

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

SYNGENTA CROP PROTECTION AG,

Petitioner,

v.

INFLEXION POINT TECHNOLOGIES, LLC,

Patent Owner.

Case No. PGR2025-00045

Patent No. 12,102,027

**DECLARATION OF DOUGLAS S. PRAIRIE, P.E. IN SUPPORT OF
PATENT OWNER'S PRELIMINARY RESPONSE TO PETITION**

I, Douglas S. Prairie, P.E., hereby declare as follows:

I. INTRODUCTION

A. Scope of Work

1. I have been retained by Fredrikson & Byron, P.A. on behalf of Inflexion Point Technologies Patent Owner as an independent expert to provide my opinions on the subject matter of the patents and prior art at issue in PGR2025-00045.

2. I understand that Inflexion Point Technologies is the owner of U.S. Patent No. 12,102,027 (“the ’027 Patent”) to Smith et al., entitled “System and Method for Prescriptive Seed Treatment,” filed June 23, 2015.

3. I make this declaration based upon personal knowledge. I am over the age of 21 and otherwise competent to make this declaration.

4. I am being compensated at my normal consulting rate of \$150/hour for my work, but my opinions are based on my own views of the patented technology and the prior art. My compensation is not dependent on the outcome of this proceeding and in no way affects the substance of my statements in this Declaration.

B. Qualifications

5. I hold a B.S. in Agricultural Engineering (with a focus on power and machinery) from South Dakota State University, which I received in 1997. I also hold a M.S. in Mechanical Engineering (with a business emphasis) from Boise State University, which I received in 2004. I am a registered Professional Engineer in the State of Idaho.

6. I have worked in the agricultural and mechanical engineering industry for over twenty-five years. For a large portion of that time, I worked directly on the development of precision seeding technology. My present position at South Dakota State University allows me to lecture and lead the development of engineering and technical based coursework for the first four-year university in the world with a B.S. degree in Precision Agriculture. Courses I am responsible for involve every aspect of the design, operation and ownership of agriculture machinery including planting and seeding technologies. Previous positions related directly to planting and seeding technology include five years as the global Product Manager of planting and seeding technologies for Raven Industries (now part of CNHi). This position involved being familiar with all the global planter and seeder hardware manufacturers and the technologies they utilized. A highlight of this position was the rollout of Raven's Omni-Row planter control system which interfaced with all the leading row crop planter technologies. A leading-edge feature of this system was individual row rate control of seed population and multi-hybrid or multi-species planting controls. Early in my engineering career, I was employed as a product development engineer for CaseIH within their planter and seeder product group. During my time with CaseIH (now part of CNHi), I was involved in multiple projects that led to a series of innovative technologies and U.S. Patents related to seed distribution and ground engaging tools for planting and seeding equipment.

7. From May 1996 until September 1996 (while I was completing my B.S.), I worked for Ag-Chem Equipment Co., where I performed product testing on the engine hydraulic systems of chemical and granular fertilizer applicators. (I understand that after my work there, Ag-Chem Equipment Co. was acquired by AGCO Corporation in 2001.)

8. From October 1996 until July 2000, I worked for Case Corporation, a large manufacturer of construction and agricultural equipment, as a New Product Development Engineer for Case's Planting and Seeding Division. In that role, I was part of a team that developed the SDX 30 and SDX 40 single disc no-till planter programs from conception to production. Some of this work is shown within U.S. Patents 6,386,127, 6,640,732, and 6,644,223. I was also involved in the development of pneumatic seed delivery systems to row crop planter seed meters (U.S. Patents 5,915,312 and 6,047,652).

9. From December 2000 until February 2003 and again from September 2005 until December 2007, I worked for Multiquip, a manufacturer and supplier of products for construction, industrial, telecom, government, and other industries, as an Engineering Department Manager. In that role, I oversaw the development of light construction equipment, such as the HTX and STX hydraulic concrete power trowels.

10. From February 2003 until September 2005, I worked for Bratney Companies as a Construction/Mechanical Project Engineer. Bratney Companies provides equipment design, engineering, and construction services to seed, food, grain, and feed facilities around the world. In that role, I developed and managed construction projects, including a green field alfalfa cleaning and bagging facility.

11. From December 2007 through December of 2024, I performed freelance agricultural, mechanical, and industrial design engineering through my own company, Prairie West LLC. Some examples of this work include mechanical engineering analysis and documentation for a micro corn to ethanol production facility, structure design analysis for a mobile hydraulic car crushing system, and industrial design and product development for a consumer products company that developed child strollers.

12. From March 2010 until March 2015, I also worked for Raven Industries (now part of CNHi), first as a Project Manager for planting, seeding, and harvesting product lines and then as the North American Sales Manager for precision agriculture technology. Raven Industries is an electronics manufacturing firm, specializing in precision agriculture, high-performance specialty films, and lighter-than-air technologies. In those roles, I oversaw development and launch of multiple planting products, including OmniRow Planter Controls, OmniSeed Air Seeder Controls, UHarvest Grain Cart Monitoring System, and SmartYield Pro Yield

Monitoring System. The OmniRow product line was the first aftermarket planter control system that allowed for individual rate control of row crop planter seed meters. The OmniSeed seeder control was an aftermarket and OEM based technology that was revolutionary in its ability to provide a comprehensive seeder control package within a single platform. Leading these product development efforts and launches allowed me firsthand exposure to all the major planter and seeding equipment manufactures and their technologies.

13. From June 2015 until June 2016, I worked for POET Research as a Mechanical Research Manager in the research and innovation group. POET Research develops and produces clean and renewable biofuels. In that role, I developed technologies related to corn ethanol, cellulosic ethanol, and corn-derived industrial products.

14. From August 2016 until the present, I have taught as a Lecturer at South Dakota State University in the Agriculture and Biosystems Engineering Department. I have taught and led the development of courses for undergraduate students that go on to receive Bachelor of Science degrees in Agriculture Systems Technology (AST), Precision Agriculture (PRAG), Agriculture and Biosystems Engineering (ABE), and Mechanical Engineering (ME). South Dakota State University is the first and only university in the world to offer a four-year B.S. degree in Precision Agriculture. As part of this coursework, I have assisted with the development of

multiple small scale two-row planters that showcase technologies of the leading planter equipment manufacturers. Specific courses I lead and/or instruct are ABE 234 Digital Tools for Agriculture Engineers, ABE 314 Agriculture Power and Machinery; ABE 411/422 Capstone Design; ABE 350 Hydraulic Systems; ABE 464 Monitoring and Controls; AST 412 Fluid Power Technology; and AST 313 Farm Machinery Management.

15. I am a named inventor on multiple U.S. patents and applications relating to seeding and planting technology: U.S. Patent Nos. 5,915,312, titled Pneumatic Seed Delivery System, which issued on June 29, 1999 (a pneumatic system for providing grain from a grain bin to a grain meter using air flow); U.S. Patent No. 6,047,652, titled Seed Planter Distribution System, which issued on April 11, 2000 (a system for receiving air borne seed from a source and transferring the seed to seed metering bins); U.S. Patent No. 6,116,172, titled Shank-Mounted Row Chop Opener, which issued on September 12, 2000 (an opener assembly used to form a furrow in the ground with improved versatility and lower maintenance needs); U.S. Patent Nos. 6,386,127, 6,640,732, and 6,644,223, titled Disc Opener for a Seed Planter, which issued on May 14, 2002, November 4, 2003, and November 11, 2003, respectively (a disc-style opener assembly for opening a furrow in the ground); U.S. Patent No. 6,454,019, titled Agricultural Implement Down Pressure System, which issued on September 24, 2002 (a mechanism for forcing a device that

opens a furrow in the ground towards and into the soil); and U.S. Patent Application No. 13/842,326, titled Multi-Seed Planter Control System and Method for the Same, which was filed on March 15, 2013 (a method of automatically planting two or more seed types, including monitoring a planter's location and having remotely adjustable planting characteristics).

16. I am a member of multiple professional organizations, including the American Society of Agricultural and Biological Engineers (ASABE), and the American Society of Mechanical Engineers (ASME).

17. A copy of my curriculum vitae is attached as Appendix A.

18. Appendix A contains further details regarding my experience, education, and other qualifications to render an expert opinion in connection with this proceeding.

C. Materials Reviewed

19. In forming my opinions, I have reviewed the following documents, and any other document cited in this declaration:

Exhibit	Description
1001	U.S. Patent No. 12,102,027 to Smith et al., entitled "System and Method for Prescriptive Seed Treatment," filed June 23, 2015
1002	Selected Excerpts of the File History of the '027 Patent
1003	Declaration of Durham K. Giles, Ph.D.

1004	Wagers et al., “Multi-Seed Planter Control System and Method for the Same,” US2014/0277959, published on September 18, 2014 (“Wagers”)
1005	Mitchell, “Antismut Grain and Soil Treating Process and Apparatus,” U.S. Patent No. 1,409,564, issued on March 14, 1922
1006	Wilkerson et al., “Systems and Methods for Fluid Dispensing,” US2004/0231575, published on November 25, 2004 (“Wilkerson”)
1007	Batcheller et al., “Method and System for Optimizing Planting Operations,” US2014/0379228, published on December 25, 2014 (“Batcheller”)
1008	Memory et al., “Method and Apparatus for Coating Seeds,” U.S. Patent No. 6,155,185, issued on December 5, 2000 (“Memory”)
1009	Garner et al., “Seeding Machine with Seed Delivery System,” U.S. Patent No. 8,850,995, issued on October 7, 2014 (“Garner”)
1010	Bender et al., “Multiple-Type Seed Dispensing System,” U.S. Patent No. 5,915,313, issued on June 29, 1999 (“Bender”)
1011	Garner et al., “Planting Unit for a Seeding Machine Having Blocking Member to Control Hand-Off of Seed From a Seed Meter to a Seed Delivery System,” U.S. Patent No. 8,671,856, issued on March 18, 2014 (“Garner ‘856”)
1012	Thacker, “Vegetable Seed Planter,” U.S. Patent App. Pub. No. 2016/0174458, published on June 23, 2016 (“Thacker”)
1013	Wendte, “Method and Apparatus for an Agricultural Implement Seed Meter,” U.S. Patent No. 7,854,066, issued on December 21, 2010 (“Wendte ‘066”)
1014	Sauder et al., “Apparatus and Method for Controlled Delivery of Seeds to an Open Furrow,” U.S. Patent No. 6,681,706, issued on January 27, 2004 (“Sauder ‘706”)

1015	Celik, “Effects of Various Planters on Emergence and Seed Distribution Uniformity of Sunflower,” Applied Engineering in Agriculture (2007) (“Celik”)
1016	Liu et al., “Seed Sensory System and Method for Improved Seed Count and Seed Spacing,” U.S. Patent App. Pub. No. 2010/0116974, published on May 13, 2010 (“Liu”)
1017	Sauder et al., “Seed Tube Egress-Mounted Seed Sensor,” U.S. Patent No. 8,631,749, issued on January 21, 2014 (“Sauder ‘749”)
1018	Knake, “Apparatus for Spray-Treating Seeds During Planting,” U.S. Patent No. 4,356,934, issued on November 2, 1982 (“Knake”)
1019	Hancock, John H., “Design and Evaluation of a Seed-Specific Applicator for In-Furrow Chemical Application,” University of Tennessee, 2003 (“Hancock”)
1020	Grimm et al., “System and Method for Spraying Seeds Dispensed From a Planter,” U.S. Patent No. 9,226,442, issued on January 5, 2016 (“Grimm”)
1021	Downey et al., “Pulsed-Jet Microspray Applications for High Spatial Resolution of Deposition on Biological Targets,” Atomization and Sprays, Vol. 14, pp. 93-109 (2004) (“Downey”)
1022	Cloeter et al., “Planar Laser Induced Fluorescence (PLIF) Flow Visualization applied to Agricultural Spray Nozzles with Sheet Disintegration; Influence of an Oil-in-Water Emulsion,” ILASS Americas 22nd Annual Conference on Liquid Atomization and Spray Systems, Cincinnati, OH (2010) (“Cloeter”)
1023	Nielsen, “Don’t Let the Planter Hold Back Your Corn Yields,” Purdue University, published January 4, 1996 (“Nielsen”)
1024	Kocher et al., “Corn Seed Spacing Uniformity as Affected by Seed Tube Condition,” Biological Systems Engineering: Papers and Publications (2011) (“Kocher”)

1025	Selected Excerpts of the File History of Eur. Patent App. No. 3967120, filed on June 23, 2015
1026	“John Deere Debuts New Planting Technology & Electric Excavator During CES 2023 Keynote,” John Deere, published on January 5, 2023
1027	Garner et al., “Seeding Machine for Planting Multiple Seed Varieties and Prescription for Multiple Varieties Seeding Machine,” U.S. Patent No. 8,942,894, issued on January 27, 2015 (“Garner ‘894”)
1028	Wendte et al., “Multiple Seed-Type Planter with On-Row Selector Assembly,” U.S. Patent No. 9,648,802, issued on May 16, 2017 (“Wendte ‘802”)
1029	Giles, D. Ken et al., “Liquid Property and Nozzle Effects on Flight Time of Pulsed Jet Spray.” <i>Atomization and Sprays</i> , vol. 14, no. 2 (2004) (“Giles”)
1030	Declaration of Sylvia D. Hall-Ellis, PhD

II. LEGAL UNDERSTANDING

20. I am not an attorney, and I have not independently researched the law on patentability. My knowledge of the legal standards below is based on information I learned from counsel and through my prior experience in patent litigation.

21. I understand that, in this post-grant review, Petitioner ultimately has the burden of proving that each challenged claim is unpatentable by a preponderance of the evidence. I also understand that, for the Board to institute post grant review,

Petitioner has the burden of showing that it is more likely than not that at least one claim is unpatentable.

22. I understand that a patent claim is unpatentable if the claimed invention was anticipated by a prior art reference or would have been obvious to a person of ordinary skill in the art (“POSITA”) at the time of the purported invention.

B. Claim Construction

23. I understand that patent claims are to be interpreted in view of a patent’s specification and prosecution history. I understand that claim construction starts with the plain language of the claims as understood by a POSITA at the time the patent was filed.

24. I understand that a patentee may be its own lexicographer, so long as the definition of a specific term is clearly set forth in the specification, and it is clear the inventor intended to define the term.

C. Prior Art

25. I understand that in order to obtain a patent, the claimed invention must be new and nonobvious from the perspective of a POSITA at the time of the invention. I further understand that the information available to a POSITA as of the time of the invention is referred to as the “prior art.”

26. I have been informed by counsel that information is only considered prior art if it falls within one of the specific categories of prior art identified in the

patent statutes. I further understand that for purposes of this proceeding before the United States Patent Trial and Appeal Board, only patents and other documents that have the legal status of a “printed publication” may be relied upon as prior art.

27. I have been informed by counsel that a patent or a published U.S. patent application is generally considered to become prior art as of the date the patent application is filed.¹

28. I have been informed by counsel that a printed publication qualifies as prior art based on the date when it becomes “publicly accessible.” I have been informed that information is publicly accessible as of the date it was disseminated or otherwise made available such that members of the relevant public interested in the subject matter could, using reasonable diligence, locate it.

29. I have also been informed that the determination of public accessibility is a case-by-case analysis particular to an individual publication. I also understand that one way a printed publication can be deemed publicly accessible if it is catalogued and indexed by a library such that a member of the public interested in the subject matter could locate it exercising reasonable diligence.

¹ I have been informed that a patent or published patent application may also become prior art based on its date of conception or its date of publication. I have been informed that the different rules related to those statutory provisions are not relevant to this proceeding, and accordingly this Declaration treats patents and published patent applications as entering the prior art based on the filing date of the underlying patent application.

30. I understand that the burden is on the Petitioner to identify with particularity evidence sufficient to establish a reasonable likelihood that the reference was publicly accessible before the critical date of the challenged patent, and therefore that there is a reasonable likelihood that it qualifies as a printed publication. I understand that Petitioner must establish public accessibility by a preponderance of the evidence.

31. I have been instructed to assume in my analysis, that, for the purpose of determining what qualifies as “prior art,” the effective filing date for each of the Challenged Claims (“Effective Filing Date”) is June 23, 2015. In other words, patents or publications that were publicly available prior to the Effective Filing Date, as well as any patent application filed in the United States before the invention, may be considered.

32. I understand that Dr. Giles analysis was stated to have been based on a June 23, 2015, Effective Filing Date.

D. Anticipation

33. I understand that a patent claim is unpatentable as anticipated under 35 U.S.C. § 102 if a single prior art reference expressly or inherently describes each element of the claimed invention. I understand that for a feature to be inherently present in a prior art reference, the feature must necessarily be present. I also understand that this description must be sufficiently detailed to allow a POSITA to

practice the claimed invention without undue experimentation. Finally, to anticipate, the reference must disclose not only all the limitations of the claim but also all the limitations arranged or combined in the same way as recited in the claim.

34. It is my understanding that anticipation is a question of fact determined from the perspective of a POSITA at the time of the claimed invention. I also understand the standard for anticipation in a PGR proceeding is “by a preponderance of the evidence.” My understanding of this burden of proof is that it requires there be a greater than 50% chance that something is true. Further, it is my understanding that a claim is anticipated only if each and every element in the claim is found, expressly or inherently, in a single prior art reference.

35. I understand that if a prior art reference does not expressly set forth a particular claim element, the prior art may still anticipate a claim if that element is “inherent” in its disclosure. My understanding of the inherency standard is that there can be no inherency unless the evidence makes it clear the missing descriptive matter is necessarily present in the thing described in the reference. It is also my understanding that inherency may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient to establish inherency.

E. Obviousness

36. I understand that Petitioner has challenged several claims of the '027 Patent on the grounds that the invention claimed would have been obvious to a POSITA at the time the applications were filed. I also understand the standard for obviousness in a PGR proceeding is “by a preponderance of the evidence.” In other words, I understand that the party challenging validity (here, Syngenta) bears the burden of establishing the obviousness of the invention by a preponderance of the evidence.

37. I have been informed that there are two types of claims: (1) independent claims; and (2) dependent claims. I understand that independent claims stand alone and do not reference or depend from other claims. I understand a dependent claim is a claim that refers to at least one other claim in the patent. For example, claim 2 of the '027 Patent is a dependent claim because it refers to claim 1. I understand a dependent claim includes all of the limitations recited in the dependent claim, as well as all of the limitations of the claim(s) upon which it depends. Thus, I have been informed that to establish anticipation or obviousness of a dependent claim, the prior art must teach or render obvious each and every limitation of the dependent claim as well as the independent claim from which it depends.

38. I understand that the factors for an obviousness analysis include: (1) the scope and content of the prior art; (2) the differences between each of the claims of

the patent and the prior art; (3) the level of ordinary skill in the art at the time the invention was made; and (4) objective indicia (or “secondary considerations”) of nonobviousness.

39. I understand that the objective indicators of nonobviousness (sometimes referred to as “secondary considerations” or “secondary indicia”) which must be considered in evaluating obviousness include commercial success of the claimed invention, whether others copied the invention, whether there was a long-felt but unmet need in a particular industry, and whether others in the field praised the invention. I understand secondary considerations can be evidence that patent claims were not obvious. I understand that secondary considerations of nonobviousness support a finding of nonobviousness if the evidence of secondary considerations is sufficiently tied to the patented features. Where a patent claims a combination of features, I understand that the evidence of secondary considerations may be tied to the claimed combination as a whole. I understand secondary considerations of nonobviousness may overcome primary evidence of obviousness even if such primary evidence is strong.

40. I also understand that a POSITA is presumed to be a person who would have known about all relevant prior art, and that in examining the prior art, both what the art discloses and anything that inherently occurred as a result of practicing what was expressly disclosed in that prior art should be taken into account.

41. I understand that there must be a reason, suggestion, or motivation to modify a single prior art reference, or to combine multiple references, to achieve the claimed invention. I understand that this motivation may come from a teaching, suggestion, or motivation to combine. I also understand that a specific teaching, suggestion, or motivation is not required.

42. I understand the reason, suggestion, or motivation to modify or combine the teachings of a reference to the claimed invention can be either express or implied, and may be derived (for example) from the prior art reference itself, from the knowledge of a POSITA, or from the nature of the problem to be solved. I understand a claimed invention also is obvious if it would have been obvious to a POSITA to try a course of conduct—for example when there is a design need or market pressure to solve a problem and there are a finite number of identified, predictable solutions, and where a person of ordinary skill has a reason to pursue the known options within his or her technical grasp.

43. I also understand that the use of hindsight is not appropriate in determining whether a claimed invention would have been obvious. In other words, one cannot use the patent as a guide through the prior art references to assist in combining the right references in the right way so as to achieve the result of the claims of the patent. Rather, I understand one must consider only the thinking of a POSITA with knowledge of all the prior art at the time of the invention. I have been

informed that the U.S. Court of Appeals for the Federal Circuit has explained that “[t]o imbue one of ordinary skill in the art with knowledge of the invention in suit when no prior art reference . . . of record convey or suggest that knowledge, is to fall victim to the insidious effect of a hindsight syndrome wherein that which only the inventor taught is used against its teacher.” *W.L. Gore & Assoc. v. Garlock, Inc.*, 721 F.2d 1540, 1553 (Fed. Cir. 1983).

44. I understand that, in consideration of all those factors, a patent is not obvious unless the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a POSITA to which said subject matter pertains.

F. Enablement

45. I have been informed and understand that to meet the enablement requirement, an applicant is required to disclose sufficient information to allow a POSITA to make and use the claimed invention without undue experimentation. I further understand that the enablement requirement must be satisfied at the time the patent application was filed.

46. I have also been informed and understand that a POSITA may determine whether a disclosure calls for undue experimentation considering the following factors: (a) the quantity of experimentation necessary; (b) the amount of direction or guidance presented; (c) the presence or absence of working examples;

(d) the nature of the invention; (e) the state of the prior art; (f) the relative skill of those in the art; (g) the predictability or unpredictability of the art; and (h) the breadth of the claims.

47. I have also been informed and understand that these factors are illustrative, not mandatory. Thus, I understand that not all of these factors need to be reviewed when determining whether a particular disclosure is enabling.

48. I have been informed and understand that a prior art disclosure must satisfy the enablement requirement to be anticipatory or render a claimed invention obvious.

G. Claim Construction

49. I understand that “claim construction” is the interpretation of the meaning of patent claims. I understand that claims in this post-grant review proceeding are generally given their ordinary and customary meaning, which is the meaning they would have to a POSITA at the time of the invention, in light of the intrinsic specification and file history.

50. I understand that many sources can be used to assist in understanding the meaning of a claim including the claims themselves, the specification, the prosecution history, and extrinsic evidence concerning scientific principles, the meaning of technical terms, and the state of the art. I also understand that intrinsic

evidence can carry more weight than extrinsic evidence particularly if claim terms are given an express definition or if the inventor(s) acted as their own lexicographer.

51. I have been asked to review the claims and ascertain the meaning of the claims from the perspective of one of ordinary skill in the art, as discussed in Section IV. My opinions on claim construction expressed in this declaration are from the perspective of a POSITA as of June 23, 2015, and are consistent with my understanding as stated above with regards to this post-grant review.

52. Petitioner has asserted that “[t]he claim terms of the ’027 Patent should be afforded their plain and ordinary meaning as understood by one of ordinary skill in the art consistent with the scope of the terms as addressed at 7:25-8:57, and the remainder of the ’027 Patent specification.” Petition at 17.

53. I agree. This is consistent with my understanding, from the perspective of a POSITA at the relevant time. That said, in practice, Petitioner ignores its own statement as it applies to “seed-applied substance,” and maps this term against agricultural products that are not applied to the seed but are instead applied to the soil. *E.g.* Petition at 21-22, 25 (“provide the agricultural product contemporaneously with dispensing and planting the seeds” . . . “granular agricultural products”); *id.* at 46 (“as the seed is about to enter the earth at the lower extremities 10 of the hollow teeth, the liquid is applied to the grain and also to the earth, thus giving the seed and earth at the same time a treatment with the anti-smut liquid compound”).

54. As a POSITA, it is my understanding that the '027 Patent uses “seed-applied substance” to refer to a substance applied to the seed before it is planted. Ex. 1001, col. 7:45-48 (“include any composition applied to seeds prior to the seeds being planted (e.g., when the seed comes in contact with the soil in a field).”).

55. It is my opinion that “seed-applied substance” should be interpreted to mean “a substance that is applied directly to the seed before the seed comes into contact with the soil in a field.” In my opinion, this is consistent with what the patent already says but is inconsistent with Petitioner’s apparent interpretation.

III. SCOPE OF OPINIONS

56. At this time, I have been asked only to provide my independent opinions and analysis of the issues I specifically discuss in this declaration. I note that the Petition, including the evidence it cites, appears to refer to other issues regarding which I have not been asked to provide my opinions.

IV. PERSON OF ORDINARY SKILL IN THE ART

57. I understand that the Petitioner and Dr. Giles have proposed a definition of a POSITA: “at least a Bachelor of Science degree in Agricultural or Mechanical Engineering with 5-10 years of practical, applied experience in the field of agricultural machinery, including systems integration and fluid handling and sprayer control systems. . . . Further, one skilled in the art would have a good understanding

of sensors and actuators used in foundational technologies of precision agriculture....” E.g., Petition at 16.

58. I would certainly meet Petitioner’s proposed POSITA standard, as I *teach* Bachelor of Science courses in Agricultural Engineering, and have since 2016. Many courses I teach specifically relate to systems integration of fluid handling and sprayer control systems. Specific courses I lead and/or instruct are ABE 234 Digital Tools for Agriculture Engineers, ABE 314 Agriculture Power and Machinery; ABE 411/422 Capstone Design; ABE 350 Hydraulic Systems; ABE 464 Monitoring and Controls; AST 412 Fluid Power Technology; and AST 313 Farm Machinery Management.

59. I do not necessarily agree with Petitioner’s proposed definition. In my experience, a POSITA as it relates to the ’027 Patent would have a Bachelor of Science degree in Agricultural or Mechanical Engineering with 2-4 years of practical, applied experience in the field of agricultural machinery, including systems integration and fluid handling and sprayer control systems, or equivalent experience. My opinions below are provided with respect to this definition of a POSITA.

60. I am a POSITA under my proposed definition as well, for the same reasons.

61. I understand that when considering the validity of the claims challenged by the Petitioner, I am to analyze the patents, the prior art, and any other references from the perspective of a POSITA at the time of invention. I understand that this date is June 23, 2015, the date on which the PCT application for the '027 Patent was filed. Therefore, when I provide my opinions, I note that they are from the perspective of a POSITA. I do not believe my analysis would change under my definition of a POSITA or Petitioner's.

V. OPINIONS ON INVALIDITY

A. Ground 1: Anticipation based on Wagers.

62. I am a named inventor on the Wagers reference. *See* Ex. 1004.

63. I am familiar with the '027 Patent. Based on my review, I understand that it is directed to solving the problem of "What treatment should this specific seed get right now based on current conditions?" and provides a solution in the form of a prescriptive seed-applied substance application at the planter in a precise location.

64. Wagers is directed towards a different problem of, "Which pre-selected seed type should I plant in this zone and how should I plant it?" and addresses this problem through selecting and optimally planting from pre-existing seed varieties in predetermined locations.

65. Wagers does not involve applying specific seed-applied substances to seeds at specific locations during the planting process or real-time seed treatment application decisions.

66. Unlike the '027 Patent, Wagers does **not** disclose applying calculated substance treatments to individual seeds during the planting process.

67. Wagers is directed to a very different technology than the '027 Patent and does not involve applying a seed-applied substance to each seed before that seed comes in contact with the ground. Wagers also does not disclose utilizing variable types and amounts of seed-applied substances based on conditions in the field.

68. Wagers instead tracks the GPS coordinates of the planter against a “prescription map” and plants the seed type noted on the prescription map, with the predetermined agricultural product (based on the seed type) listed on the prescription map.

69. Wagers is not concerned with seed treatments. Indeed, Wagers never even uses the term “seed treatment”, “treatment”, or “treat”. *See generally* Ex. 1004.

70. Wagers is directed towards conventional application of chemicals to the furrow as opposed to the seed.

71. It is my opinion that Wagers does not anticipate claim 1 of the '027 Patent because Wagers does not disclose (1) “providing a seed drop tube”; (2) “a seed-applied substance”; (3) “calculating a location within a field where the seed

will be delivered to the soil by the planter”; (4) “selecting, based at least in part on a condition, a combination of the seed and the seed-applied substance by selecting a type of seed-applied substance”; (5) “calculating a desired application amount of the selected type of the seed-applied substance to be applied to and carried by the seed to the soil”; (6) “generating the combination of the seed and the selected type of the seed-applied substance at least in part by individually applying the desired application amount of the selected type of the seed-applied substance to each seed as it is being delivered to the soil”; (7) “delivering the combination of the seed and the selected type of the seed-applied substance to the soil at the calculated location within the field for planting”; or (8) “wherein the type of the seed-applied substance, and the desired application amount of the selected type of the seed-applied substance can vary as the planter changes locations within the field.” Each of these are limitations found in independent claim 1 of the ’027 Patent.

1. “Seed drop tubes”

72. First, Wagers does not disclose “providing . . . a seed drop tube.” Ex. 1001 at Claim 1. For this reason alone, Wagers cannot anticipate the ’027 Patent.

73. I understand Petitioner relies on element 108 in Wagers to “disclose” the seed drop tube. Element 108 is a seed hopper. A seed hopper is not a seed drop tube. Ex. 1004, [0026] (“For instance the multi-seed planter 104 includes a seed hopper **108**.”). Review of the ’027 Patent confirms my understanding, as the ’027

Patent separately describes a seed drop tube and a seed hopper. E.g., Ex. 1001, at 10:8-10; see also *id.* at Claim 11 (separately claiming the “seed hopper.”).

74. I understand Petitioner further relies on the “coulters, seed metering systems including seed wheels, seed hoppers and the like” and “seed metering system 120” as the seed tube. Petition at 21-22. Again, these are not seed tubes. *See, e.g.*, Ex. 1001 at 10:7:10 (describing, separately from seed tubes, the presence of seed meters, seed hoppers, and seed wheels).

75. Wagers does not disclose seed drop tubes at all. Because Wagers does not teach or suggest seed drop tubes, Wagers cannot anticipate claim 1 of the '027 Patent.

2. “Seed- applied substance”

76. Wagers also does not teach “providing . . . a seed-applied substance.” Ex. 1001, cl. 1.

77. Under the correct definition, a seed-applied substance must be applied to the seed (and not applied directly to the ground, or to the seed as it is on the ground).

78. I understand that Petitioner argues this is provided by Wagers’ disclosure of “liquid fertilizer or herbicide” and “granular fertilizer, herbicide, insecticide or the like.” Petition at 21 (teal). I disagree. Wagers discloses bulk-application of fertilizer, insecticide, or herbicide *to the soil itself*. Wagers does not

disclose or suggest any mechanism for applying a substance (e.g., a chemical coating, inoculant, or treatment) directly to individual seeds before planting.

79. Petitioner's reliance on paragraph [0028] of Wagers is misplaced. Paragraph [0028] states that "a liquid fertilizer or herbicide is provided in the agricultural product reservoir 116. In one example the agricultural product reservoir 116 is distributed throughout the row units 114 for instance to corresponding spray units associated with each of the one or more row units 114 or associated with two or more row units 114." Ex. 1004. This is not a disclosure of seed-applied substance. Instead, as evident throughout Wagers, it is a disclosure of how the row units 114 may spray liquid fertilizer or herbicide on the rows (e.g., onto the dirt) while seeds are being dispersed. Ex. 1004, [0028] ("The agricultural product reservoirs 118 are configured to provide the agricultural product contemporaneously with dispensing and planting of seeds.")

80. Paragraph [0050] (cited by Petitioner) confirms this. Paragraph [0050] discusses "an agricultural product dispenser 418 such as one or more of a sprayer or pneumatic system for respective liquid *or granular* fertilizer, herbicide, insecticide or the like...." Ex. 1004, [0050] (emphasis added).

81. Granular fertilizer, herbicide, or insecticide logically and physically cannot be applied to seeds themselves and are instead applied to soil. This is inconsistent with the '027 Patent's focus.

82. Claim 1 requires a *seed-applied* substance on a per-seed basis, whereas Wagers describes bulk application of an agricultural product to the soil itself at a rate of choice, with shut off valves if needed.

83. Because Wagers does not disclose a “seed-applied substance”, Wagers does not anticipate the ’027 Patent.

3. “Calculating a location within a field where the seed will be delivered to the soil by the planter”

84. Wagers also does not anticipate the ’027 Patent because Wagers does not disclose “calculating a location within a field where the seed will be delivered to the soil by the planter.”

85. Wagers does not teach calculating where to deliver seed. Rather, it teaches use of a GPS, along with a premade “prescription map” to plant seeds noted in the prescription map based on the sensed GPS location of the planter. *See* Ex. 1004, [0008] (“The method monitors a planter location on a prescription map of a field, selects a seed type based on the monitored planter location on the prescription map, and then dynamically changes one or more of the planter characteristics based on at least the selected seed type.”); *see also* FIG 3 and [0030] (showing and describing a prescription map demonstrating which seed type should be planted in the particular GPS coordinate).

86. Petitioner relies on Wagers’ Figure 3 and paragraph [0039] to disclose this limitation; this misses the point. The ’027 Patent requires calculation of where

each seed will be delivered. This is different than the Wagers-style matching of the GPS coordinate to a preset prescription map to determine what type of seed will be delivered to a particular prescription zone.

87. Petitioner also appears to rely on Wagers' paragraphs [0032], [0062], [0067] to disclose this limitation. These paragraphs do not address calculating where a seed will be delivered. Paragraph [0032] refers to FIG. 3 showing a map disclosing that different prescription zones of the map include different, predetermined characteristics for the seed and the agricultural product applied. Ex. 1004, [0032].

88. Paragraph [0062] explains that one of the predetermined characteristics includes coulter down pressure based on what zone the GPS determines the planter is currently within. Ex. 1004, [0062].

89. Paragraph [0067] goes on to explain that one of the inputs to the zone calculations is terrain characteristics such as "moisture content of the soil, accelerometer data corresponding to the roughness of the terrain, the grade of the terrain and the like." Ex. 1004, [0067].

90. Wagers does not reference calculating or calculation at all. Instead, Wagers describes using a GPS to locate a planter's location on a prescription map with pre-set prescription zones, each prescription zone corresponding to a pre-identified seed type and agricultural product application. Wagers treats all seeds

within a prescription zone identically. *E.g.*, Ex. 1004, [0056] (describing particular parameters on a zone-by-zone basis).

91. Because Wagers does not disclose “calculating a location within a field where the seed will be delivered to the soil by the planter”, Wagers does not anticipate the ’027 Patent.

4. “selecting, based at least in part on a condition, a combination of the seed and the seed-applied substance by selecting a type of seed-applied substance”

92. As I’ve already discussed, Wagers does not disclose a “seed-applied substance.” Thus, Wagers also does not disclose “selecting, based at least in part on a condition, a combination of the seed and the seed-applied substance by selecting a type of seed-applied substance.” Thus, in my opinion, Wagers does not anticipate the ’027 Patent.

5. “calculating a desired application amount of the selected type of the seed-applied substance to be applied to and carried by the seed to the soil”

93. Wagers also does not anticipate the ’027 Patent because Wagers does not disclose “calculating a desired application amount of the selected type of the seed-applied substance to be applied to and carried by the seed to the soil.”

94. Wagers does not teach or disclose (1) “calculating a desired amount of the selected type of the seed-applied substance to be applied to [the seed]” or (2) applying the seed-applied substance to the seed prior to the seed contacting the soil.

95. Wagers does not calculate an amount of the “agricultural product” to apply to the planted seed, as Petitioner suggests. Rather, Wagers teaches uniform application of the agricultural product within a prescription zone, pre-determined and pre-listed on the prescription map. *See* Ex. 1004, [0050] (“In one example the agricultural product input 540 includes but is not limited to a type of agricultural product as well as a rate of dispensing of the agricultural product provided by the controller 402 and based upon the location of the planter (or the respective row unit 114) within a zone of the prescription map (e.g., within the prescription map module 404).”).

96. Petitioner appears to also rely on paragraphs [0033], [0040], [0050], and [0051] to cover calculating a desired amount of the selected type of the seed-applied substance to be applied to. Petition at 25-26. Critically, these citations do not disclose calculating a desired amount of seed-applied substance, and they definitely do not disclose applying said substance *to the seed*.

97. Paragraph [0033] ties Wagers’ application of agricultural product *to the prescription zone*: “the seed type prescribed in each of the zones 302 correspondingly determines one or more planter characteristics of the multi-hybrid planter 104 including for instance . . . the selection of one or more agricultural products and the rate of application of the one or more agricultural products.”

98. Wagers at most teaches having a particular agricultural product, with a particular rate of application, based on the seed type and the prescription zone. This is not calculation; this is inputting a simple preset into the prescription zone. Nor does paragraph [0033] teach application of the agricultural product *to the seed*; Petitioner does not appear to argue as much.

99. Paragraph [0050] does not fill in these gaps. Paragraph [0050] instead teaches how to have a particular flow rate for the prescription zone: “a rate sensor 546 is provided on the output side of the control valve 544 to accordingly measure the opening of the control valve 544 and the actual dispensation rate (e.g., as a flow meter) from the agricultural product dispenser 418 . . . to achieve a desired target rate and type of agricultural product dispensation by feedback control.”

100. Wagers’ ability to control its application of agricultural product at a predetermined application rate does not disclose *calculating* an amount of seed-applied substance to be applied to the seed.

101. Petitioner next relies on paragraph [0051] which provides that “the control valve 544 is used to apply a particular rate of an agricultural product with the respective row unit 114.” Again, this describes implementing a predetermined application rate within a zone, not calculating a rate of application to a seed.

102. Wagers additionally does not disclose applying the seed-applied substance to the seed prior to the seed contacting the soil. The claim is clear: the

seed-applied substance is carried to the soil *by the seed*. Ex. 1001, cl. 1 (“calculating a desired application amount of the selected type of the *seed-applied substance to be applied to and carried by the seed to the soil*”).

103. Petitioner’s citation to Wagers’ paragraph [0028] does not disclose this element. That paragraph only demonstrates that Wagers applies the agricultural product while the seed is planted: the “agricultural product reservoirs 118 are configured to provide the agricultural product contemporaneously with dispensing and planting of seeds.” Ex. 1004, [0028] (emphasis added).

104. The agricultural product—discussed throughout Wagers as “liquid or granular fertilizer, herbicide, or insecticide,” *see* Ex. 1004, [0050], is applied at a continuous rate throughout a prescription zone. *See id.* at [0050] (“In one example the agricultural product input 540 includes but is not limited to a type of agricultural product as well as *a rate of dispensing* of the agricultural product provided by the controller 402 and *based upon the location of the planter (or the respective row unit 114) within a Zone of the prescription map* (e.g., within the prescription map module 404).”) (emphasis added).

105. The ’027 Patent calls for precise application of product *to the seed itself*. *E.g.*, Ex. 1001, col. 5:4-11; col. 7:45-48 (“‘seed-applied substance’ include[s] any composition applied to seeds *prior to the seeds being planted*”) (emphasis added). Thus, Wager’s disclosure of agricultural product dispersed simultaneously

with planting does not disclose applying the seed-applied substance before the seed contacts the soil.

106. Dr. Giles attempts to fill Wagers' gap by asserting that "[o]ne of ordinary skill in the art would necessarily understand [Wagers's disclosure of metering seeds and applying agricultural product contemporaneously with dispensing of the seed] to necessarily disclose the application of the substance to the individual seed just prior to placement in the ground." Petition at 31 (citing Ex. 1003, ¶¶ 92, 303). I disagree. I am a named inventor of Wagers. This is not what Wagers discloses. Wagers instead discloses agricultural product dispersed simultaneously with planting—*not* to the seed itself, but with the seed in its planted location.

107. Because Wagers does not disclose "calculating a desired application amount of the selected type of the seed-applied substance to be applied to and carried by the seed to the soil," Wagers does not anticipate the '027 Patent.

6. "generating the combination of the seed and the selected type of the seed-applied substance at least in part by individually applying the desired application amount of the selected type of the seed-applied substance to each seed as it is being delivered to the soil."

108. Wagers also does not anticipate the '027 Patent because Wagers does not disclose "generating the combination of the seed and the selected type of the seed-applied substance at least in part by individually applying the desired

application amount of the selected type of the seed-applied substance to each seed as it is being delivered to the soil.”

109. Wagers does not disclose (1) applying a seed-applied substance (as previously discussed); or (2) *individually* applying a seed-applied substance *to each seed* as it is being delivered to the soil, i.e., before contact with the soil.

110. Rather, Wagers discloses that the “agricultural product reservoirs 118 are configured to provide the agricultural product *contemporaneously* with dispensing and planting of seeds,” Ex. 1004, [0028] (emphasis added), and “one or more of the for liquid and granular agricultural products are adjusted to provide a desired type and amount of the respective agricultural product based on the seed selected.” These passages disclose applying the agricultural product to the soil, while planting but separately from the seed, in an amount pre-selected based on the seed type. They do not teach or suggest applying the substance to individual seeds before the seeds reach the soil.

111. Because Wagers does not disclose “generating the combination of the seed and the selected type of the seed-applied substance at least in part by individually applying the desired application amount of the selected type of the seed-applied substance to each seed as it is being delivered to the soil,” Wagers cannot anticipate the ’027 Patent.

7. *“delivering the combination of the seed and the selected type of the seed-applied substance to the soil at the calculated location within the field for planting.”*

112. Wagers also does not anticipate the '027 Patent because Wagers does not teach or suggest “delivering the combination of the seed and the selected type of the seed-applied substance to the soil at the calculated location within the field for planting.”

113. Petitioner relies on Wagers' FIG. 3 and paragraphs [0028], [0033], and [0041] to disclose this. As discussed, Wagers does not disclose calculating a location within the field for delivery of the seed. Nor does Wagers disclose delivery of a seed at a location within the field—rather, Wagers discloses planting a choice of seed throughout a prescription zone previously designated on a prescription map. *See* Ex. 1004, [0050].

114. Wagers discloses tracking the location of a planter against a prescription map. That is not the same thing as the seed-by-seed dynamic planting of claim 1 of the '027 Patent.

115. Because Wagers does not disclose “delivering the combination of the seed and the selected type of the seed-applied substance to the soil at the calculated location within the field for planting,” it cannot anticipate claim 1 of the '027 Patent.

B. Grounds 2-6: Obviousness based on Wagers as a Primary Reference

116. It is further my opinion that Petitioner's additional obviousness grounds, Wagers in combination with Mitchell, Batcheller, Memory, and Garner fail because Wagers is the primary reference for each of these combinations. For the reasons discussed above, Wagers does not disclose each element of independent claim 1.

117. In Ground 2, Wagers in view of Mitchell, Mitchell is not asserted against independent claim 1 limitations that Wagers lacks, including "calculating a location within a field where the seed will be delivered to the soil by the planter." and "calculating a desired application amount of the selected type of the seed-applied substance to be applied to and carried by the seed to the soil."

118. Thus, Wagers in view of Mitchell cannot render the '027 Patent obvious, because (as previously discussed), Wagers does not meet each limitation of the independent claim of the '027 Patent.

119. None of Mitchell, Batcheller, Memory, and Garner are even asserted to disclose limitations of claim 1 of the '027 Patent. Thus, because Wagers does not disclose independent claim 1 of the '027 Patent, Grounds 3-6 fail.

C. Enablement

120. I understand Petitioners argue that the '027 Patent is not enabled.

121. Specifically, Petitioners argue that the '027 Patent is not enabling for limitations of claim 1: (1) “seed”; (2) generating the combination “as it is being delivered to the soil”; and (3) “individually applying . . . the seed-applied substance to each seed as it is being delivered to the soil”. I disagree.

122. As a POSITA, I understand how to use the method claimed in independent claim 1 to plant seeds as claimed. I could use this method no matter the size, shape, mass, or any other characteristic of the seed.

123. That is not to say that all seeds would be economically viable to plant in this manner. Some seeds may, for example, need to be planted so slowly that I would not select this method for planting them. That does not mean they could not be planted in this way, just that there would be less profit on the resulting plant.

124. I would also understand how to utilize various seeds, regardless of individual seed characteristic, to generating the combination of the seed and seed-applied substance “as it is being delivered to the soil.” The patent specification clearly provides examples where the spray of the seed-applied substance is directed to a spot where each seed passes through the seed drop tube 28. The seeds, no matter the size, shape, mass, or any other characteristic, are guided through the seed drop tube at consistent rates—unable to “bounce off the walls” of the seed drop tube—and are in discrete compartments 58 which allow for consistent spraying within a compartment to ensure coverage and limit overspray.

125. Similarly, I understand how to individualize seed treatment from the disclosure of the '027 Patent, based on the same disclosures.

126. All of these things I would understand how to implement without undue experimentation.

I here declare under penalty of perjury that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true, and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code.

Signed by:

Douglas S Prairie

710105E7EF954BA...

Douglas S. Prairie, P.E.

10/16/2025

Dated

APPENDIX A

DOUGLAS S. PRAIRIE, P.E.

1402 Steamboat Trail • Brookings, SD 57006 • (605) 310-8802 • douglasprairie@yahoo.com

PROFESSIONAL ENGINEER

Registered under number 13315 in the State of Idaho

MISSION STATEMENT

Provide innovative education, business and product development solutions

SKILLS SUMMARY

• Engineering Education • Precision Agriculture • Fluid Power Systems • Higher Education • Off-Highway Equipment • Project Management • Product Development • Lean Manufacturing	• Product Management • Business Development • P&ID Development • Sales Management • Intellectual Property • Biofuels • Industrial Equipment • Agricultural Equipment	• Engineering Management • Contract Negotiations • Design for Manufacturing • Stress & Failure Analysis • Feasibility Cost Studies • GD&T • Engine Emission Regs • Machine Design
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EXPERIENCE

South Dakota State University, Brookings, SD; www.sdstate.edu; *August 2016 to present*

Lecturer for Agriculture and Biosystems Engineering Department

- Ag Power and Machinery, Fluid Power Systems, Instrumentation and Controls, ABE Senior Design
- Advisor for International Quarter Scale tractor club; Awarded 3 Championships over the last 9 years
- Advisor for Fluid Power Club; Awarded 2nd place for Fluid Power Bike competition 2023 and 2025

Prairie West LLC, *December 2007 to present*

Freelance Agriculture, Mechanical and Industrial Design Engineer

- Expert legal consultant for multiple cases requiring mechanical and agriculture systems expertise
- Contract designer, developer and test engineer for BOB Strollers
- Contract engineer and CAD designer for AGI Hi Roller belt conveyors

POET Research, Sioux Falls, SD www.poet.com; *June 2015 to June 2016*

Mechanical Research Manager for POET's Research and Innovation Group

- POET Research was responsible for the development and support of novel technologies related to corn ethanol, cellulosic ethanol, and corn derived industrial products and processes.

Raven Industries, Sioux Falls, SD www.ravenprecision.com; *November 2014 to March 2015*

North American Sales Manager of Precision Agriculture Technology

- Sales Leadership for a team of 15 account managers spread across the United States and Canada
- Sales Forecasting and Analysis for hundreds of accounts totaling over \$60 million in annual sales
- Contract Negotiations with OEM and after-market distribution partners

Raven Industries, Sioux Falls, SD www.ravenprecision.com; *March 2010 to November 2014*

Product Manager of Planting, Seeding and Harvest Control Product Lines

- Led development and launch of OmniRow Planter Controls, OmniSeed Air Seeder Controls, UHarvest Grain Cart Monitoring System, and SmartYield Pro Yield Monitoring System
- Business Development of an industry leading Multi-Hybrid planter control system
- Team Lead for Raven SmartQuote Guided Sales and Quotation Tool
- Grew product line sales from a few thousand \$ into multi-million \$ per year business segments
- Recipient of four ASABE AE 50 Product Innovation Awards
- Member of Raven Leadership Council

DOUGLAS S. PRAIRIE, P.E.

EXPERIENCE CONTINUED

Bratney Companies, Boise, ID www.bratney.com; February 2003 to September 2005

Construction/Mechanical Project Engineer of Industrial Processes

- Developed and Executed proposals for multiple design-build construction projects
- Project Managed the construction and startup of a green field alfalfa cleaning and bagging facility

Multiquip, Boise, ID www.multiquip.com; Dec 2000 to Feb 2003; Sept 2005 to Dec 2007

Engineering Department Manager for Light Construction Equipment Manufacturer

- Manage a team of 15 engineers, designers, drafters, and technicians tasked with supporting the safety and technical demands of 200+ plus finished goods.
- Manage a \$1.3 million annual budget for engineering product support and product development.
- Coordinate with product managers, manufacturing, quality, purchasing, marketing, and suppliers
- Responsible for designing equipment to latest global safety and homologation standards
- Coordinate intellectual property development with patent attorneys

Case Corporation, Fargo, ND www.cnh.com; October 1996 to July 2000

New Product Development Engineer for Planting and Seeding Division

- Developed SDX 30 and SDX 40 single disc planter programs from conception to production

Ag-Chem Equipment Co., Jackson, MN www.agcocorp.com; May 1996 to September 1996

- Performed and analyzed engine dynamometer tests, hydraulic tests, and other product tests utilizing data acquisition systems

PATENTS

- Inventor on U.S. Patent # 5,915,312 & 6,047,652: *Pneumatic Seed Delivery System*
- Inventor on U.S. Patent # 6,116,172: *Shank Mounted Row Crop Opener*
- Inventor on U.S. Patent # 6,386,127 6,640,732 & 6,644,223: *Disc Opener for a Seed Planter*
- Inventor on U.S. Patent # 6,454,019: *Ag Implement Down Pressure System*
- Inventor on U.S. Patent # 7,497,522: *Concrete Saw Stay Level Handlebars,*
- Patent Pending: *Multi-Hybrid Planter Controls and Combine Yield Monitor Systems.*

SOFTWARE

SolidWorks CAD and Simulation, LabVIEW, MathCAD, Visio, CREO, AutoCAD, SAP R/3, Visual Basic, Working Model, Microsoft Office and Microsoft Project

EDUCATION

BOISE STATE UNIVERSITY (BSU) Boise, ID www.boisestate.edu

Masters of Mechanical Engineering with Business Emphasis

Graduation Date: December 2004

GPA: 3.5/4.0

Project Paper: *Design of a Conceptual Biodiesel Production Facility*

SOUTH DAKOTA STATE UNIVERSITY (SDSU), Brookings, SD www.sdstate.edu

BS Agricultural Engineering with Power and Machinery Focus

Graduation Date: May 1997

GPA: 3.6/4.0

ASSOCIATIONS

- Certified with Carew International Dimensions of Professional Selling® Program
- Member of FarmHouse Fraternity www.farmhouse.org
- Member of Society of Automotive Engineers www.sae.org
- Member of American Society of Mechanical Engineers www.asme.org
- Member of American Society of Agricultural and Biological Engineers www.asabe.org
- SolidWorks User Group

DOUGLAS S. PRAIRIE, P.E.

1402 Steamboat Trail • Brookings, SD 57006 • (605) 310-8802 • douglasprairie@yahoo.com

PROFESSIONAL ENGINEER

Registered under number 13315 in the State of Idaho

EXPERT WITNESS CASE HISTORY

Testimony and/or Deposition

1. Precision Planting, LLC and AGCO CORP (Petitioners) vs DEERE and COMPANY (Patent owner), Case Numbers: IPR2019-01044; IPR2019-010446; IPR2019-01050; IPR2019-01052; IPR2019-01053; IPR2019-01054; IPR2019-01055 (USPTO Patent Trial and Appeal Board). Multiple reports and approximately 40 hours of deposition.
2. Bazooka Farmstar, LLC (Petitioner) vs Nuhn Industries Ltd. (Patent Owner), IPR2023-01161 (USPTO Patent Trial and Appeal Board). Declaration and deposition testimony on behalf of Patent Owner
3. Bazooka Farmstar, LLC (Petitioner) vs Nuhn Industries Ltd. (Patent Owner), IPR2024-00004 (USPTO Patent Trial and Appeal Board). Declaration testimony on behalf of Patent Owner
4. Bazooka Farmstar, LLC (Petitioner) vs Nuhn Industries Ltd. (Patent Owner), IPR2024-00098 (USPTO Patent Trial and Appeal Board). Declaration and deposition testimony on behalf of Patent Owner
5. Nuhn Industries Ltd. (Plaintiff) v. Bazooka Farmstar, LLC (Defendant), Case No.. 3:22-cv-00015, (S.D. Iowa). Expert reports on behalf of Plaintiff
6. Unverferth Mfg. Co., Inc v Park-Kan Co., LLC (Petitioner). Review Expert of US Patent Numbers: 8,967,940; and 9,745,123. Declarations and testimony on behalf of petitioner.

Patent Infringement and Patent Litigation

1. Wilmer Cutler Pickering Hale and Dorr LLP, Washington D.C. (2018 -2020). Deere and Company (Plaintiff) vs AGCO and Precision Planting (Defendants). Patent Infringement Review Expert for U.S. Patent Numbers: 8,671,856; 8,813,663; 8,850,998; 9,480,199; 9,510,502; 9,661,799; 9,686,906; 9,699,955; 9,807,922; 9,807,924; 9,820,429; 9,861,031; 10,004,173. Working on behalf of the defendant.
2. Harness, Dickey & Pierce, P.L.C. St. Louis, MO (2023-present). Bazooka-Farmstar, LLC (Petitioner) v. Nuhn Industries LTD,. (Patent Owner). Patent validity case. Review Expert of US Patent Numbers: 10,974,557, 11,358,425, 11,491,835, and 11,541,708. Working on behalf of Patent Owner.
3. Fish & Richardson, P.C, Minneapolis, MN (2024 – present). Unverferth Mfg. Co., Inc v Park-Kan Co., LLC (Petitioner). Review Expert of US Patent Numbers: 8,967,940; and 9,745,123. Working on behalf of petitioner.
4. Stara S.A.-Industria De Implementos Agrícolas (Petitioner) v AGCO Corporation (Patent Owner), IPR2024-01459. Expert report on behalf of Patent Owner
5. David's Dozer (Patent Owner) v. Deere and Company (Petitioner), Patent analysis of US Patent 10,533,300 Automatic Grade Stabilizer on behalf of Patent Owner.
6. Monohan Products LLC and Baby Generation Inc. v. Baby Jogger LLC, IPR2025-01105, Patent Trial and Appeal Board. Expert reports on behalf of Petitioner

7. *Monohan Products LLC and Baby Generation Inc. v. Baby Jogger LLC*, IPR2025-01106, Patent Trial and Appeal Board. Expert reports on behalf of Petitioner
8. *Baby Generation, Inc., d/b/a/a Mockingbird; Evenflo Company, INC.; and Mohahan Products, LLC, d/b/a Uppababy, (Petitioner) v. Baby Jogger LLC*, IPR2025-01120, PTAB. Expert reports on behalf of Petitioner
9. *Baby Generation, Inc. d/b/a Mockingbird et al. v. Baby Jogger, LLC*, IPR2025-01095 (P.T.A.B.), involving U.S. Patent No. 11,505,231. Expert reports on behalf of Petitioner
10. *Evenflo Co., Inc. et al. v. Baby Jogger, LLC*, IPR2025-01100 (P.T.A.B.), involving U.S. Patent No. 11,192,568. Expert reports on behalf of Petitioner
11. *Evenflo Co., Inc. v. Baby Jogger, LLC*, IPR2025-01122 (P.T.A.B.), involving U.S. Patent No. 11,731,682. Expert reports on behalf of Petitioner
12. *Evenflo Co., Inc. v. Baby Jogger, LLC*, IPR2025-01140 (P.T.A.B.), involving U.S. Patent No. 11,577,771. Expert reports on behalf of Petitioner

Product Liability and Safety Litigation

1. *Marlow, Woodward & Huff, PLLC, Yankton SD (2023). Dwayne Schmitz (Plaintiff) vs Clark Equipment Co. (Defendants). Product liability and safety review. Working on behalf of the Plaintiff. Work involved a safety test report and declaration report.*