

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Arkema France

Petitioner

v.

Honeywell International Inc.

Patent Owner

Trial No.: IPR2015-00916
U.S. Patent No. 8,710,282

PETITIONER'S REPLY TO PATENT OWNER'S RESPONSE

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I. INTRODUCTION

The '282 patent should never have issued. During prosecution, the Examiner made no prior art rejections and challenged no claim terms at issue in this proceeding. Even Dr. Lousenberg admitted that when he first saw the '282 patent, before being hired by Patent Owner, "I didn't really see what the initial invention was" and didn't understand how it could be patentable. (EX1024, 15:22-16:5, 16:24-17:9.)

II. CLAIM CONSTRUCTION

Patent Owner does not address validity of the '282 patent claims under the constructions set forth in the Petition, thereby conceding invalidity under those constructions. Moreover, even under Patent Owner's proposed claim constructions the claims of the '282 patent are invalid.

III. ARGUMENT

A. Claims 1-20 are Obvious Under 35 U.S.C. § 103 Over the Combination of Smith, Masayuki, and Harrison

1. A POSITA would be motivated to look beyond Smith

A POSITA reading Smith would understand that "spent KOH" would be withdrawn from the dehydrohalogenation reactor. Smith teaches that the base-mediated dehydrofluorination reaction can be conducted continuously in a continuously stirred tank reactor (CSTR). (EX1003 at 2.) At "steady state," the concentrations of starting materials, reagents, and products *in* the reactor are

constant, as are concentrations and flow rates of streams entering and exiting the reactor. (EX1025, 203:14-16, 204:4-205:8, 207:4-208:8.)

Dr. Lousenberg testified that Smith teaches feeding aqueous KOH to the reactor and that a POSITA would start with an aqueous KOH concentration “around 25%”. (EX1025, 233:24-235:21.) As KOH reacts with organic reactants, KF is formed and is present in the aqueous phase. (EX1025, 228:14-24.) Thus, at steady state, the aqueous reaction mixture in the CSTR contains both KOH and KF (“spent KOH”) and dissolved organics. (EX1025, 242:4-12, 252:25-254:5.) The aqueous stream exiting the reactor also contains “spent KOH,” in the same concentration as the aqueous reaction mixture, because KOH and KF cannot be separated in the reactor. (EX1024, 28:6-7; EX1025, 245:11-15, 246:5-247:5.) Accordingly, there is no real dispute that “spent KOH” would be withdrawn from the Smith reactor.

Further, a POSITA would understand the “spent KOH” being withdrawn to include an appreciable amount of KOH. The DHF reaction rate and the organic starting material conversion depend on the steady state concentration of KOH in the reactor. (EX2002, ¶121; EX1025, 242:16-25, 248:25-249:14.) The reaction rate is “based on the steady state concentration of reactants times the rate constant” (*id.*), thus higher steady state concentrations of KOH lead to higher reaction rates (EX1025, 247:6-15). Without KOH, no reaction occurs. (EX1025, 242:22-25.)

Therefore, a POSITA would run the Smith reaction with a high steady state concentration of KOH – thus resulting in a high concentration of KOH exiting the reactor.

The argument that Smith does not disclose “any significant amount” of unreacted KOH finds no support in Smith. Dr. Lousenberg pointed to Smith’s teaching that a phase transfer catalyst could be used for base-mediated dehydrofluorination, but identified no evidence that a POSITA would interpret this teaching to suggest using a low steady state concentration of KOH. (EX2002, ¶87.) Notably, Dr. Lousenberg found no support in Smith for his opinion that “[a]bout more than 90 percent [of the spent KOH in the aqueous stream exiting the reactor] would be KF.” (EX1025, 247:1-5, 306:17-24, 308:18-25, 309:23-310:4.) Unable to find support in Smith, or anywhere else in the public record (EX1025, 250:21-24), Dr. Lousenberg identified reactions described in laboratory notebooks from his employment at DuPont (EX1025, 243:24-244:8, 245:4-6, 250:4-20). Dr. Lousenberg admitted that these notebooks (if they exist) are not publicly available and were not disclosed in his report (EX1025, 245:7-9, 250:19-20), and he offered no evidence that a POSITA would be aware of them.

Dr. Lousenberg also testified that [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED] However, unlike the continuous reaction of Smith, [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

Masayuki describes a base-mediated dehydrohalogenation process involving a phase transfer catalyst in which unreacted DHA was recycled. (EX1005, 10:20-11:16; EX1025, 269:18-20.) Thus, the only publicly-available document of record that addresses this issue shows that a continuous base-mediated dehydrohalogenation reaction – like Smith – results in sufficient levels of unreacted DHA to warrant recycling, *even when the reaction is conducted in the presence of a phase transfer catalyst*. Further, in his discussion of Smith, Masayuki, and Harrison, Dr. Lousenberg never discusses a KOH conversion higher than 50%, and even uses 50% KOH conversion in his calculations, leaving up to 50% unconverted KOH. (EX2002, ¶¶120, 121, 123.) Accordingly, a POSITA

would understand that the reactions disclosed in Smith lead to sufficient amounts of unreacted KOH to justify its recovery and recycling.

Alternatively, even if the aqueous reaction mixture of Smith primarily contained KF, as Dr. Lousenberg contends, a POSITA would still be motivated to look beyond Smith for teachings related to processing of this aqueous mixture to achieve an efficient, cost effective, and environmentally responsible continuous process. (EX1002, ¶102.) At steady state in a continuous process, there is simultaneous introduction of reactants and withdrawal of products and byproducts. A POSITA would look to analogous processes, such as Masayuki, for guidance on processing options for the aqueous stream leaving the dehydrohalogenating reactor. (*Id.*) A POSITA would have a reasonable expectation of success in combining the known processes of Smith and Masayuki because of the similarities between them. (*Id.* at ¶77.)

A POSITA would appreciate that Masayuki teaches using a “relatively high concentration (25-55% by weight) of an alkali metal hydroxide” (EX1005, 6:14-18), and a POSITA would understand that higher concentrations of alkali metal hydroxide lead to faster reaction rates and greater conversion to products (EX2002, ¶121). As discussed above, Masayuki also teaches recycling alkali metal hydroxide – suggesting that a higher concentration of DHA in the aqueous reaction mixture justifies such recycling. (EX1005, 6:9-10.)

2. The cited references teach, suggest, or disclose all elements of the claims

Patent Owner does not dispute that the combination of Smith, Masayuki, and Harrison teaches every element of claims 1-20 other than “spent KOH”, “recovering spent [DHA/KOH]” and “recovering spent DHA” from a reaction stream that “further comprises dissolved organics” (Claim 11). Using Patent Owner’s BRI for “spent DHA” and “recovering spent DHA”, the term “recovering spent DHA” means substantially separating an aqueous solution containing DHA and by-product salts from any other materials in the reaction stream. (Response at 6, 8-9.)

As discussed above, a POSITA would reasonably understand Smith, or alternatively, the combination of Smith and Masayuki, to teach base-mediated dehydrohalogenation reactions that produce spent DHA/KOH. As explained below, a POSITA would further understand that performing the downstream processing steps of Masayuki on the aqueous reaction stream exiting the Smith reactor would result in “recovering spent DHA”.

Masayuki describes an aqueous solution containing DHA and by-product salts being substantially separated from any other materials in the reaction stream, collectively, in the decanter 20 and the enricher 21. As explained below, a POSITA would understand that introducing the aqueous reaction stream of Smith into the decanter 20 and enricher 21 of Masayuki would substantially separate

organics from the spent DHA. In Masayuki, the aqueous phase containing DHA is separated into a lipid phase (phase transfer catalyst) and an aqueous phase (including unreacted DHA and by-product salt) in the decanter 20, and the lipid phase is returned to the reactor. (EX1005, 10:33-11:1.) As Dr. Lousenberg confirmed, a POSITA would expect the same thing to happen with the aqueous reaction stream of Smith in Masayuki (i.e., at least a portion of organics present (e.g., phase transfer catalyst) would separate out and be returned to the reactor). (EX1025, 282:20-283:19.) This separation in decanter 20 would be a first instance of “other materials” being separated from “spent DHA”.

Masayuki also describes increasing the concentration of DHA in the aqueous stream withdrawn from the reactor in order to return an aqueous stream to the reactor having a concentration within the range of 15 to 55wt% DHA (50wt% in Example 1). (EX1005, 6:28-36.) In Masayuki, the concentration of DHA in the aqueous stream is increased by evaporating out water using the enricher, resulting in by-product salt precipitating out and being removed. (*Id.* at 11:1-14.) However, a POSITA would recognize that evaporating out water to increase the concentration of KOH (and precipitate KF) in the aqueous stream of Smith would not be effective because the solubilities of KOH and KF in water are too similar. (EX1025, 288:13-18.) Still, the enricher of Masayuki would be needed for the

aqueous stream of Smith to remove the additional water generated in the DHF reactor of Smith. (*Id.* at 179:25-180:5, 302:16-22, 303:5-11.)

Dr. Lousenberg confirmed the presence of dissolved organics in the aqueous stream leaving the DHF reactor in the combination of Smith and Masayuki. (*Id.* at 282:20-283:10.) A POSITA introducing the aqueous reaction stream of Smith into the enricher loop of Masayuki would expect any remaining organics (such as dissolved organics) in the aqueous reaction stream to be separated and evaporated via conduit 7. (*Id.* at 285:13-23, 292:25-293:17.)¹ This evaporation is a second instance of “other materials” being separated from “spent DHA”. In Masayuki, the enricher 21 is operated at a temperature between 95°C and 150°C to avoid polymerization of chloroprene and to evaporate out water. (EX1005, 9:28-10:2.) However, polymerization of chloroprene is irrelevant when the chemistry of Smith

¹ Dr. Lousenberg admitted that it is reasonable to expect that 236ea and 245eb would be removed from the aqueous solution in the enricher if the enricher were operated at 100°C. Despite being uncertain about Masayuki’s teaching, Dr. Lousenberg could provide no reasons or explanation why 236ea or 245eb would not be removed in the enricher. (EX1025, 287:9-288:5.)

is used with the Masayuki processing steps.² Thus, a POSITA would use operating temperatures relevant to the Smith chemistry.

Furthermore, a POSITA would expect dissolved organics to be in the aqueous stream of Smith when it is introduced to the enricher of Masayuki (EX1025, 284:11-13) and would find it desirable to separate them out (*id.* at 292:25-293:5). Additionally, a POSITA would understand that 236ea and 245eb could be evaporated out of the enricher if the operating temperature was above their boiling points (6°C and 20°C, respectively, at atmospheric pressure). (*Id.* at 293:8-17.)

Therefore, the combination of Smith and Masayuki teaches “spent KOH,” “recovering spent [DHA or KOH]” and “recovering spent DHA” from a reaction stream that “further comprises dissolved organics” (Claim 11).

² In its Response, Patent Owner ignores the combination of Smith chemistry with processing of Masayuki, and wrongly focuses on how chloroprene and 3,4-dichloro-butene-1 behave in the processing units of Masayuki (e.g., enricher). (Response at 15-20.)

3. A POSITA would have combined Smith with Masayuki and Harrison

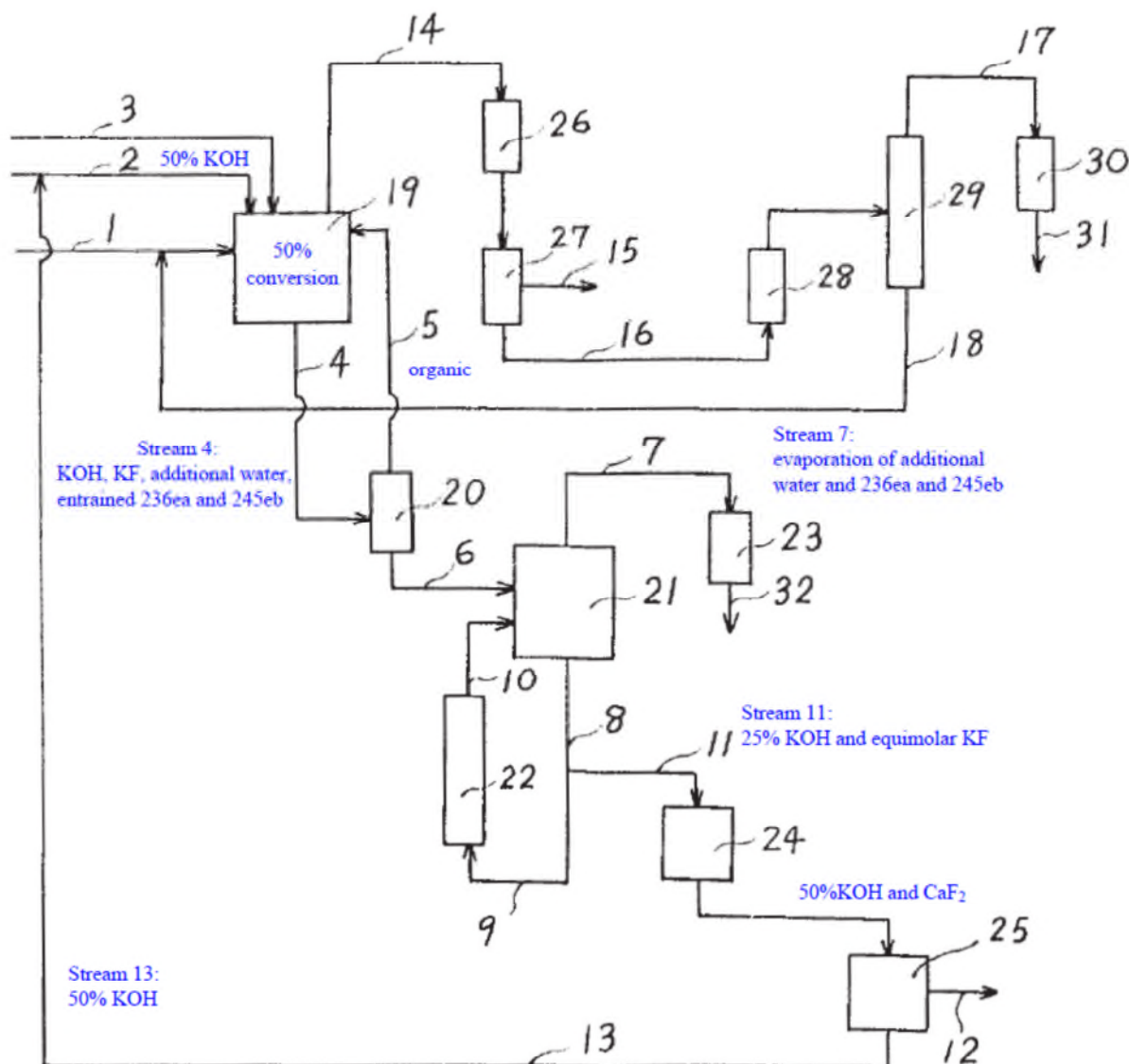
Dr. Lousenberg suggests that the combination of Smith, Masayuki, and Harrison would be inoperable, but this analysis is incomplete. A POSITA is a person of ordinary creativity, not an automaton. *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 421 (2007). As stated above, a POSITA would recognize that KOH and KF have similar solubilities in water and thus cannot be separated by precipitation. (EX1025, 288:13-18.) POSITA also would be aware of the KF conversion method taught in Harrison, where KF is reacted with Ca(OH)_2 to produce KOH. (*Id.* at 288:19-289:5.) With this knowledge, it would have been obvious to use the Harrison conversion reaction to convert KF to KOH and concentrate KOH. *KSR*, 550 U.S. at 415-18.

Dr. Lousenberg's examples purporting to show that the combination of Smith, Masayuki, and Harrison would not work are exaggerated and are not reflective of how a POSITA would solve a design problem. A POSITA would use the teachings of Smith, Masayuki, and Harrison, along with experience, recognized design principles, and ordinary creativity, to solve the design problem at hand. As Dr. Manzer recognized, a POSITA would understand how to operate the enricher loop of Masayuki in combination with the reaction of Harrison, "to maintain a desired level of KOH fed to the reactor." (EX2005, 233:5-8, 233:16-20, 234:4-7.)

Dr. Lousenberg admits that the chemistry of Smith (which corresponds to the equations marked formulas 1 and 2 of the '282 patent) produces one mole of water for each mole of KF produced. (EX1025, 179:25-180:5, 181:3-6, 290:20-23.) Thus, the aqueous reaction stream withdrawn from the dehydrofluorination reactor contains additional water produced in the reactor and therefore has a lower combined concentration of KOH and KF than the aqueous KOH stream that was introduced to the reactor. Dr. Lousenberg also admitted that the Masayuki enricher could be used to remove this additional water (*id.* at 291:19-23) along with 236ea and 245eb from the aqueous stream (*id.* at 293:8-17).

In his declaration, Dr. Lousenberg posits an example in which a stream of 50% KOH is introduced to the reactor, and KOH utilization is 50%. (EX2002 at ¶¶122-124.) Using the concentration and KOH utilization in Dr. Lousenberg's example as a starting point, a POSITA would understand that 50% of the starting KOH reacts with 236ea and 245eb, forming KF and additional water, and leading to an aqueous reaction mixture containing KOH, KF, and additional water.

(EX1025, 178:12-181:6.) The aqueous reaction mixture is withdrawn from the reactor and introduced to the decanter, where at least a portion of the organic present therein is separated via phase separation and returned to the reactor. The aqueous component of the reaction mixture exits the decanter and is introduced to the enricher 21.



As discussed above, a POSITA would know that KOH and KF cannot be separated by evaporating out enough water to precipitate KF (*id.* at 288:13-18) and, thus, would look to another method to achieve a 50% KOH concentration in the aqueous phase returning to the reactor in stream 13. Nonetheless, as stated above, a POSITA would use the enricher to remove additional water produced

during DHF (*id.* at 291:19-23) so that the aqueous stream leaving the enricher loop would include 25% KOH and an equimolar amount of KF.

As Dr. Lousenberg acknowledged, a POSITA would have been aware that the reaction of KF with $\text{Ca}(\text{OH})_2$ to form KOH – the same reaction as taught in Harrison – could be used to convert KF to KOH. (*Id.* at 288:19-289:5.)

Patent Owner argues that a POSITA would be dissuaded from adding lime as taught by Harrison in the combined process of Smith and Masayuki because of the concentrations used in Harrison. (Response at 30-31.) However, Harrison teaches removal of inorganic fluorides, “[s]ignificant concentrations” of which are found in industrial waste water. (EX1006, 1:12-15.) Further, in a preferred embodiment, Harrison describes the $\text{Ca}(\text{OH})_2$ reaction with an aqueous solution containing about 15 to 20wt% KF (*id.* at 2:65-3:5), which is close to the KF concentration of 25% used in Dr. Lousenberg’s example.

Patent Owner also suggests that the “mud” that is formed in Harrison is problematic. (Response at 30-32.) However, Dr. Lousenberg confirmed in his deposition that a solution of KOH and KF, at a combined concentration of 50% (as used in Dr. Lousenberg’s example), entering the slurry tank of Masayuki would not precipitate, provided that the temperature of the slurry tank is at least 50°C. (EX1025, 294:7-295:1.) Further, each of Harrison Examples 1, 2, and 3 teach an aqueous solution of KOH that is removed from the mud as supernatant and that

could be returned to the process for reuse. (EX1006, 4:41-46, 4:56-58, and 5:28-29.) The “mud” is the precipitated CaF_2 that is intentionally left behind and removed as filter cake. In the combined Smith, Masayuki, and Harrison process, the CaF_2 precipitate would be removed by the centrifuge 25 just as precipitated NaCl is removed in Masayuki. Dr. Lousenberg recognized that a centrifuge can be used to separate a liquid from a solid in a continuous process. (EX1025, 171:20-172:5.) Thus, the expected precipitate would not dissuade a POSITA from using the teachings of Harrison.

A POSITA would know that Harrison’s conversion reaction could be implemented in the Masayuki slurry tank to convert KF back to KOH . (*Id.* at 289:6-11.) Using the known stoichiometry of the KF conversion reaction, a POSITA would understand that the KF would be converted back to 25% KOH , resulting in an aqueous stream having 50% KOH and CaF_2 precipitate. (EX1001, 13:46-56; EX1006, 3:6-10; EX1002, ¶74.) Further, a POSITA would have included a stirrer in the slurry tank because, as Dr. Lousenberg testified, it is typical to include a stirrer in a reactor when ingredients are added to the reactor in order to increase contact with the materials in the reactor and create more favorable reaction conditions. (EX1025, 172:6-16.) After the slurry tank, the CaF_2 would be removed in the centrifuge just as the NaCl is removed in Masayuki, and the aqueous stream would be returned to the reactor in stream 13 with a KOH

concentration of 50%, thereby achieving the object of Masayuki of minimizing loss of alkali metal hydroxide. (EX1002, ¶75; EX1025, 304:17-306:3.)

Thus, the combined process of Smith, Masayuki, and Harrison produces 1234yf and also recovers and recycles an aqueous stream comprising 50% KOH.

B. Smith is Prior Art to the '282 Patent Because Patent Owner Did Not Exercise Diligence in Constructively Reducing to Practice the Claimed Invention

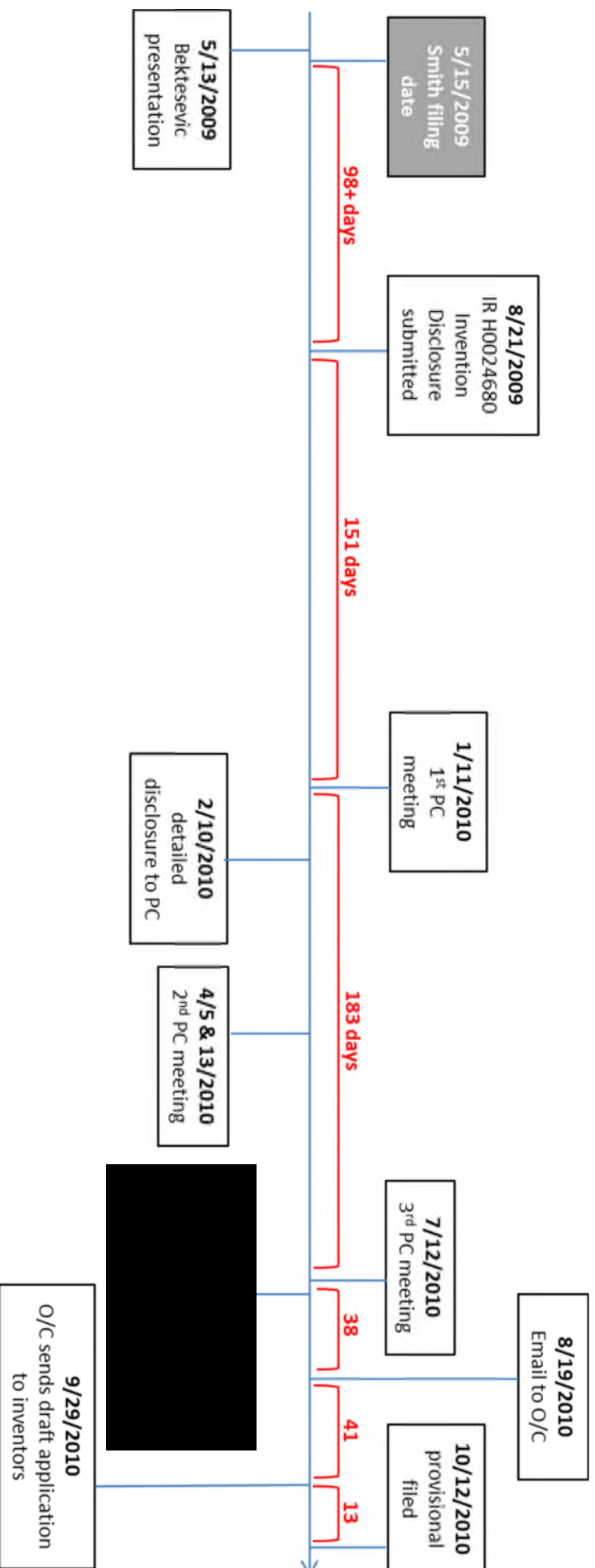
1. Legal Principles

Patent Owner does not allege actual reduction to practice of the claims at issue in this proceeding (claims 1-20), but rather relies on constructive reduction to practice for these claims. During the period in which reasonable diligence must be shown, there must be a continuous exercise of reasonable diligence. *Griffith v. Kanamaru*, 816 F.2d 624, 626 (Fed. Cir. 1987). Even a short period of unexplained inactivity may be sufficient to defeat a claim of diligence. *Olympus Am. v. Perfect Surgical Techniques, Inc.*, Case IPR2014-00233, slip op. at 21-22 (PTAB June 8, 2015) (Paper 56) (finding lack of diligence during each of 19-day, 3-day, and 18-day spans of the critical period).

2. Smith

Smith was filed on May 15, 2009. Thus, Patent Owner must show continuous and corroborated diligence for the 17-month period from just prior to

May 15, 2009, until October 12, 2010 (the “Smith critical period”), which is illustrated below.



Regarding a 98+-day first Smith period, Dr. Bektesevic gave a presentation on May 13, 2009 regarding her prior caustic dehydrofluorination experiments (EX2028) and then took no action for the 98 days after the May 15, 2009 filing date of Smith until August 21, 2009, when she submitted an invention disclosure (IR H0024680) (EX2029).

Patent Owner attempts to patch this 98-day gap with testimony of Thomas Morris, but his declaration falls far short of the specificity required under *Olympus*. For example Mr. Morris's declaration covers the time span of April 2009 through the fourth quarter of 2011 in less than two pages and never describes dates of work more specifically than by a particular month. (EX2036, ¶¶5-10.) Mr. Morris's declaration also discusses Patent Owner's commercialization of 1234yf without ever referencing the process of the '282 patent.³ See *Mycogen Plant Sci., Inc. v. Monsanto Co.*, 252 F.3d 1306, 1314-15 (Fed. Cir. 2001), *vacated on other grounds*, 535 U.S. 1109 (2002). For example, Mr. Morris refers to a whitepaper regarding 1234yf and a Forward Engineering Request Form regarding 1234yf, but does not state that either document is related to the process of the '282 patent.

³ Patent Owner investigated many processes, unrelated to the '282 patent, to manufacture 1234yf (e.g., those described in Application No. 13/195,429 (EX1014) and US 2012/0184785 (Ex. 1021)).

(EX2036, ¶¶5, 9; *see also* EX1023, 13:9-13.) As another example, Mr. Morris refers to a “high volume production plant in Louisiana [that] will come online in the near future” (EX2036, ¶11), but the production plant in Louisiana does not use the process claimed in the ’282 patent.^{4,5}

After Dr. Bektesevic submitted the invention disclosure on August 21, 2009, 151 days passed until the PC finally discussed the invention disclosure on January 11, 2010. At the January PC meeting, H0024680 [REDACTED] [REDACTED] which were held April 5 and

⁴ The process used at the Louisiana production plant does not include the dehydrofluorination of 236ea or 245eb and uses a different organic starting material (1230xa instead of HFP) and produces different by-products (HCl instead of CaF₂). (EX1034 at 5-14 (showing “Fugitive and Unloading Operations” calculations for the beginning of the production process, where raw materials are introduced and the reaction of 1230xa + HF → 1233xf + HCl takes place).)

⁵ Dr. Lousenberg admitted that the current process used by Patent Owner “[does] not do liquid phase.” (EX1024, 70:11-22.)

13, 2010 and July 12, 2010. (EX1032; EX1033; EX1037.)⁶ Activity during the [REDACTED] period was very sparse. For example, on February 10, 2010, Dr. Bektesevic provided the PC a requested detailed disclosure (EX2041, ¶10 (citing EX2030)) [REDACTED]

[REDACTED]

Additionally, Mr. Bradford allegedly reviewed IR H0024680 “with an eye to filing” after the April 13 meeting; however, his declaration does not describe any specific actions he performed in reviewing IR H0024680. Rather, he indicates generally what his “customary” and “normal review” of disclosures *would be* without any specific reference to IR H0024680 other than eventually recommending proceeding with filing a provisional patent application. (EX2041, ¶11.) Such general testimony is not sufficiently specific as to facts and dates and should be given little to no weight. *Olympus*, IPR2014-00233, slip op. at 20-22.

⁶ [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

Each of these periods (98, 151, and 183 days) is in itself sufficient to defeat Patent Owner's claim of diligence.

The time period from July 12, 2010 to October 12, 2010 can be divided into three time spans: 1) a 38-day first time span from July 12, 2010 to the date Patent Owner instructed outside counsel to prepare the patent application; 2) a 41-day second time span from the time Patent Owner instructed outside counsel to prepare the application until outside counsel sent Patent Owner the draft application; and 3) a 13-day third time span while the inventors allegedly reviewed the draft application. Patent Owner has failed to show continuous and corroborated diligence during any of these three periods.

With regard to the first time span, Bruce Bradford testified that a Patent Committee (PC) meeting was held on July 12, 2010 during which the PC requested that Mr. Bradford instruct outside counsel to draft a patent application. (EX2041, ¶12.) After this meeting, there was an unexplained period of inactivity of [REDACTED] when nothing happened relative to IR H0024680 (July 12, 2010-[REDACTED]).

[REDACTED]

[REDACTED] After the meeting minutes were circulated, nothing happened relative to IR H0024680 for [REDACTED]

([REDACTED]-August 19, 2010).⁷ Then, on August 19, 2010 (38 days after the July 12, 2010 PC meeting), Mr. Bradford's paralegal finally instructed outside counsel to draft a provisional application. In other words, Patent Owner waited 38 days to send [REDACTED]

[REDACTED] This 38-day period, by itself, is sufficient to defeat Patent Owner's diligence claim. *Olympus*, IPR2014-00233, slip op. at 20-22.

With regard to the 41-day second time span, Joseph Posillico testified that he received instructions to draft a patent application on August 19, 2010. (*See* EX2043, ¶4.) Patent Owner's only evidence of activity during this 41-day span is that, between September 22 and 29, attorneys spent 18.3 hours working on the application. (*Id.* at ¶9.) This evidence falls far short of demonstrating continuous activity. Also, [REDACTED]

⁷ Mr. Bradford testified that he and his paralegal were on vacation from July 26, 2010 to August 2, 2010 (EX2041, ¶14), but this does not justify Patent Owner's inactivity between July 16, 2010 and August 19, 2010, particularly during the 17-day period from August 2-19.

[REDACTED]

[REDACTED]

[REDACTED] This 41-day period is sufficient to defeat Patent Owner's diligence claim.

With regard to the 13-day third time span, outside counsel sent a draft patent application to the inventors on September 29th and requested review and comment by October 6th. (See EX2041, ¶16; [REDACTED] Dr. Bektesevic replied on October 1st requesting an extension of time to review the application. (See EX2041, ¶17; [REDACTED] Then, on October 12th, Dr. Bektesevic again wrote to outside counsel, stating that the inventors agreed "it is OK to file invention as is." (See EX2041, ¶17; [REDACTED]) Patent Owner does not identify any activities undertaken by the inventors related to reviewing the draft application. Also, Patent Owner has not identified a single edit or comment made by the inventors. Dr. Tung, the only inventor declarant, testified that he reviewed the draft application "as I was available given my other day to day responsibilities," but he does not identify any single date on which he worked on the application. (EX2006, ¶59.) Dr. Tung's testimony is not sufficiently specific as to facts and dates for the relevant time period to establish reasonable diligence. See *Olympus*, IPR2014-00233, slip op. at 21 (holding that inventor testimony that "I do not recall all of my specific daily activities from 1998, I diligently worked with [my attorney during the relevant

time period] within the reasonable time limits of my busy ... schedule” was not sufficiently specific to establish reasonable diligence.) This 13-day period is also sufficient to defeat Patent Owner’s diligence claim.

Patent Owner has not met the burden of producing evidence showing continuous and corroborated diligence during the Smith critical period.

Respectfully submitted,

May 6, 2016

Date

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CERTIFICATE OF WORD COUNT

The undersigned certifies pursuant to 37 C.F.R. § 42.24(d) that the relevant portions of Petitioner's Reply contain 4615 words as determined by Microsoft Word.

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CERTIFICATE OF SERVICE

I hereby certify that a true copy of the foregoing PETITIONER'S REPLY
TO PATENT OWNER'S RESPONSE has been served in its entirety this 6th day
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