UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

E. I. DU PONT DE NEMOURS AND COMPANY and
ARCHER-DANIELS-MIDLAND COMPANY,
Petitioners,

v.

FURANIX TECHNOLOGIES B.V.,
Patent Owner.

Case IPR2015-01838
Patent 8,865,921

Declaration # 2 of Dr. Kevin J. Martin

I, Kevin J. Martin, do hereby declare as follows:

1. I have been asked to submit an opinion in support of a Reply Brief regarding the subject matter of the claims of U.S. Patent No. 8,865,921 ("the '921 patent") (Exhibit 1001) in response to Patent Owner's Response (Paper No. 23) ("the Response"), including the testimony of Dr. Schammel.

2. I describe herein portions of Dr. Schammel's testimony (Exh. 2020) and the Response with which I do not agree. Other portions of Dr. Schammel's testimony and the Response are not addressed; however, just because I do not discuss a portion of the testimony or reply, does not imply or suggest that I agree with Patent Owner's or Dr. Schammel's representations.

3. As I previously testified (e.g., Exhibit 1009), I am very familiar with the subject matter of the claims of the '921 patent, and worked in the relevant field for a number of years. A further description of my qualifications can be found in my CV. *See* Exhibit 1015.

4. Similar to my prior Declaration, I am not being compensated beyond my current salary for my time preparing this declaration and any time associated with any subsequent deposition. I am, however, being reimbursed for reasonable and customary expenses associated with my work and testimony. I do not expect to

receive any compensation contingent on the outcome of this matter or the specifics of my testimony.

I. A PERSON OF ORDINARY SKILL IN THE ART

5. I have reviewed Dr. Schammel's declaration and supporting testimony and understand that he does not agree with my description of a person of ordinary skill in the art. *See* Exh. 2003 ¶ 44. Instead, Dr. Schammel asserts "a person of ordinary skill in the art in 2009 would have been a person having at least a bachelor's degree in chemistry or chemical engineering, having worked in the field of chemical process development for at least five years [or] having experience in the preparation of furan compounds from biomass and in the catalysis of oxidation of furan compounds." *Id*.; *see also* Exh. 2020 at 18:6-14.

6. According to Dr. Schammel, a person having ordinary skill in the art would have been able to run oxidation reactions to arrive at FDCA, would have been able to run tests within a particular range if provided, and would be capable of reviewing and understanding peer-reviewed publications. *See* Exh. 2020 at 20:5-8 and 20:19-21:6. Dr. Schammel further testified that a person having ordinary skill in the art would have been capable of designing experiments. *See id*. at 20:15-18.

7. While I agree with Dr. Schammel's description of the capabilities of his described person of ordinary skill in the art, I disagree with the limitations placed on that person, especially in view of his deposition testimony wherein he admitted that a person of ordinary skill in the art would not have been able to necessarily fully practice the invention. *See* Exh. 2020 78:11-14. In my opinion, the difference between my description of a person of ordinary skill in the art and Dr. Schammel's description is that the added experience and/or education my description requires would have allowed that person to draw further inferences from peer-reviewed publications based on the additional experience and/or education, and that a person of ordinary skill in the art would have had a reasonable expectation of successfully optimizing conditions for oxidation reactions based, in part, on peer-reviewed publications. My description of a person having ordinary skill in the art would have been able to obtain workable ranges for the catalytic oxidation of HMF to FDCA, and to design experiments to vary variables and determine an optimal range to maximize yields. This is supported by the references themselves that provide ranges for temperatures, pressures, reaction times, and catalyst concentrations, as well as inferences drawn from the experiments reported. *See, e.g.,* the '732//7:5-7 ("preferred time of the reaction is determined by the temperature, pressure and catalyst concentration such that a maximum yield of diacid is obtained."); *id.* at 15:9-11 (the data "also illustrates

that increasing catalyst concentrations at a given temperature and time, nearly always increased the FDA yield."); Partenheimer//105 ("yield increases with catalyst concentration (Figure 7) [and] with temperature (entries 1 and 2 and 3 and 4 of Table 3)."); *id.* (discussing data showing staged reactions achieving no greater yield than non-staged reactions); *id.* ("[i]t is believed that variation of the molar amounts of the Co, Mn, Zr, and Br could well improve the yield of 2,5-furandicarboxylic acid."); '318 at [0007] (disclosing reactor temperatures of from about 50° C to about 200° C.); *id.* at Figs. 30, 31 (disclosing the conversion of HMF to FDCA at 160°C and at either 150 psi of air (oxygen partial pressure of 2.17 bar) or 300 psi (oxygen partial pressure of 4.34 bar)), below:

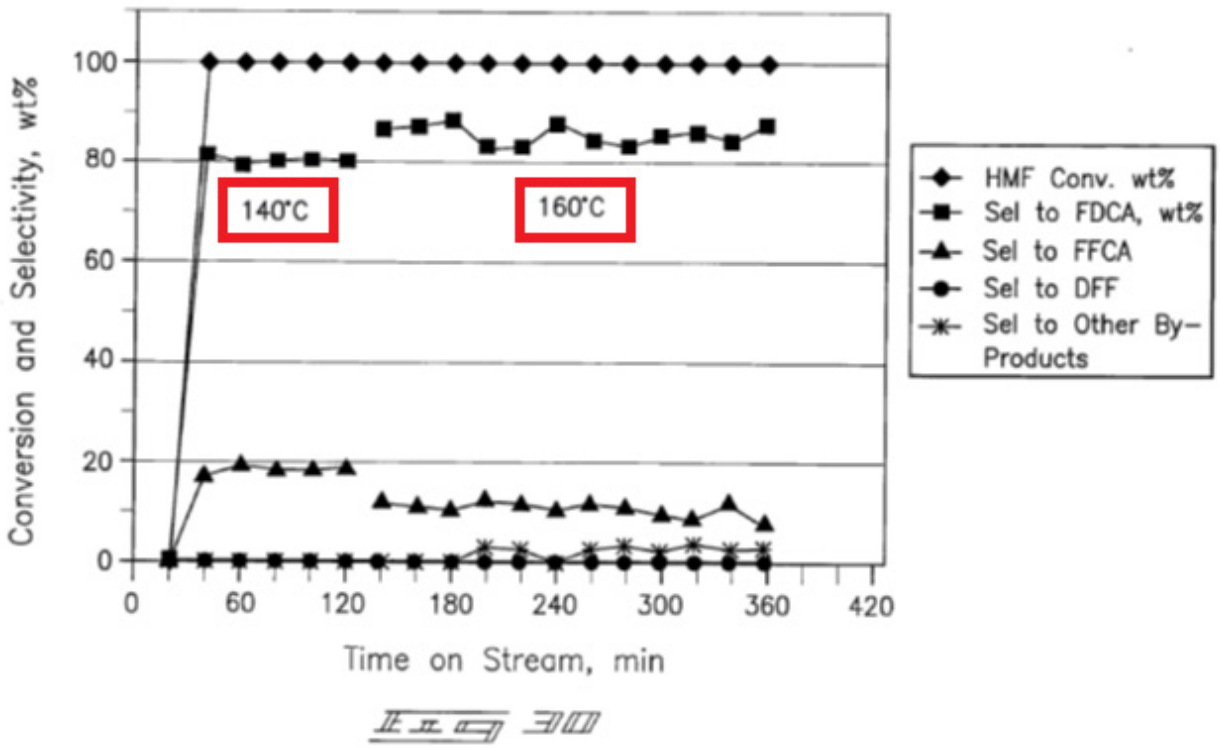

Fig 30

DOCKET ALARM

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