; and

FURTHER ORDERED that within two weeks of the entry of this Decision, the parties shall file jointly a redacted version of this Decision that may be made publicly available, and Patent Owner shall file a redacted version of its Sur-reply that may be made publicly available.

¹⁰ Although Patent Owner did not file a motion to seal its Sur-reply (Paper 12), the as-filed document will remain under seal because it contains the same confidential business information present in the Preliminary Response and Reply.

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Patent 8,591,852 B2

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