

Expert Declaration Of Eric S. Winkel, Ph.D., P.E. In Support Of Petitioner's Reply to Patent Owner's Response – Case IPR2024-00004

Bazooka Farmstar, LLC v. Nuhn Industries, Ltd.

ESi Matter No: 97177

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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

BAZOOKA-FARMSTAR, LLC

Petitioner,

- vs. -

NUHN INDUSTRIES LTD.,

Patent Owner.

Case No: IPR2024-00004

U.S. Patent No. 11,491,835

EXPERT DECLARATION OF ERIC S. WINKEL, PH.D., P.E.
IN SUPPORT OF PETITION FOR *INTER PARTES*
REVIEW OF U.S. PATENT NO. 11,491,835

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TABLE OF ABBREVIATIONS

Abbreviation	Definition
Bazooka or Petitioner	Bazooka-Farmstar, LLC
Bennett	U.S. Patent Application Publication No. 2014/0288763
Bennett-II	U.S. Patent Application Publication No. 2021/0331752
Bradley	Great Britain Patent No. 2,366,218
Bryham	U.S. Patent No. 7,314,395
Carrier	U.S. Patent Application Publication No. 2012/0185129
Carrier-II	U.S. Patent No. 7,478,817
Challenged Claims	Claims 1-21 of U.S. Patent No. 11,358,425
CRU	The USPTO's Central Reexamination Unit
IPR	<i>Inter Partes</i> Review
Lyseng	Ron Lyseng, <i>Float your boat in a slurry moat</i> , The Western Producer (August 29, 2013).
Melnikov	Russian Patent Application No. 2012137830/11 (EX1023-EX1024)
Manure-Manager	MANURE MANAGER, Jan./Feb. 2011 (EX1112)
Manure-Manager II	MANURE MANAGER, July/Aug. 2011 (EX1113)

Abbreviation	Definition
Nuhn Pump	Patent Owner's pump disclosed in Manure-Manager (EX1112, 27).
Patent Owner	Nuhn Industries Ltd.
POSA	Person of Ordinary Skill in the Art
Puck	U.S. Patent Application Publication No. 2014/0112093
PTAB	U.S. Patent Trials and Appeals Board
Respondent	Patent Owner or Nuhn Industries Ltd.
The '125 Application	U.S. Patent Application No. 17/590,125
The '133 Provisional	U.S. Provisional Patent Application No. 61/805,133
The '224 Patent	U.S. Patent No. 11,448,224
The '422 Patent	U.S. Patent No. 10,710,422
The '425 Patent	U.S. Patent No. 11,358,425
The '425 Prosecution	The Prosecution of U.S. Patent No. 11,358,425
The '425 Reexamination	The Reexamination of U.S. Patent No. 11,358,425
The '425 Reexamination Request	The Request for <i>Ex Parte</i> Reexamination of U.S. Patent No. 11,358,425
The '557 Patent	U.S. Patent No. 10,974,557

Abbreviation	Definition
The '557 Reexamination	The Reexamination of U.S. Patent No. 10,974,557
The '557 Reexamination Request	The Request for <i>Ex Parte</i> Reexamination of U.S. Patent No. 10,974,557
The '598 Provisional	U.S. Provisional Patent Application No. 61/867,598
The '636 Patent	U.S. Patent No. 9,694,636
The '638 Patent	U.S. Patent No. 10,124,638
The '758 Patent	U.S. Patent No. 8,944,758
The '789 PCT	PCT Application No. PCT/CA2014/050,789
The '835 Patent	U.S. Patent No. 11,491,835
The '015 Litigation	United States District Court for the Southern District of Iowa, Civil Action No. 3:22-cv-00015-SMR.
Truxor	DOROTEA MEKANISKA AB, TRUXOR AMPHIBIAN TOOL CARRIER (EX1006)
Truxor-II	DOROTEA MEKANISKA AB, TRUXOR AMPHIBIAN TOOL CARRIER (2013) (EX1020)
Truxor-III	DOROTEA MEKANISKA AB, TRUXOR AMPHIBIAN TOOL CARRIER (2013) (EX1021)

Abbreviation	Definition
Truxor-IV	DOROTEA MEKANISKA AB, TRUXOR AMPHIBIAN TOOL CARRIER (EX1022)
SenwaTec	SENWATEC-SCHRÖER UMWELT-& GEWÄSSERTECHNOLOGIE GMBH & Co. KG, LIGHT AMPHIBIOUS BOAT/VEHICLE “AMPHI- KING®” SWT--AB380 (EX1012)
Sundstrom	The Sundstrom Stir Dredge (Shown and described in EX1120, EX1153, EX1154, and EX1128, 10:09-12:03)
USPTO	United States Patent and Trademark Office
Yoon	KR Publication No. 20130016490 (EX1010-EX1011)

I. INTRODUCTION

1. I have been retained by Merchant & Gould P.C. to serve as an independent expert on behalf of Bazooka in the above-referenced matter to provide my technical review, analysis, and opinions concerning the validity of claims 1-40 of the '835 Patent.

2. I previously executed a declaration relating to the validity of the '835 Patent claims, which I understand was filed with Bazooka's petition for *inter partes* review of the '835 Patent as EX1004. I am providing this declaration as a supplement to my prior declaration to address the arguments made by Nuhn and Mr. Prairie in conjunction with Nuhn's Patent Owner Response. *See* Paper 23 and EX2094.

3. My efforts on this case continue to be billed at a rate of \$250 per hour, with reimbursement for expenses incurred. I have no financial interest in the dispute between Bazooka and Nuhn, and my compensation is not contingent upon the outcome of this IPR.

II. SUMMARY OF OPINIONS

4. A summary of my opinions regarding the validity of claims 1-40 of the '835 Patent is provided in my previous declaration. EX1004, ¶¶12-17. My opinions on these topics remain unchanged since the filing of that declaration.

III. LEGAL PRINCIPLES

5. I am not an attorney. My understanding of patent law and the applicable legal principles and standards comes from explanations provided to me by counsel.

A. Invalidity by Anticipation, Obviousness, and Interpreting Claims Before the Patent Office

6. My prior declaration, executed on October 13, 2023, outlines my understanding of various aspects of patent law, including invalidity by anticipation, obviousness, and interpreting claims before the USPTO. EX1004, Section III.A-C.

B. Means-Plus-Function Claim Terms

7. I understand that 35 U.S.C. §112(f) allows a patentee to claim an invention in functional rather than structural language. I understand that this form of claim drafting is referred to as means-plus-function claiming. I understand that means-plus-function claiming applies only to purely functional limitations that do not provide the corresponding structure for performing the claimed function.

8. I understand that the interpretation of claim language as a means-plus-function limitation under 35 U.S.C. §112(f) is a legal question that is based on the following underlying factual questions: (1) whether the words of the claim are understood by persons of ordinary skill in the art (POSAs) to have a sufficiently definite meaning as the name for structure, and (2) what structure is disclosed in the specification for performing the claimed function. I understand the PTAB will determine as a matter of law whether a term or phrase is a means-plus-function claim

limitation. I am not providing an opinion on the legal question of whether any phrases are means-plus-function limitations; however, I have provided my opinions on the underlying factual determinations as to what a POSA would have understood about specific claim terms and the content of the specification.

9. I understand that the presence of the word “means” in a claim creates the presumption that the claim term is a means-plus-function claim term. Likewise, I understand that the absence of the word “means” in a claim creates the presumption that the claim term is not a means-plus-function claim term. However, I understand that this presumption is not a strong presumption. I understand that the key inquiry for determining whether a claim term is a means-plus-function term is whether the words of the claim are understood by persons of ordinary skill in the art (POSA) to have a sufficiently definite meaning as the name for structure.

10. I understand that once a claim term is determined to be a means-plus-function term, then the function recited in the claim must be determined. I understand that the function of a means-plus-function claim term is defined only by the words of the claim language. I also understand that a means-plus-function claim term may recite multiple functions, in which case, the corresponding structure in the specification must perform all the functions recited in the claim.

11. Once the function of a claim is determined, I understand that the structure in the specification corresponding to the claimed function must be

determined. I understand the corresponding structure is the structure in the specification that performs all of the functions recited in the means-plus-function claim term.

C. Secondary Considerations

12. I understand that there are a number of secondary considerations that may serve as objective indicia of non-obviousness. I understand that secondary considerations are weighed against any prima facie showings of obviousness. Therefore, I understand that the mere presence of secondary considerations is not enough to overcome a strong showing of obviousness unless the objective evidence is sufficient to overcome the prima facie showing of obviousness.

13. I understand that secondary considerations that may be used to support an argument of non-obviousness include: (1) whether the patent owner's invention solved a long felt but unsolved need; (2) whether others have failed to successfully solve the problem solved by the patent owner's invention; (3) the commercial success of products that embody the patent owner's claims; (4) the presence of unexpected results; (5) praise of the invention by others in the same industry; and (6) copying of the invention.

14. I understand that there must be concrete evidence of the presence of secondary considerations to serve as objective indicia of non-obviousness. I understand that the patent owner must present evidence that is more substantial than

mere assertions that the considerations are present. Therefore, I understand that secondary considerations that lack substantial evidentiary support do not weigh in favor of the non-obviousness of a patent owner's claims.

15. I understand that, to serve as objective indicia of non-obviousness, there must be a nexus between the secondary considerations and the inventiveness of the claims. Therefore, I understand that the existence of secondary considerations due to reasons that are not related to the inventiveness of the patent owner's claims will not indicate that the claims are non-obviousness.

16. I understand that a patentee is entitled to a rebuttable presumption of nexus between the asserted evidence of secondary considerations and a patent claim if the patentee shows that the asserted evidence is tied to a specific product and that the product is the invention disclosed and claimed. Thus, I understand that presuming a nexus is appropriate when the patentee shows that the asserted objective evidence is tied to a specific product and that product embodies the claimed features and is coextensive with them. On the other hand, I understand that when the product that is commercially successful is not coextensive with the patented invention the patentee is not entitled to a presumption of nexus. I understand that a patent claim is not coextensive with a product that includes a critical unclaimed feature that is claimed by a different patent and that materially impacts the product's functionality.

17. I understand that when the patent owner's claims are embodied in a product, it is indicative of non-obviousness if the product produces unexpected results. I also understand that what is unexpected for the sake of unexpected results is judged from the point of view of the POSA. Therefore, I understand that a POSA having a higher level of expertise in the field of endeavor would have a more rigorous standard for what results are unexpected compared to a POSA having less expertise in the field.

18. I understand that the copying by market competitors of a product that embodies the patent owner's claims is a secondary consideration that may serve as objective indicia of non-obviousness. I understand that copying is only equivocal evidence of non-obviousness when there are no other compelling indicia of non-obviousness present. Thus, solely copying would not suffice as strong evidence of non-obviousness.

19. I understand that a claim-embodiment product's fulfillment of a long felt but unsolved need in the field of endeavor is a secondary consideration that may serve as objective indicia of non-obviousness for the claims. Alternatively, I understand that a product that fulfills a need that has already been solved by the prior art is not indicative of non-obviousness.

D. Materials Considered

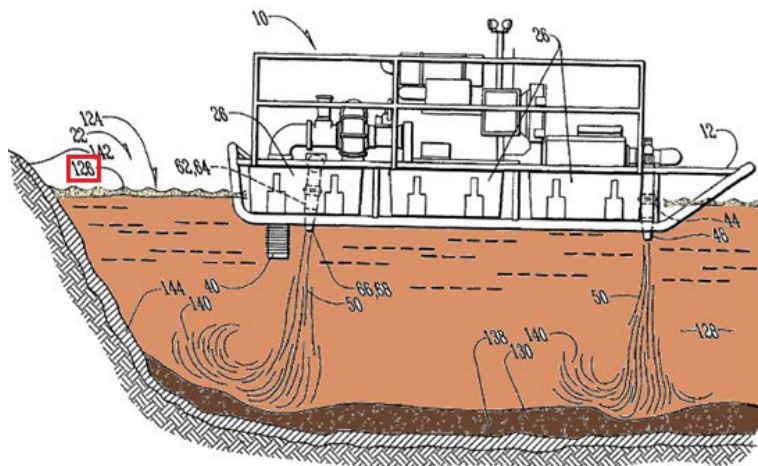
20. In forming the opinions expressed in this declaration, I have relied on my own knowledge, experience, and expertise, as well as the knowledge of a POSA in the relevant timeframe. In addition, I have reviewed and relied upon all documents and materials referenced in my declarations submitted in conjunction with IPR Nos. IPR2023-01161; IPR2024-00004; and IPR2024-00098 and Reexamination Nos. 90/019,428; 90/019,290; 90/019,302; and 90/019,482. I have also reviewed and considered the declarations of Douglas Prairie submitted in conjunction with each of these IPRs, as well as the additional materials provided in Appendix A.

IV. BACKGROUND

21. The '835 Patent describes that as-excreted “[m]anure produced during animal husbandry ... is transferred by washing [with water] to a pit or lagoon for storage[,]” (EX1001, 1:32-35) after which the diluted “[l]iquid manure ... [is] *irrigate[d]* onto farm land for disposal.” EX1028, 1:14-17 (emphasis added) (incorporated-by-reference).

22. When stored in a lagoon, liquid manure stratifies into layers including a bottom sludge layer 130 with settled solids (brown, below), a watery liquid supernatant layer 128 (orange) above the sludge layer, and occasionally, a crust 126 of floating fibrous material (yellow). EX1014, ¶¶[0003]-[0004], [0034], FIG. 4. Before irrigating the lagoon onto farmland for fertilizer, lagoons may be agitated by

pumping the watery liquid supernatant layer and shooting it against the nutrient rich sludge layer and crust so that the nutrients at the bottom of the lagoon are moved into suspension within the watery upper supernatant layer. *Id.*, ¶[0004]. As shown by Puck and recognized by others, POSAs understood that pumping this watery supernatant layer was more efficient than pumping the sludge at the bottom of the lagoon. *See, e.g., id.*, FIG. 4.; EX1035, 5 (“[O]perators float the intake 18 to 24 inches below the surface and do not use an intake strainer (Figure 9). This keeps the intake free of floating debris, and above the sludge layer at the bottom of the lagoon.”). At that point, conventional farmland irrigation (water pumping) equipment may be used to pump the nutrient-rich liquid manure mixture onto farmland for fertilization. EX1028, 1:14-17; EX1034, 64; EX1058, 15; EX1060, 88; EX1119, ¶7. Using this irrigation equipment, liquid manure is transferred “at a much faster rate than hauling,” making the application process more efficient. EX1058, 15.



EX1014, FIG. 4 (annotated).

23. It is with this context that a POSA, having a familiarity with liquid manure, would have understood the pumping requirements of the vehicle of the '835 Patent. A POSA would have understood that an agitated liquid manure lagoon could have, and likely would have, a total solids content of less than about 5% because “[m]anure that has a TS concentration of less than 5 percent ... can be irrigated for land application of liquids from lagoons[.]” EX1057, 81. And POSAs would have understood that, pre-agitation, the supernatant layer has a lower solids content than the post-agitation liquid manure mixture, because the solids in the sludge and crust portions of the lagoon would not yet be mixed within the watery supernatant layer. POSAs would have understood that, since conventional irrigation pumps could pump 5% total solid post-agitation mixtures onto farm fields, such pumps would also pump the near water-like consistency of pre-agitation supernatant to agitate the lagoon into a homogeneous mixture.

V. PERSON OF ORDINARY SKILL IN THE ART

24. I understand that Nuhn and Mr. Prairie have proposed an alternative definition for a POSA as “a livestock farmer or commercial manure applicator familiar with manure agitation equipment or an engineer with at least 2 years of experience designing agricultural equipment and knowledge of manure agitation equipment.” Paper 23 at 8; EX2004, ¶64.

25. Along with his own definition, Mr. Prairie offers two criticisms (EX2094 ¶¶59-60) of my previously provided POSA definition. EX1004, ¶81-82. First, Mr. Prairie alleges that my definition excludes those most familiar with manure agitation equipment. EX2094, ¶59. Second, Mr. Prairie criticizes my definition as being overly generic and made without reference or regard to the sole application for the claimed vehicle – manure lagoon agitation/pumping. *Id.*, ¶60. These criticisms miss the mark. As explained in more detail below, livestock farmers and manure applicators would not possess the requisite expertise on a variety of topics pertinent to a remotely controlled amphibious pumping vehicle. In addition, Mr. Prairie is incorrect in his suggestion that my POSA definition is made without regard to “the sole application for the claimed vehicle.” *Id.* Contrary to his assertions, as explained more below, my definition is based on the technical fields and technical training and background of a technical expert on the various topics pertinent to a remotely controlled amphibious pumping vehicle.

26. As support for his POSA definition, Mr. Prairie states that the ’835 Patent has been classified as being directed to “amphibious vehicles specially adapted for particular purposes” and “manure” handling. EX2094, ¶62. Mr. Prairie also opines that the claimed vehicle has no “utility in doing anything other than operating in manure lagoons.” *Id.*, ¶63. Mr. Prairie is wrong.

27. As the PTAB correctly found in its institution decision, the '835 Patent is not limited to liquid manure lagoons. Paper 12 at 11. Instead, the summary of the invention and preamble of the claims are directed to a general “amphibious pumping vehicle.” EX1001, 1:56-57; 8:36. While the '835 Patent does provide some discussion of liquid manure pumping, it also discusses various other uses for the vehicle and pump, such as driving the vehicle on land “across wet or muddy conditions” and “pumping fluid from rivers, ponds, lakes, [and] rain water storage reservoirs.” EX1001, 2:20-23; EX1028, 4:3-8 (incorporated-by-reference).

28. Mr. Prairie’s POSA definition is fundamentally flawed on multiple levels. First, Mr. Prairie opines that a POSA may be “a livestock farmer or commercial manure applicator familiar with manure agitation equipment.” EX2094, ¶64. Aside from utilizing various implements and equipment, experience as a livestock farmer or a commercial manure applicator would not include any training or education related to engineering design. Simply because a farmer or applicator has experience using equipment does not necessarily make them knowledgeable about the various engineering and design principles. This is akin to suggesting that a commercial truck driver would be a POSA for engineering design topics for heavy trucks because of their experience utilizing and driving trucks. However, no amount of field use experience provides a commercial truck driver with the knowledge and expertise on engineering topics such as diesel engine

performance, power transmission systems, electrical controls, etc., on tractor-trailer systems. Mr. Prairie is wrong because there is no basis for asserting that farmers and manure applicators have specific knowledge and expertise pertinent to designing remote-control amphibious pumping vehicles.

29. While a livestock farmer or manure applicator may certainly be capable of servicing or performing maintenance on farming equipment, as Mr. Prairie alleges, a farmer is not equipped to design a multi-functional amphibious vehicle like the one described in the '835 Patent. Rather, this is a task that would be performed by an engineer. Addressing marine propulsion, marine hydrodynamics, and stability; selecting and designing hydraulic and mechanical systems for power transmission systems; and implementing remote control and software systems are activities that engineers perform on a regular basis. They are not activities ordinarily performed by livestock farmers or manure applicators.

30. Second, Mr. Prairie opines that a POSA could alternatively be “an engineer with at least 2 years of experience designing agricultural equipment and knowledge of manure agitation equipment.” *Id.* Mr. Prairie’s alternative definition is also incorrect. Agricultural equipment is a broad category and there are many different types of agricultural products and equipment, the overwhelming majority of which differ significantly from remote-control amphibious pumping vehicles. Importantly, Mr. Prairie has not shown, nor has he even attempted to show, how two

years' experience designing "agricultural equipment" would correlate to the design of remote-control amphibious pumping vehicles. There are many types of agricultural equipment and, to my knowledge, very few incorporate technologies for remote control of amphibious vehicles that need to be propelled and controlled on both land and water.

31. Mr. Prairie has not provided any technical support that his hypothetical POSA with two years' experience designing agricultural equipment would have encountered remote control systems, let alone remote-control systems for amphibious vehicles and/or pump systems. Mr. Prairie has not demonstrated that his hypothetical POSA would have any experience or training in marine propulsion systems, hydrostatics/stability, or hydrodynamics of floating vessels.

32. Furthermore, as the PTAB acknowledges, Petitioner's definition of a POSA properly includes a broad familiarity with "fluid pumps and livestock manure." Paper 12 at 11-12. Nuhn faults this definition for not requiring a POSA to have hyper-specific knowledge of manure storage systems. Paper 23 at 8-10. But knowledge of livestock manure would necessarily include knowledge of how it is stored. To the extent it does not, Nuhn's own POSA definition also fails, as Nuhn presents as an alternative definition, an engineer having only "knowledge of manure agitation equipment"—not storage places for manure. Paper 23 at 8.

33. It is my opinion that Mr. Prairie is not a POSA. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

VI. CLAIM CONSTRUCTION

34. I understand that Nuhn identifies that the terms “liquid manure mover” and “liquid manure pump” require construction. It is my opinion that Nuhn’s proposed constructions for each of these claim terms are wrong. In addition, as

discussed below, I disagree with Nuhn's and Mr. Prairie's representation of the term "liquid manure" and its various assertions as to the solid content, particulate sizes, pumping requirements, and other physical characteristics. Their representations are unreasonable and completely at odds with what a POSA would have understood, as explained herein.

A. "Liquid Manure Mover"

35. Claims 1, 9, 13-17, 25, 29-32, and 39-40 of the '835 Patent recite the term "liquid manure mover." Claim 24 depends from claim 17 and recites the term "fluid mover." It is my opinion that the associated structure of "liquid manure mover" and "fluid mover," as used in claims 1, 9, 13-17, 24-25, 29-32, and 39-40 of the '835 Patent would be a "pump, conduit, and nozzle."

36. It is my opinion that a POSA would interpret the "fluid mover" in dependent claim 24 of the '835 Patent to be one and the same as the "liquid manure mover" recited in independent claim 17. This is because the use of the term "fluid mover" appears to be an error, as evidenced by the prosecution history, which notes that "Claim 24 similarly refers to the liquid manure mover." EX1002, 78.

37. Nuhn generally asserts that the claim term "liquid manure mover" is a means-plus-function term and that the function of "liquid manure mover" is to "move liquid manure." Paper 23 at 11. Nuhn further asserts that the means disclosed in the specification for "liquid manure mover" is at least "a pump, a conduit, and a

nozzle.” *Id.* As outlined in my prior declaration, I agree that the proper construction for “liquid manure mover” is “a pump, a conduit, and a nozzle.” EX1004, ¶¶78-80.

38. Nuhn further asserts that because the specification refers to “an immersible manure pump rather than a generic pump,” that the corresponding structure should be formulated as an “immersible liquid manure pump, fluid conduit(s), and fluid nozzle(s).” Paper 23 at 11-12. This is incorrect. In general, I agree that “liquid manure mover” is a means-plus-function limitation and that its function is to “move liquid manure.” However, Nuhn’s and Mr. Prairie’s arbitrary requirement that a liquid manure mover requires an “immersible liquid manure pump” is wrong.

39. First, Nuhn incorrectly argues that the liquid manure mover requires a “liquid manure pump.” I understand that the proper construction for a means-plus-function limitation should only include structures specifically disclosed in the specification. Here, the specification never even uses the term “liquid manure pump.” Rather, it only generically refers to a “pump” or a “fluid pump.” *See, e.g.*, EX1001, 1:58, 3:17.

40. Mr. Prairie has argued that the term “liquid manure pump” should be interpreted to mean an “immersible liquid manure pump, fluid conduit(s), and fluid nozzle(s).” EX2094, ¶69. However, the specification never even uses the term “liquid manure pump.” Furthermore, Nuhn’s and Mr. Prairie’s interpretation

requires arbitrarily cherry-picking particular features of the pump (i.e. “immersible”) from Nuhn’s prior identification of the required features of a pump for pumping liquid manure.

41. Nuhn’s requirement that its means-plus-function claim phrase should be interpreted to cover a “liquid manure pump” as opposed to a “fluid pump” is overly specific. I understand that means-plus function terms should not be construed to incorporate structure from the written description beyond that necessary to perform the claimed function. The specification discloses that a fluid pump is the only structure necessary for pumping liquid manure. EX1001, 1:25-28; 1:49-51; 3:13-17; 8:5-7, 8:18-20 Therefore, it is my opinion that the term “liquid manure mover” should not be interpreted to include a “liquid manure pump,” when a general “fluid pump” is all that is disclosed in the specification for performing this function.

42. Nuhn and Mr. Prairie also assert that the term “liquid manure mover” should be interpreted to mean an “*immersible* liquid manure pump, fluid conduit(s), and fluid nozzle(s).” EX2094, ¶69. As above, Nuhn’s and Mr. Prairie’s construction requires arbitrarily cherry-picking particular features of the pump (i.e. “immersible”) from Nuhn’s prior identification of the required features of a pump for pumping liquid manure. In support of his arguments, Mr. Prairie relies on the following highlighted portion of the Asserted Patents:

65 The fluid pump may comprise a pump housing configured
for immersion within the fluid. The pump housing may
comprise a bottom fluid inlet and at least two tangential fluid

outlets. A greater number of tangential fluid outlets may be
provided, for example three fluid outlets. The tangential
fluid outlets may be combined into a single fluid conduit for
directing the combined output of the fluid pump to a desired
location. The vehicle may comprise structure configured to 5
cause raising and lowering of the fluid pump, especially the
fluid pump housing, relative to the vehicle body. For
example, a hydraulically or electrically driven linear actua-
tor may be provided on the vehicle and configured to raise
and lower the fluid pump. This may be accomplished via a 10
telescoping structure or a lever structure of the vehicle. The
tangential fluid outlets may be equipped with flexible or
telescoping connections to the single fluid conduit. Lower-
ing the fluid pump for immersion into the fluid obviates the
need for priming the fluid pump, which can be problematic 15
when the fluid is manure comprising solid materials that can
plug the pump or priming structure. Immersion of the pump
also simplifies intermittent operation of the pump, due to
eliminating potential loss of prime, and reduces the need for
pump maintenance. 20

EX1001, 2:65-67, 3:1-20 (emphasis added); EX2094, 34-35.

43. However, Mr. Prairie provides no basis for why the first portion of the highlighted passage (EX1001, 2:65-66 (“The fluid pump may comprise a pump housing configured for immersion within the fluid”)) should be included in the definition of the “liquid manure mover” while excluding the features recited in the second portion of the highlighted passage. EX1001, 3:1-13 (“A greater number of

tangential fluid outlets may be provided, for example three fluid outlets. The tangential fluid outlets may be combined into a single fluid conduit for directing the combined output of the fluid pump to a desired location. The vehicle may comprise structure configured to cause raising and lowering of the fluid pump, especially the fluid pump housing, relative to the vehicle body. For example, a hydraulically or electrically driven linear actuator may be provided on the vehicle and configured to raise and lower the fluid pump. This may be accomplished via a telescoping structure or a lever structure of the vehicle. The tangential fluid outlets may be equipped with flexible or telescoping connections to the single fluid conduit.”)). Nor could he. The arbitrary exclusion of this portion of the description of the pump is illogical and is not supported by any portion of the ’835 Patent.

44. Additionally, the ’835 Patent specification does not teach that the term “liquid manure mover” requires an immersible liquid manure pump. Claim 1 of the ’835 Patent provides that “the liquid manure mover [is] positioned within liquid manure when the vehicle is floating.” EX1001, 8:37-57. Rather than Nuhn’s arbitrary construction, a POSA would have understood that the liquid manure mover of claims 1, 17, 39, and 40 would equally be satisfied by other portions of the liquid manure mover being positioned in the liquid manure when the vehicle is floating, such as the fluid conduit or fluid nozzle.

45. Given Nuhn’s proposed construction for the term liquid manure mover, “at least a pump, a conduit, and a nozzle,” a POSA would have understood that the liquid manure mover is comprised of multiple components. Paper 23 at 20. Claims 1, 17, 39, and 40 do not require that a liquid manure pump be immersed or “positioned within the liquid manure when the vehicle is floating;” they require that the “liquid manure mover” be positioned in the liquid manure. A POSA would have understood that any portion of the liquid manure mover—the nozzle(s), the conduit(s), or the fluid pump—may be positioned in the liquid manure when the vehicle is floating to meet these claim limitations. Nuhn’s proposed construction, which requires the fluid pump exclusively, rather than any of the other components that comprise the liquid manure mover, to be immersed is entirely arbitrary and self-serving.

46. For example, the ’835 Patent provides that “[t]he fluid pump *may* comprise a pump housing configured for immersion within the fluid.” EX1001, 2:65-66. This does not limit the fluid pump to only immersible pumps, and a POSA would have understood that other fluid pump configurations existed, which meet the functional limitations of “liquid manure mover.” There are other potential features of the fluid pump described in the ’835 Patent specification which describe the fluid pump including: “three tangential fluid outlets 19 that are connected via flexible pump outlet conduits 33 to a combiner 34...”, “[t]he pump housing may comprise a

bottom fluid inlet and at least two tangential fluid outlets”, or a “pump actuation cylinder 35 is provided to cause raising and lowering of the pump 9 and especially the pump housing 18 relative to the vehicle body 1.” EX1001, 7:20-23, 2:66-3:1, 7:24-27. Nuhn arbitrarily requires that the liquid manure pump be immersible while failing to account for any of these other listed features.

47. A POSA would have understood that a fluid pump for pumping liquid manure does not require any of these extraneous features, including a bottom fluid inlet and at least two tangential fluid outlets, multiple fluid outlets, flexible pump conduits, a combiner, or an actuation cylinder for raising and lowering the pump. Similarly, a POSA would have understood that a fluid pump for pumping liquid manure does not require that the impeller and housing be immersible. A POSA would have understood that a variety of fluid pump configurations are suitable for pumping liquid manure. Nuhn’s requirement that the fluid pump be immersible in its proposed construction of “liquid manure mover” is arbitrary, because like these other features, it is entirely unnecessary for the function of moving liquid manure.

48. Mr. Prairie opines that “the structure (e.g., fluid pump, conduit, and nozzle) cannot perform the function of moving liquid manure without at least the fluid pump being immersible in the liquid manure such that the fluid pump can initiate pumping to cause movement of liquid manure.” EX2094, ¶77. This is wrong, because the fluid pump (i.e. the impeller and housing where pumping occurs in a

centrifugal pump) does not necessarily need to be immersed in liquid manure. Puck is one example, where a conduit leading to the pump inlet, impeller, and housing is immersed in the fluid reservoir, but the pump impeller and housing are above the surface. As Puck explicitly teaches, a POSA would have understood that this type of pump configuration is capable of pumping liquid manure, despite the housing and impeller not being immersible in this configuration.

49. A POSA would have understood that there are a variety of centrifugal pumps that were known in the art for pumping liquid manure. Mr. Prairie acknowledges that a pump that can pump liquid manure is not limited to the pump disclosed in the '758 Patent, but asserts that it is “one with the structure like ... the pump disclosed in the '758 Patent or other prior art pumps used for agitating and pumping liquid manure.” EX2094, ¶78. Indeed, a variety of pumps were known to POSAs and available in the prior art for pumping liquid manure, including both immersible and non-immersible centrifugal pumps with housings and rotating impellers, with *structures like the pump disclosed in the '758 Patent*. A POSA would have understood that the “liquid manure mover” in the '835 Patent does not require a specific structure different from other centrifugal pumps known in the prior art for pumping liquid manure.

B. “Liquid Manure Pump”

50. Nuhn and Mr. Prairie assert that the institution decision, which preliminarily found that a “liquid manure pump” is a “pump with a structure that is capable of pumping liquid with suspended solids,” overgeneralizes and impermissibly broadens the scope of the “liquid manure pump.” Paper 23, 14. Nuhn asserts that this preliminary finding no longer requires a pump that is capable of pumping liquid manure. *Id.* I disagree; the PTAB was correct.

51. Both Nuhn and Mr. Prairie acknowledge that at least one of the references (EX1034) I relied on discloses a number of different types of pumps known in the art for pumping liquid manure, including closed impeller, semi-open impeller, and open impeller centrifugal pumps. Paper 23, 15; EX2094, ¶82. Nuhn and Mr. Prairie argue that no “bright-line rule delineating these various pump types where one type is universally considered a liquid manure pump and another type is not.” EX2094, ¶82. Mr. Prairie acknowledges that “any one of these types of pumps could be designed to pump liquid manure if provided with an appropriate size, tolerances/clearances, flow rate, pump head, power requirements, and appropriate housing, impeller, inlet, outlet, and bearing design.” EX2094, ¶82. However, this is basic knowledge of a POSA, and for example, a POSA would have been able to appropriately size or appropriately power a liquid manure pump for an intended application.

52. Rather than using the knowledge of a POSA and the clear evidence of the different types of pumps capable of pumping liquid manures, Nuhn and Mr. Prairie propose an alternative means of assessing whether a pump is a “liquid manure pump” because they assert that there are “no bright-line rules.” EX2094, ¶83. Nuhn and Mr. Prairie propose that a POSA would look to four specific criteria. I disagree.

53. The first criterion proposed by Nuhn and Mr. Prairie is “was the pump designed to pump liquid manure.” Paper 23 at 16; EX2094, ¶83. This is illogical and inconsistent with the knowledge of a POSA. A POSA would have understood that pumps can be designed for a variety of applications and purposes. Accordingly, a POSA would not have understood that only pumps designed, presumably from square-one at the start of the design process, are capable of pumping liquid manure. Put differently, there is no subjective intent required to determine whether a pump is capable of pumping liquid manure. A POSA would have understood that a variety of pumps are capable of pumping liquid manure, despite not having been specifically designed for pumping liquid manure. For example, various references describe the use of conventional water pumps and irrigation pumps and equipment for pumping liquid manure. A POSA would have understood that these pumps are capable of pumping liquid manure, regardless of whether they may have been initially designed for water or irrigation with water. As another example, a POSA would have understood that dredge pumps were capable of pumping liquid manures and higher

concentrations of manure, like sludge. Despite the fact that dredge pumps were likely “designed” for removing heavy sediments from waterways, a POSA would have understood that dredge pumps were well suited for pumping liquid manure.

54. The second criterion proposed by Nuhn and Mr. Prairie is “was the pump marketed as a liquid manure pump.” Paper 23 at 16; EX2094, ¶83. This too is illogical, and a POSA would not rely simply on marketing materials to ascertain the structural capabilities and limitations of a pump or pumping system. As the examples above illustrate, a water pump, a dredge pump, or an irrigation pump, which were known in the art for pumping liquid manures, would not necessarily be marketed as “liquid manure pumps.” Yet such pumps were all capable of pumping liquid manure. This second criterion is similarly irrelevant and is not a reliable method for determining whether a pump can pump liquid manure.

55. The third criterion proposed by Nuhn and Mr. Prairie is “has the pump been tested and validated (i.e., proven) for liquid manure pumping applications.” Paper 23 at 16; EX2094, ¶83. There is no standardized test to test and validate that a pump is proven for liquid manure pumping applications. To my knowledge, there is no standards organization that promulgates a test procedure for proving that a pump is a liquid manure pump for liquid manure pumping applications.

[REDACTED]

[REDACTED]

56. The fourth proposed criterion by Nuhn and Mr. Prairie is “does the pump have structure that would become clogged and/or damaged by pumping liquid manure.” Paper 23 at 16; EX2094, ¶83. This too is completely arbitrary and a POSA would have understood that under specific circumstances, almost any pump may become clogged and/or damaged. Given Mr. Prairie’s definition of liquid manure that contains solid objects six feet thick and potentially trees, most pumps, including those known in the art for pumping liquid manure, could be damaged or would fail to perform (become clogged) if tasked with pumping six-foot-thick solid objects and/or trees. To understand whether a specific pump or style of pump is suited for a particular application, a POSA would look to the specifications of the pump system and the characteristics of the fluid being pumped, such as its solids content, viscosity (including any non-Newtonian behaviors), and its particulate size. A POSA would

have understood that the types of pumps known in the art and capable of pumping liquid manure were well documented in the prior art literature. Finally, neither Nuhn nor Mr. Prairie have been able or willing to provide any specific structure that is required for pumping liquid manure or to prevent clogging and damage to the pump.

57. As discussed above, and in my previous declarations, a POSA would have understood that liquid manure, and specifically the liquid manure contained in manure lagoons typically have relatively small particles, relatively low solids content (i.e. less than about 5%), and can be pumped with a variety of different centrifugal pumps. *See supra* Section VI.B; EX1004, ¶¶78-80.

58. In sum, a POSA would have understood that pumps come in various sizes and require various power inputs. A POSA would not rely on subjective design intent and/or marketing language from a manufacturer or some non-standardized and non-existent test that Mr. Prairie is unable to define. A POSA would not look to Nuhn's and Mr. Prairie's four "factors" above to determine whether a pump could be characterized as a "liquid manure pump" because a POSA would have understood that various pump styles were suitable for pumping liquid manure. A POSA would have sufficient knowledge of pumps and pump systems to select appropriate sizes and power requirements for the intended application.

i. Nuhn Fails to Identify Any Structure Associated with a “Liquid Manure Pump.”

59. Nuhn argues in its Response that if a fluid pump were to deviate from the design of the pump disclosed in the '835 Patent, a POSA would reference its list of factors to consider whether the pump had a structure capable of pumping liquid manure. Paper 23 at 17. This is wrong.

60. A POSA would not have understood that a departure from the exemplary design in the '835 Patent would render a pump incapable of pumping liquid manures; a POSA would have already understood that there were many pump designs and pump configurations used for pumping liquid manure that did not include all of the features and structures disclosed in the “exemplary design” of the pump disclosed in the '835 Patent. For example, a number of pumps capable of pumping liquid manure did not comprise a “housing with three tangential fluid outlets”; a POSA would have understood that many liquid manure pumps only had one or two fluid outlets but were still capable of pumping liquid manure. Such a departure would not render a pump incapable of pumping liquid manure and would not require a POSA to look at initial design, marketing materials, an arbitrary and nebulous test procedure, or whether the “structure” would become clogged or damaged.

61. Other than broadly referring to the specification, which does not include specific structural requirements for a fluid pump capable of pumping liquid manure, Nuhn provides no other identification of the structural features associated with a fluid pump for pumping liquid manure. [REDACTED]

62. It is my opinion that a POSA would have understood that a “liquid manure pump” for “pumping liquid manure” would not be limited to the exemplary pump disclosed in the ’835 Patent specification—which only describes submersible impeller centrifugal multi-outlet pumps—when multitudes of other pumps have long been used for pumping liquid manure. *See, e.g.*, EX1034, 52 (identifying ten distinct types of “[l]iquid manure handling pumps”).

[REDACTED]

63. Nuhn focuses many of its arguments on manure storage pits containing heavy crust. While such pits may be one extreme use case for Nuhn’s commercial product, these pits are the exception—they do not represent liquid manure lagoons. The ’835 Patent distinguishes between these “smaller pits” ((EX1001, 1:42) containing higher solid contents manure) and “large lagoons” ((*id.*, 1:46) containing lower solid contents liquid manure), noting that low solid content “liquid manure [is] ... contained in a farm lagoon” and is “irrigate[d] onto farm land[.]” *Id.*, 1:26-

29; EX1028, 1:14-17. And Nuhn's own evidence states that "crusts do not occur on pig slurry stores[.]" EX2030, 6. [REDACTED]

[REDACTED] And the '835 Patent, which is directed to "hog and cattle manure," notes that "during storage, a crust *can* develop[.]" EX1001, 1:33-37 (emphasis added).

64. Even if Nuhn's and Mr. Prairie's construction of "liquid manure" were correct, and liquid manure included six-foot-thick solid objects, the term "liquid manure" is broad enough to also include manure without crusts. The liquid manure found in liquid manure lagoons is distinguishable from higher solid content pits cited by Nuhn in its Response. EX1048, 76 (describing typical solid contents levels in pits versus lagoons); EX1141, 5 (same).

65. "Liquid manure" is understood in the literature as a mixture of water and manure with a total solid content of less than about 5%. EX1060, 89; EX1058, 11-13 ("The solids content of slurry ranges from about 5 to 15 percent.... Liquid manure has solids content of 5 percent or less. This consistency generally is produced where manure is diluted by wash water...."); EX1056, 13 ("Wastes that have a moisture content of 95 percent or more [(%TS of 5% or less)] exhibit qualities very much like water are called liquid waste or liquid manure."); EX1035, 2; E1036, 2. While Nuhn and Mr. Prairie claim that there should be no upper limit to the solid content of liquid manure [REDACTED] [REDACTED] Nuhn does not (and cannot) dispute that even under its own construction, "liquid manure" includes those lagoons

containing “a mixture of water and manure with a total solid content of less than about 5%.” [REDACTED]

[REDACTED] As the '835 Patent acknowledges, the literature is clear that “manures with less than approximately 4% total solids can be pumped from earthen basins or lagoons using pumps designed for conventional water irrigation.” EX1034, 64; *see also* EX1036, 5; EX1048, 80; EX1028, 1:14-17. Thus, a POSA would have understood that a “liquid manure pump” would cover pumps capable of pumping high volumes of water from lakes and streams, which at least are capable of pumping such low solid content forms of liquid manure.

iii. Mr. Prairie’s Arguments Concerning Liquid Manure Are Wrong.

66. Mr. Prairie contends that my opinions do not account for pre-agitation characteristics of liquid manure or the crust on lagoons. EX2094, ¶112. He is wrong. As a preliminary matter, the claims of the asserted patent say nothing about pre-versus post-agitation liquid manure. Rather, the claims merely require “a liquid manure pump.” Regardless of the specific construction that is employed, “liquid manure” would cover the pre-agitation contents of a lagoon, or the post-agitation contents of a lagoon. Given that the pre-agitation supernatant would have a lower solids content than the post-agitation mixture, a POSA would have understood that

a pump capable of pumping a post-agitation mixture would also be capable of pumping the pre-agitation supernatant against the other layers of the lagoon, as has long been done in the liquid manure handling industry. *See supra* Section IV.

67. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

Neither does the '835 Patent. Under Mr. Prairie's seemingly boundless construction, liquid manure could be quite literally anything and could contain any concentration of solids, including 100% solids content. This is incorrect. At any rate, Mr. Prairie concedes that liquid manure would include a mixture of water and manure with a total solid content of less than about 5%.

68. Mr. Prairie's overly broad and unrealistic construction of liquid manure is wrong because it is inconsistent with what a POSA would have understood. Mr. Prairie's reliance on the fact that the '835 Patent does not "state a certain percentage" is misleading because a POSA would have been familiar with various forms of manure and would have a general understanding of their characteristics and their range of solids concentrations. A POSA reading the '835 Patent would not have understood the '835 Patent to redefine the term "liquid manure" or ascribe a new

and different meaning from what was generally understood in the industry. A POSA would have understood that liquid manure would behave differently than other forms of manure, and accordingly would have a different range of solids content. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

69. Mr. Prairie contends, incorrectly, that a POSA would not have understood the solids concentration of a typical manure lagoon to be a few percent or less. EX2094, ¶99. But Mr. Prairie does not provide a single citation to any study that actually reports the solids concentrations found in typical manure lagoons. Despite his statements asserting that the sole purpose of the claimed invention is for manure lagoon agitation/pumping, Mr. Prairie summarily ignores available technical references that would have informed a POSA as to the typical solids concentration found in liquid manure in liquid manure lagoons. EX1048, 76; EX1141, 5.

70. Mr. Prairie instead cites other patents, alleging that these patents use liquid manure broadly to refer to the contents of lagoons. EX2094, ¶100. Mr. Prairie is wrong. He provides no citations that would support his position that solids, and trees, and six-foot-thick crusts are liquid. The large majority of these references do not even use the term “liquid manure” and instead describe manure handling technology for manure storage systems that have higher solid contents manure.

Those references that do describe liquid manure handling technology say nothing about the percentages of total solids found within a liquid manure lagoon. EX2013; EX2014. In sum, Mr. Prairie's conclusions are unsupported by the evidence and misrepresent what a POSA would have understood from the teachings of the intrinsic and extrinsic evidence.

71. Citing a *Natural Crusting of Slurry Storage As An Abatement Measure for Ammonia Emissions on Dairy Farms*, Mr. Prairie contends that crusts can be colonized by vegetation including small trees. EX2094, ¶106. Mr. Prairie's reliance on this reference and his conclusion is incorrect. Obviously, small trees are not growing on the liquid manure or suspended solids in liquid manure, it is growing on a solid crust, which is not liquid and is not liquid manure. It is crust. It is equally hard to imagine a POSA would have considered small trees to be "liquid" or being considered "liquid manure." Mr. Prairie provides no such reference to support his position that the suspended solids found in liquid manure would include small trees. Such small trees would not be "pumpable" for any type of liquid manure pumping system, including the pumping system disclosed in the '835 Patent. Furthermore, this very same reference acknowledges that "[c]rusts do not occur on pig slurry stores[.]" EX2034, 6. Mr. Prairie's assertions that liquid manure always includes a crust are contradicted by his own cited evidence.

VII. GROUND 1: CLAIMS 1-10, 13-26, AND 29-40 ARE ANTICIPATED BY CARRIER

72. Carrier anticipates claims 1-10, 13-26, and 29-40 of the '835 Patent because Carrier discloses a “liquid manure pump” that is capable of pumping at least some forms of liquid manure, e.g., the form that contains the lowest concentration of solids, typically below 4% or 5%, exhibits characteristics and behaviors that are very similar to water, and is readily pumped by conventional water pumps. *See supra* Section VI.B. As explained herein, Carrier also discloses a “liquid manure mover” that is “positioned within liquid manure when the vehicle is floating.” Nuhn and Mr. Prairie contend that claims 1-10, 13-26, and 29-40 are not anticipated by Carrier. As explained herein, they are wrong.

A. Independent Claims 1, 17, 39, and 40

[1.0] An amphibious vehicle comprising:

[1.1] a floatable vehicle body;

[1.2] a ground engaging propulsion structure comprising a plurality of ground engaging elements powered by a hydraulic motor;

[1.3] a hydraulically powered liquid manure mover separate from the ground engaging propulsion structure, the liquid manure mover positioned within liquid manure when the vehicle is floating;

[1.4] a power source connected to a hydraulic pump, the power source configured to provide power to both the ground engaging propulsion structure and the liquid manure mover; and,

[1.5] a wireless remote control configured to enable an operator who is remote from the vehicle to: (1) control the ground engaging propulsion structure; (2) control a flow of liquid manure from the fluid pump; (3) control at least one of the speed and direction of the vehicle when the vehicle is ground engaging; and, (4) control at least one of the speed and direction of the vehicle when the vehicle is floating.

73. For the purpose of brevity, only Claim 1 is recited herein. Claims 17 and 40 change the language of [1.5] from “control a flow of liquid manure from the fluid pump” to “control a flow of liquid manure from the manure mover” in [17.5] and [40.5]. Further, claims 39 and 40 change the language of claim [1.2] from “a plurality of ground engaging elements powered by a hydraulic motor” to “a set of wheels and wherein each wheel is powered by its own variable speed hydraulic motor” in [39.2] and [40.2]. These differences are insignificant. Further, given that Nuhn and Mr. Prairie provide the same arguments for these claims collectively, there is no reason to differentiate between them herein.

74. Nuhn and Mr. Prairie assert that Claims 1, 17, 39, and 40 are not anticipated by Carrier, at least because Carrier does not: (1) disclose or suggest a “liquid manure pump” / “liquid manure mover” (i.e. a “pump that pumps liquid manure” or a “pump with a structure that is capable of pumping liquid manure with suspended solids”); (2) disclose a “liquid manure mover positioned within liquid manure when the vehicle is floating”; and (3) disclose all of the wireless remote-

control limitations of claim 1. Paper 23 at 20-25; EX2094, ¶¶149-155. Nuhn and Mr. Prairie are wrong on each of these points. Carrier discloses every element of claim 1.

i. Carrier Discloses a Fluid Pump Capable of Pumping Liquid Manure.

a. A POSA Would Have Understood the Carrier Pump to Have a Structure Allowing It to Pump Liquid Manure.

75. Carrier describes an amphibious “forest fire” fighting vehicle including a “draft capable” “[h]igh [v]olume” pump system for pumping “from a lake or stream,” as well as “foam and or dry chemical” mixtures. EX1005, ¶¶[0007], [0051], [0061]. [REDACTED]

[REDACTED]. A POSA would have understood that Carrier would be used in environments where the pump would need to handle fluid containing debris and other suspended solids. A POSA would also have understood that in order to function in lakes, ponds, and rivers, and draw fluids from these bodies of water, the Carrier pump would need to handle fluids laden with stones, clay, mud, sand, muck, vegetation, and other potential debris or even biological life. If the fluid pump of Carrier were incapable of pumping fluid containing some suspended solids, it would not be capable of pumping water from lakes, ponds, or streams. EX1005, ¶¶[0061], [0063]. Therefore, a POSA would have understood that the Carrier pump necessarily pumps liquid with suspended solids.

76. Furthermore, a POSA would have understood that such a pump would be capable of pumping liquid manure, as the literature and long-time industry veterans all confirm that liquid manure has long been pumped using conventional irrigation equipment. *See* EX1034, 64; EX1036, 5; EX1048, 80; EX1119, ¶7; EX1120, ¶15.

77. POSAs would have understood that, as stated in the USDA Forest Service Wildland Fire Engine Guide, pumps used on wildland fire engines “are either centrifugal or positive displacement” and that “[c]entrifugal pumps are usually larger ... and employed for higher volumes.” EX1118, 64. Accordingly, a POSA would have understood that the high-volume pump systems disclosed in Carrier would comprise a centrifugal pump or a positive displacement pump.

78. [REDACTED]
[REDACTED]
[REDACTED] These centrifugal pumps are specifically described as being used to pump liquid manure. *Id.*; EX1028, 1:8-10.

¹ The '224 Patent (U.S. Patent No. 11,448,224 [REDACTED]) is a continuation of the incorporated-by-reference '758 Patent.

79. A POSA would have also understood that centrifugal and positive displacement pumps have long been used to pump liquid manure. EX1034, 51-52; EX1048, 76-80; EX1060, 42-46. A POSA would have also understood that these pumps can be scaled up or down in size to pump higher or lower volume flow rates. *See* EX1143, 4-5. For example, a pump manufacturer may offer the same pump design over a wide range of sizes and capacities. *Id.* A POSA would have understood that larger pumps are capable of generating greater flow rates and would have larger fluid passageways than smaller pumps, and accordingly would be capable of passing larger solids through them. *Id.* POSAs would have therefore understood Carrier’s pump to be capable of pumping suspended solids in dilute forms of liquid manure, which are generally in the 1-6mm range (EX1004, Section V.B.ii.b (citing EX1037, 9))—much smaller than the larger solids capable of being pumped by these centrifugal and positive displacement pumps.

b. The Carrier Pump at Least Pumps Dilute Forms of “Liquid Manure.”

80. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED] A

POSA would have understood that even Mr. Prairie’s unlimited range of solids

concentration in liquid manure would have included liquid manures with approximately 4-5% total solids or less.

81. As explained above, a POSA would have understood that liquid manure contains the lowest solids content of the various forms of manure. A POSA would have further understood that manure lagoons typically contain a relatively low solids content, which is why they are described as “liquid” based on their solids content and the physical characteristics which they exhibit. *See supra* Section VI.B.ii-iii. A POSA would have therefore understood that the Carrier “[h]igh [v]olume” firefighting pump, which is capable of pumping liquid from “lake[s] or stream[s],” would have at least been capable of pumping dilute forms of liquid manure. EX1005, ¶¶[0051], [0061]. A POSA would have understood that dilute forms of manure were pumped with conventional water pumps, including pumps used for irrigation. EX10340, 64; EX1036, 5; EX1048, 80, 84-85. A POSA would have understood that these water irrigation pumps would be capable of pumping liquid manures containing suspended solids, as would the high-volume water pump of Carrier.

82. Nuhn and Mr. Prairie have not demonstrated or even attempted to demonstrate why the pump of Carrier would not be capable of at least pumping dilute forms of liquid manure with approximately 4-5% or less total solids.

c. Nuhn's Counterarguments Are Wrong.

83. Nuhn first argues that Carrier does not meet the “liquid manure mover” or “liquid manure pump” limitations of the '835 Patent claims and suggests that Carrier would be incapable of pumping liquid manure. Paper 23 at 17.

84. Nuhn relies on a misrepresentation of Bazooka's marketing materials in its effort to support its position that Carrier would be incapable of pumping liquid manure. This is misleading. Describing Carrier's pump with a screen, Nuhn opines that “Petitioner would agree such a pump would not pump liquid manure when itself admits that most pumps cannot operate in the thick sludge found in manure lagoons.” Paper 23 at 18-19. This is inaccurate and a misrepresentation of Bazooka's marketing materials, which describe the propellers [not the pump] on the Wolverine and the thrust they create, state: “this well-balanced machine can move in any direction, even in the *thickest sludge* where most pumps cannot operate.” EX2033, 9 (emphasis added). Contrary to Nuhn's misrepresentations, a POSA would not understand that the content of a manure lagoon, which typically contain relatively low solids content (*see supra* Section VI.B.ii), is equivalent to “the thickest sludge where most pumps cannot operate.” Unrelated and misrepresented quotes from marketing materials published many years after the date of the alleged invention are not a reliable means for determining whether the Carrier pump is capable of pumping liquid manure.

85. Mr. Prairie contends that a POSA would expect Carrier's pump to have clogging problems because it includes a screen to filter out large solids. EX2094, ¶154. This is also incorrect. Screens were known in the art and were used in liquid manure pumping applications. EX1004, ¶¶105-113. Mr. Prairie's conclusions are speculative and contrary to the understanding of a POSA. Specifically, a POSA would have understood that screens were used in many pumping applications, including liquid manure, and allow solids under a certain size to pass through and be processed by the pump while preventing larger solids above a certain size from entering. This same approach was known in the art for pumping liquid manure. *Id.* Contrary to Mr. Prairie's assertions, the screen would not render the high-volume fluid pump of Carrier incapable of pumping liquid manure. Even under Mr. Prairie's overly broad construction of liquid manure, Carrier would have at least been capable of pumping liquid manure containing 4-5% solids or less.

ii. Carrier Discloses that the Liquid Manure Mover is "Positioned Within Liquid Manure When the Vehicle is Floating."

86. Nuhn argues that Carrier fails to disclose a "liquid manure mover positioned within liquid manure when the vehicle is floating." Paper 23 at 20. Nuhn attempts to support this position by asserting that pump, conduit, and nozzles are depicted at the top of the Carrier vehicle. *Id.*, 21. Nuhn concludes that Carrier falls

short of teaching a liquid manure mover positioned within liquid manure when the vehicle is floating. *Id.*, 22. This is incorrect.

87. Nuhn incorrectly concludes that if the vehicle were designed to pump water from a lake or pond while floating, the water tank would be unnecessary. *Id.*, 22-23. Nuhn is wrong, and either does not understand the teachings of Carrier or willingly misrepresents them, or both. Nowhere does Carrier provide that its pump systems must only draw fluid from the tank, nor does it teach that the Carrier vehicle and pump systems would be incapable of pumping directly from a lake or stream. In fact, Carrier explicitly teaches the opposite and a POSA would have understood that Carrier would be capable of pumping fluid directly from a reservoir in which it was floating. First, Carrier describes that “[t]he fire fighting equipment 200 can include pump systems... and ***all pump systems can be draft capable***[.]” EX1005, ¶[0051]. A POSA would have understood that a firefighting system that is “draft capable” to have the ability to draw fluid directly from a reservoir and into the pump using a conduit immersed in the fluid reservoir. *See e.g.*, EX1118, 21, 66.

88. Carrier teaches “a pump mounted to the all terrain vehicle which is capable of pumping water from a lake or stream onto a fire is another feature of the present invention.” EX1005, ¶[0061]. Further, Carrier teaches that the “tank 201 can preferably have a... pump 202 to refill the tank 201 from lakes, ponds, or streams.” *Id.*, ¶[0063]. If the pump systems of Carrier were only capable of drawing fluid from

the tank, it would be impossible for the pump to refill the tank from lakes, ponds or streams. Regardless, Nuhn is wrong. Thus, as Carrier explicitly teaches, a POSA would have understood that Carrier includes a pump system which is capable of drawing and pumping fluid directly from a reservoir, such as a lake, pond, or stream.

89. Additionally, a POSA would have understood that Carrier discloses a “pump, conduit(s), and nozzle(s)” which would be capable of pumping fluid from a liquid manure reservoir while the vehicle is floating. *Id.*, ¶¶[0050], [0052], [0059], [0061]. For the pump system of Carrier to pump fluid from a reservoir, a portion of the fluid mover, in this instance the conduit leading to the pump, is necessarily immersed in the fluid. Thus, Carrier discloses a “liquid manure mover.”

90. Nuhn’s representation that the tank would be unnecessary if the vehicle were designed to pump water from a lake or pond while floating is again incorrect. A POSA would have understood that the pump systems of Carrier could draw from either a reservoir (lake, etc.), as its systems are described as “draft capable,” or from the on-board tank. *Id.*, ¶[0051]. Carrier teaches an *amphibious* fire fighting vehicle, and the on-board tank would allow for the Carrier vehicle to fight fires on land by filling the tank using the pumping systems in the water and then driving on land to fight fires.

91. Finally, in arguing that Carrier’s onboard tank would lead POSAs to infer that the vehicle would not be capable of pumping fluid while floating, Nuhn

ignores that many marine firefighting vehicles, which were capable of pumping fluid while they were floating, utilized similar onboard tanks. *See, e.g.*, EX1136. These vehicles would have been familiar to a POSA, and POSAs would have likewise understood Carrier to be capable of pumping while floating.

iii. Carrier Teaches all of the Wireless Remote Control Limitations of Claims 1, 17, 39, and 40.

92. Nuhn's and Mr. Prairie's contentions that Carrier fails to disclose a wireless remote control that performs the limitations of claims 1, 17, 39, and 40 are rooted in their arguments that Carrier fails to disclose a pump that is capable of pumping liquid manure. Paper 23 at 23-25; EX2094, ¶155. As shown above, Carrier teaches a pumping system that includes a pump, conduit, and a nozzle. A POSA would have understood that the Carrier pump would be able to pump at least dilute forms of liquid manure, and that the conduit of the Carrier pumping system would necessarily be positioned in the fluid while the vehicle is floating. Nuhn and Mr. Prairie's contentions are meritless.

B. Dependent Claims 2-10, 13-16, 18-26, and 29-38

93. Claims 2-10 and 13-16 each depend from claim 1 and claims 18-26 and 29-38 each depend from claim 17. Neither Nuhn nor Mr. Prairie provide any analysis or opinion regarding these claims and anticipation by Carrier, aside from referring back to independent claims 1 and 17 from which they depend.

94. As discussed in my prior declaration, it is my opinion that claims 2-10, 13-16, 18-26, and 29-38 are anticipated by Carrier. EX1004, Sections VII.B-H and VII.J-Q.

C. Dependent Claims 6, 22, and 23

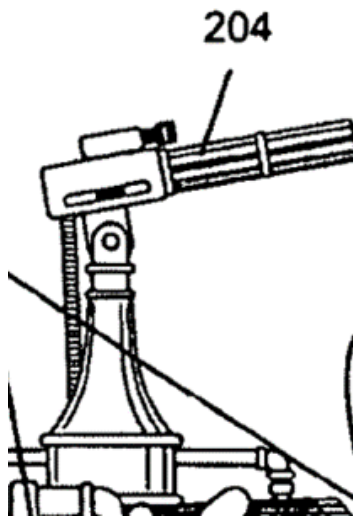
[6] The vehicle according to claim 5, wherein the at least one fluid nozzle comprises a plurality of fluid nozzles that are fluidly-connected to the fluid conduit.

[22] The vehicle according to claim 21, wherein the at least one fluid nozzle comprises a plurality of fluid nozzles that are fluidly-connected to the fluid conduit.

[23] The vehicle according to claim 21, wherein the amount of fluid flow from the at least one fluid nozzle and/or the direction of the at least one fluid nozzle are remotely controllable by the operator remote from the vehicle when the vehicle is floating.

95. Nuhn asserts claims 6, 22, and 23 are not anticipated by Carrier because Nuhn alleges that Carrier does not disclose a plurality of fluid nozzles. Paper 23 at 26-27. Mr. Prairie provides a similar opinion that a POSA “would not equate the single water cannon disclosed in Carrier with a ‘plurality of fluid nozzles...’ as claimed in the ’835 Patent.” EX2094, ¶159.

96. Nuhn’s arguments regarding the number of nozzles disclosed by Carrier are wrong. Carrier states that the “fire-fighting equipment 200 include[es] ... **nozzles** 204.” EX1005, ¶[0050] (emphasis added).



Id., FIG. 1.

97. Nuhn argues that the nozzles described in Carrier do not anticipate the claims because, according to Nuhn, they only produce a single jet of fluid that is “discharged at single direction and flowrate.” Paper 23 at 26. However, claims 6, 22, and 23 do not require that the nozzles produce a plurality of fluid jets or that they discharge in multiple directions and/or flowrates. Therefore, it is my opinion that claims 6, 22, and 23 are anticipated regardless of the number of jets that are produced by the multiple Carrier nozzles.

VIII. GROUND 2: CLAIMS 1-5, 7-21, AND 23-40 ARE RENDERED OBVIOUS BY TRUXOR IN VIEW OF YOON OR CARRIER

98. Claims 1-5, 7-21, and 23-40 of the '835 Patent are rendered obvious by Truxor in view of Yoon or Carrier. Truxor teaches every limitation of these claims with the exception of the remote-control features, which were well known to a POSA. Further, POSAs would have been motivated to add remote control features

to Truxor to improve its overall safety and expand its ability to operate in dangerous environments and would have a high probability of success in doing so. EX1004, Section VIII.A. As described herein, Nuhn's and Mr. Prairie's conclusions that Truxor combined with Yoon or Carrier would not render claims 1-5, 7-21, and 23-40 of the '835 Patent obvious are wrong.

A. Independent Claims 1, 17, 39, and 40

[1.0] An amphibious vehicle comprising:

[1.1] a floatable vehicle body;

[1.2] a ground engaging propulsion structure comprising a plurality of ground engaging elements powered by a hydraulic motor;

[1.3] a hydraulically powered liquid manure mover separate from the ground engaging propulsion structure, the liquid manure mover positioned within liquid manure when the vehicle is floating;

[1.4] a power source connected to a hydraulic pump, the power source configured to provide power to both the ground engaging propulsion structure and the liquid manure mover; and,

[1.5] a wireless remote control configured to enable an operator who is remote from the vehicle to: (1) control the ground engaging propulsion structure; (2) control a flow of liquid manure from the fluid pump; (3) control at least one of the speed and direction of the vehicle when the vehicle is ground engaging; and, (4) control at least one of the speed and direction of the vehicle when the vehicle is floating.

99. For the purpose of brevity, only Claim 1 is provided recited herein.

Claims 17 and 40 change the language of [1.5] from “control the flow of liquid manure from the fluid pump” to “control the flow of liquid manure from the manure

mover” in [17.5] and [40.5]. Further, claims 39 and 40 change the language of claim [1.2] from “a plurality of ground engaging elements powered by a hydraulic motor” to “a set of wheels and wherein each wheel is powered by its own variable speed hydraulic motor’ in [39.2] and [40.2]. As described herein, the combination of Truxor with the remote-control system of Yoon or Carrier renders obvious each of claims 1, 17, 39, and 40. Further, given that Nuhn and Mr. Prairie provide the same arguments for these claims collectively, there is no reason to differentiate between them herein.

i. Truxor Discloses a Dredging Pump Capable of Pumping Liquid Manure.

100. Nuhn and Mr. Prairie allege that Truxor’s Doro Pump does not meet the “liquid manure mover” or “liquid manure pump” limitations and generally suggest that the dredge pump of Truxor would be incapable of pumping liquid manure. Paper 23 at 41-42; *see also* EX2094, ¶¶161-165. This is incorrect because Truxor clearly teaches that the Doro Pump is capable of pumping liquid containing suspended solids. I understand that this was confirmed by the testimony of Mr. Olofsson, the designer of the Truxor Doro Pump. *See* EX1132, 104:19-107:1.

101. Again, in an effort to support these conclusions, Nuhn and Mr. Prairie rely on their proposed criteria that a POSA would only consider a pump to be liquid manure pump if it were designed, marketed, and/or tested and validated for liquid

manure pumping applications. Paper 23 at 41-43. As shown above, a POSA would not rely on these arbitrary criteria to determine whether a pump was capable of pumping liquid manure. *See supra* Section VI.B-B.i. Nuhn and Mr. Prairie also claim that Truxor would be incapable of pumping liquid manure because: (1) the Doro Pump is not heavy duty and (2) manure exhibits non-Newtonian characteristics. Paper 23 at 42-44. They are again wrong on both points.

102. First, regarding the topic of “light duty” or “heavy duty” dredges, Nuhn attempts to create an arbitrary distinction between Truxor and other dredging pump systems (discussed in EX1052, 1070, and 1071) that have long been used to pump higher solid content forms of manure. But Truxor does not describe itself as “light duty.” Nuhn and Mr. Prairie have not provided any evidence supporting the distinction between Truxor and other dredge pumps which they term “heavy duty.” Regardless, a POSA would have understood that the dredge pump of Truxor, and pumps generally, could be scaled up or down in size and power requirements that would accommodate any alleged difficulty in pumping larger solids.

103. A POSA would have understood that the primary function of a dredge pump such as the Doro Pump is to transport solid materials, oftentimes sediments, stones, and other materials often found at the bottom of a reservoir. A POSA would have understood that dredge pumps were known in the art for pumping and removing the heavier sediment layers (“sludge”) found at the bottom of liquid manure lagoons.

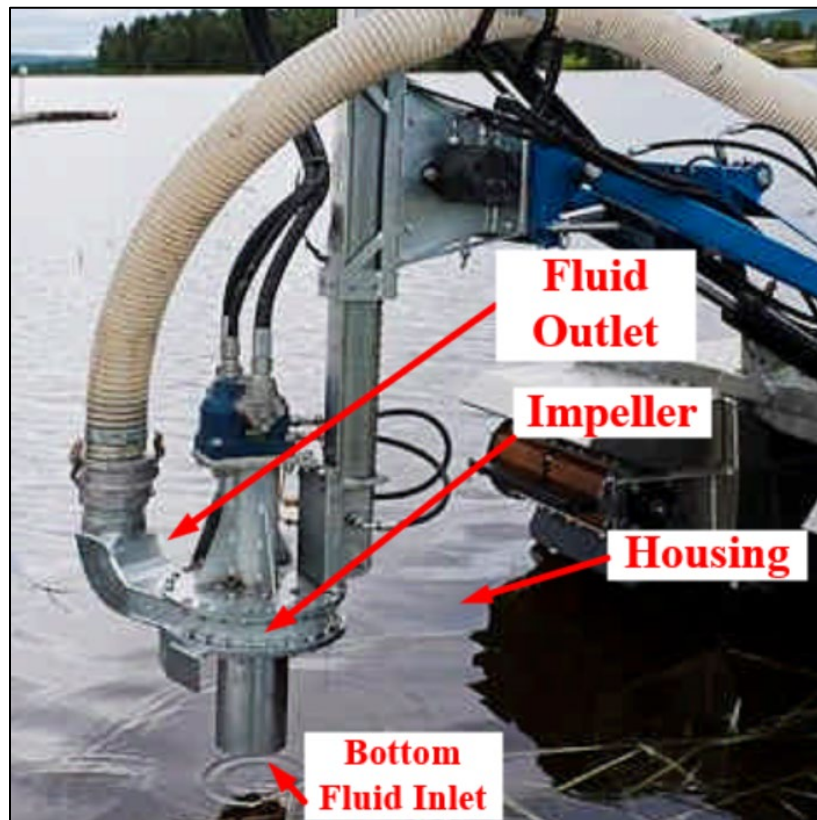
EX1034, 54-58, 60, 62; EX1048, 38, 76-77; EX1060, 42-46, 104; EX1070, 1; EX1071, 3. Furthermore, as confirmed by Mr. Olofsson, the designer of the Doro Pump, the Doro Pump was capable of pumping fluids with suspended solids of up to approximately thirty percent. EX1132, 104:19-107:1. Therefore, a POSA would have understood that the Doro Pump would be capable of pumping liquid manure, in addition to higher solid content forms of manure. *See id.*

104. Further, as shown below, the Doro Pump includes many of the same structural characteristics as described in U.S. Patent No. 4,406,413 to Houle (EX2010), a manure pump relied on extensively by Nuhn and Mr. Prairie, and which is capable of pumping liquid manure.

105. A POSA would have also understood that the Doro Pump is a centrifugal pump based on its geometry. A POSA would have understood that such centrifugal pumps include a spinning impeller inside a housing. A POSA would have understood that the Doro Pump includes a bottom fluid inlet that draws fluid into the pump housing through an inlet, and that the spinning impeller accelerates the fluid, moving it from the inlet toward the outer edge of the pump where it is discharged through a fluid outlet. A POSA would have understood that, as illustrated in the annotated image in Paragraph 106 below, the Doro Pump includes a bottom fluid inlet, a fluid outlet, an impeller, and a housing. A POSA would have understood that

the Doro Pump impeller would be located within the housing of the pump above the bottom fluid inlet and adjacent to the fluid outlet.

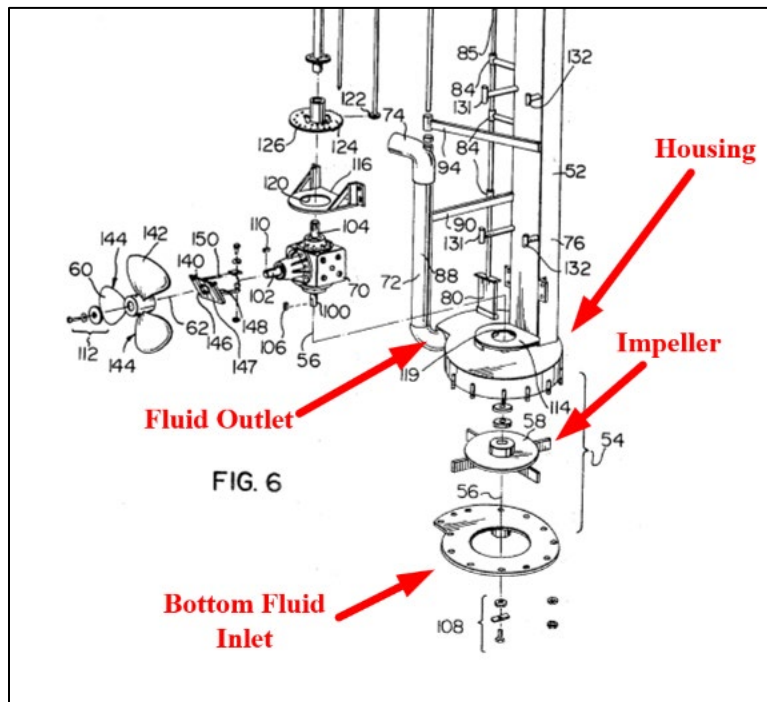
106. A POSA would have further understood that the Doro Pump is configured to be immersed in the fluid reservoir from which it is pumping and is configured to be submerged while the Truxor vehicle is floating.



EX1006, 10 (annotated).

107. As shown in the image below, a POSA would have also understood that each of the above-identified structural features of the Doro Pump are the same features that are described in Houle, which describes a centrifugal pump for pumping slurry manure. EX2010. These structural features are not required, nor are they the

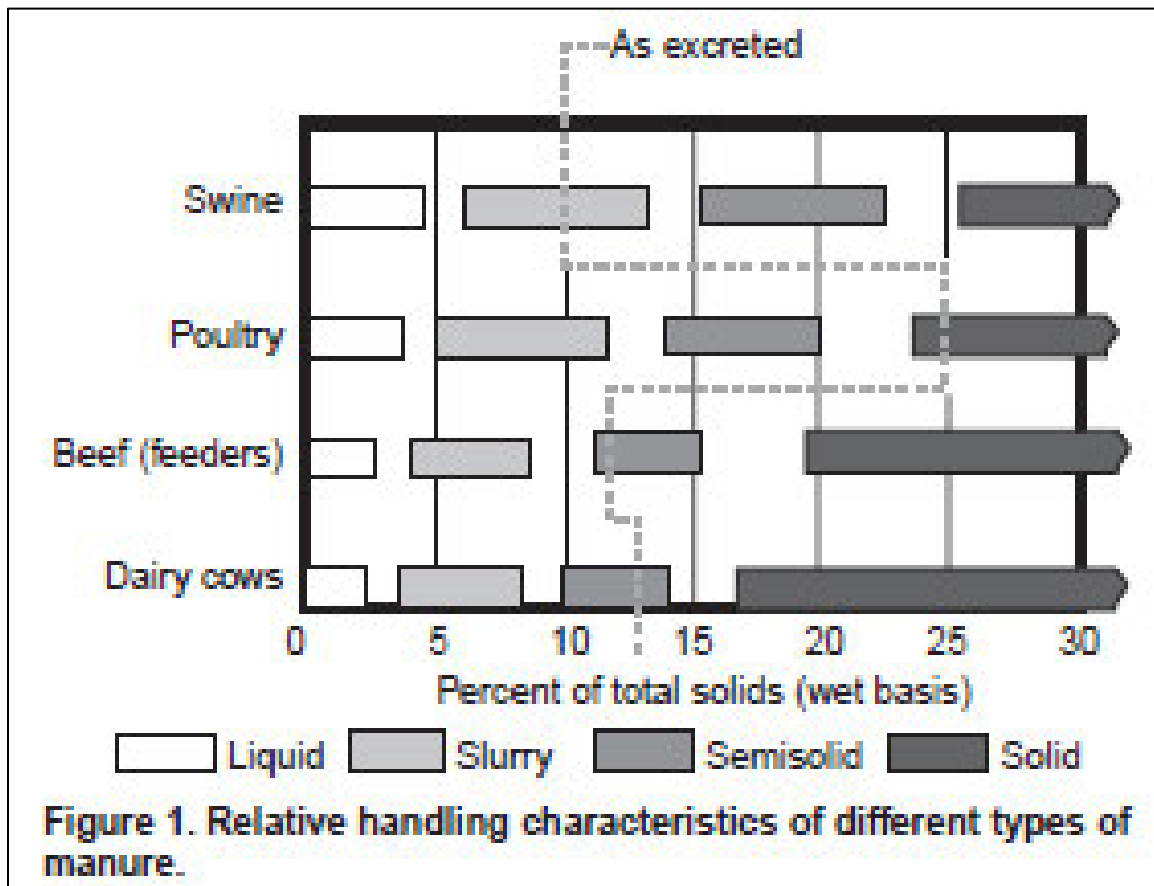
only pump configuration known in the art for pumping liquid manure. However, a POSA would have understood from the teachings of Truxor and these common structural features that the Doro Pump, like the Houle pump, could pump liquid manure.



EX2010, FIG. 6 (annotated).

108. Second, Nuhn and Mr. Prairie also assert, without support, that liquid manure has high total solids content and behaves like a non-Newtonian fluid. EX2094, ¶162. This is wrong. It is not what a POSA would have understood about the characteristics of liquid manure. As illustrated in the diagram below, a POSA would have understood that “liquid manure” is a form of manure that contains the lowest solids content, rather than “high total solids” as Mr. Prairie baselessly asserts.

EX1035, 2. Further, a POSA would have understood that the solids concentration of liquid manures found in typical manure lagoons is oftentimes a few percent or less. *Id.*, 5; EX1048, 76; EX1034, 50. As described in the literature, liquid manure (which has less than approximately 5% solids) exhibit qualities very much like water (i.e. having Newtonian fluid behaviors). EX1056, 13. This is one of the reasons why they were pumped with irrigation pumps.



EX1041, 2.

109. A POSA would have understood that some higher concentrations of manure exhibit non-Newtonian behaviors, specifically shear-thinning

characteristics. *See, e.g.*, EX2097, 8. A POSA would have understood that non-Newtonian behavior begins to manifest at higher solids concentrations, higher than the few percent or less solids that are typically found in liquid manures contained in manure lagoons. For example, in a study involving manure from lactating cows and samples taken from a manure storage tank containing bedding, urine, fresh and old manure, and water, Kumar reports that “[w]hen the slurry was below five percent total solids, it showed Newtonian flow properties, and above six percent it showed non-Newtonian (pseudo-plastic) flow properties.” EX1151, 3. Kumar concludes that “the flow is Newtonian at low total solids content (below five percent).” *Id.*, 5. A POSA would have understood that the typical concentration in a manure lagoon is a few percent or less, below the typical concentration where non-Newtonian characteristics are exhibited. EX1048, 76; EX111, 5.

110. Regardless, Nuhn and Mr. Prairie has not provided any evidence that the Doro Pump could not pump liquid manure, non-Newtonian fluids, or fluid with suspended solids. The Doro Pump is a dredge pump that is specifically designed for pumping liquids with suspended solids. Further, a POSA would have understood that centrifugal pumps were capable of pumping manure that exhibit non-Newtonian characteristics, as centrifugal pumps were reported as acceptable for pumping forms of manure having as high as 10-12% total solids. EX1034, 52.

111. Higher concentrations of manure are known to exhibit pseudo-plastic (“shear-thinning”) behavior, which a POSA would have understood to mean that as the shear-rate of the fluid increases, the viscosity drops. EX1151, 3. A POSA would have understood that a reduction in viscosity, as is the case when pumping a shear-thinning fluid, would facilitate more efficient pumping rather than prevent it, as Mr. Prairie incorrectly asserts. *Id.* Furthermore, a POSA would have understood that “sand-laden manure ... approaches Newtonian fluid when concentration decreases....” EX1152, 1. Thus, a POSA would have understood that at low concentrations of solids (in the liquid manure range), manure behaves like a Newtonian fluid (i.e. water).

112. Finally, Nuhn and Mr. Prairie both ignore that regardless of its construction, the term “liquid manure” includes mixtures of water and manure that are approximately 4-5% or less in total solid content. As described in the literature, “[l]iquid manures with less than approximately 4% total solids can be pumped from earthen basins or lagoons using pumps designed for conventional water irrigation.” EX10434 64. Therefore, a POSA would have understood that the Doro Pump, which is capable of pumping much higher solid content mixtures, would have also been capable of pumping at least these lower solids content (<4-5%) forms of liquid manure.

113. Nuhn and Mr. Prairie’s arguments are conclusory, generally unsupported, and wholly inconsistent with what a POSA would have understood about dredging pumps and dredge vehicles, liquid manure, the Newtonian behavior of liquid manures, and the ability of centrifugal pumps to pump non-Newtonian fluids. For the reasons described herein, a POSA would have understood that the Truxor vehicle with the Doro Pump was capable of pumping liquid manure.

ii. Truxor Discloses that the Liquid Manure Mover is “Positioned Within Liquid Manure When the Vehicle is Floating.”

114. Nuhn argues that since the Doro Pump is arranged on an arm and can be lifted out of the fluid while floating, it does not render obvious claims 1, 17, 39, and 40. Paper 23, 47. Nuhn is wrong. I understand that a prior art reference renders obvious an apparatus claim even if it does not meet the claim limitations in all modes of operation.

115. A POSA would have understood that the Doro Pump is configured to be immersed in the fluid reservoir from which it is pumping and is configured to be submerged while the Truxor vehicle is floating. A POSA would have understood that the Doro Pump of Truxor is clearly capable of meeting the limitations of claims 1, 17, 39, and 40, and a POSA would have understood that the Doro Pump would be immersed in the fluid reservoir any and all times that it was used for its intended purpose—pumping fluids laden with solids.



EX1006, 10.

iii. The Combination of Truxor and Yoon or Carrier Discloses the Remote-Control Limitations of Claims 1, 17, 39, and 40.

116. Nuhn argues that claims 1, 17, 39, and 40 are not rendered obvious by the combination of Truxor and the remote-control system of Yoon or Carrier because Yoon does not disclose a remote control configured to control a flow of liquid manure from the liquid manure pump. Paper 23 at 48; EX2094, ¶¶132-133, 169. Nuhn is wrong.

117. Nuhn incorrectly bases its arguments on the fact that Yoon’s water pump is “protected” by a “sludge filtering device” and asserts that Yoon’s water pump would clog if used to pump liquid manure. Paper 23 at 48. This argument represents a complete misunderstanding of the proposed combination of Truxor and Yoon or Carrier.

118. Nuhn’s representation that the Yoon pump would clog or otherwise fail to pump liquid manure is irrelevant because the proposed combination adopts the remote-control system of Yoon or Carrier to control the vehicle and Doro Pump of

Truxor. Neither Nuhn nor Mr. Prairie even attempt to argue that the remote-control systems of Yoon or Carrier would not be capable of controlling the Doro Pump on the Truxor vehicle.

B. Truxor Discloses the Claimed Combination of Elements

119. Nuhn and Mr. Prairie assert that the claims of the '835 Patent specifically relate to a vehicle “disrupting crust and recirculating liquid manure in a manure lagoon” as well as driving into, out of, and navigating the manure lagoon by wireless control. Paper 23 at 49-50; EX2094, ¶170. This is contrary to the express language of the '835 Patent claims. Specifically, claims 1-40 of the '835 Patent do not provide any reference to “crust” or to the function of “disrupting the crust.”

120. In an effort to support this position, Nuhn and Mr. Prairie state that because Truxor describes various other capabilities in addition to dredging, it would not serve as an amphibious manure lagoon pumping/agitation vehicle. EX2094, ¶172. This analysis focuses on other capabilities of Truxor, like reed cutting and gathering, while summarily ignoring the function, purpose, and capabilities of Truxor’s dredge pump, e.g., the Doro Pump. The fact that Truxor is a multi-functional vehicle with other attachments and capabilities is irrelevant to the question at hand, whether the Doro Pump is capable of pumping liquids with suspended solids. As described herein, a POSA would have understood that the Doro

Pump of Truxor would have been capable of pumping liquid manure. *See supra* Section VIII.A.i.

C. A POSA Would Have Had a Motivation to Combine Truxor with Yoon or Carrier With a Reasonable Expectation of Success

121. As described in my prior declaration, the motivations to combine Truxor with Yoon or Carrier are substantially similar to the motivations to combine SenwaTec with Yoon or Carrier. EX1004, Section VIII.A, ¶295. For this reason, I address both of these references below.

122. Neither Nuhn nor Mr. Prairie provide any analysis refuting my opinion that a POSA would have been motivated to improve the overall safety of the vehicle by adding remote control to the Truxor vehicle. As recognized by Melnikov, removing an operator from the vehicle would improve the safety of operating the vehicle. EX1023; EX1024, 4. As discussed in my prior declaration, it is my opinion that a POSA would have had a motivation to combine Truxor and Yoon or Carrier and would have had a reasonable expectation of success in doing so. EX1004, Section VIII. This is further supported by the testimony of Mr. Olofsson, the designer of the Truxor DM5000, who testified that remote control was in fact added to the Truxor DM5000 vehicle prior to 2013. EX1132, 109:14-133:9.

123. Mr. Prairie and Nuhn's suggestion that there would have been no motivation to combine Truxor with Yoon or Carrier (*see* EX2094, ¶¶142-147) is

incorrect and unsupported by the evidence. Mr. Prairie contends that the Truxor and SenwaTec vehicles: (1) are not capable of pumping liquid manure, (2) are not heavy enough to break through crust, (3) are not able to withstand corrosion, (4) would not provide a remote operator with a line of sight, and (5) have hydraulic controls that could not be remotely controlled. Each of these arguments are demonstrably wrong and counter to the evidence. *Id.*, ¶¶128-131, 142-145, 176, 208.

124. Contrary to Mr. Prairie’s assertions, a POSA would have understood that the pumps of Truxor and SenwaTec are capable of pumping liquid manure. A POSA considering the teachings of Truxor and SenwaTec would have understood that both vehicles were capable of producing strong streams of fluid with their pumps, which are discharged through nozzles. A POSA would have understood that these jets of fluid could be used to agitate liquid manure. If a crust were present on top of the liquid storage reservoir, a POSA would have further understood that the jets of fluid created by the Truxor or SenwaTec vehicle could be utilized to break up the crust. However, more importantly, a POSA would have understood that these are not limitations of the ’835 Patent claims, and breaking up “crust” is not a requirement for a liquid manure pump / liquid manure mover to pump liquid manure. Mr. Prairie’s arguments miss the mark.

125. Mr. Prairie implies that the pumps of Truxor and SenwaTec would not be sufficiently powerful for pumping liquid manure. However, as described below,

dredging pumps such as the pumps of Truxor and SenwaTec have long been used to pump liquid manure and suspended solids. *See supra* Section VIII.A.i; *see infra* Section IX.A.i. SenwaTec teaches that the “powerful centrifugal pump” can deliver “40 kW of pumping power.” EX1012, 1. A POSA would have understood that 40 kW is more than 53 horsepower, which would be more than sufficient to provide pumping and agitation capabilities. The Truxor vehicle is also described as being equipped with a “Daihatsu 35 hp diesel” engine. EX1006, 3. Mr. Prairie’s suggestions that the power and flow rates from the Truxor and SenwaTec vehicles are somehow inadequate for pumping and agitation are without basis. Mr. Prairie’s characterizations as low-power and low flow-rate are qualitative, arbitrary, and contrary to the explicit teachings in Truxor and SenwaTec.

126. Second, Mr. Prairie implies that Truxor and SenwaTec do not weigh enough to break through the crust and would simply drive across the surface of lagoon. This opinion is unsupported by the evidence. The ’835 Patent does not provide any discussion of vehicle weight, nor does it provide specific requirements for the vehicle weight or other characteristics required to break through the crust on a manure lagoon, which is not a limitation of the ’835 Patent claims. A POSA would have understood that the Truxor vehicle weighs approximately 1380 kg (3042 lb.) (EX1006, 3) and that the SenwaTec vehicle weighs approximately 2480 kg (5500 lb.) (EX1012, 1). A POSA would have understood that a crust may not even be

present, and even in instances where a crust does exist, [REDACTED]

[REDACTED] A POSA would have understood that the Truxor and SenwaTec vehicles, weighing thousands of pounds, would not simply drive across the top of a manure lagoon on top of a crust that may not even exist or a crust that is comprised of a “thin layer of liquid.”

127. Third, Mr. Prairie asserts that liquid manure in a manure lagoon is highly corrosive and because of that, a POSA would not have been motivated to use an amphibious vehicle in a liquid manure lagoon. EX2094, ¶144. However, Mr. Prairie is incorrect because a POSA would have understood that marine vehicles, specifically amphibious vehicles, can and do operate in corrosive environments, including salt water. For example, Truxor describes the use of “salt water-durable aluminum” and “[h]eat galvanized steel[.]” EX1006, 3. SenwaTec also describes “[r]obust marine aluminum construction.” EX1012, 3. A POSA would have been familiar with corrosive environments and would have been familiar with various techniques for eliminating, or at a minimum mitigating, the effects of corrosion. A POSA would have understood that corrosion-resistant materials were known in the art and readily available for mitigating any such negative effects.

128. Fourth, related to the application of remote control to the Truxor and SenwaTec vehicles, Mr. Prairie alleges that a POSA would not have modified Truxor or SenwaTec to use remote control systems because they would need a “line of sight

of the terrain ahead of and around the vehicle.” EX2094, ¶145. Mr. Prairie is wrong because he fails to consider that a line of sight of the vehicle could be achieved by standing onshore in view of the remotely controlled vehicle, as is typically the case with any remotely controlled vehicle. *See* EX1132, 109:14-133:9 (remote control added to Truxor DM5000); EX1131, 28:2-9 (remote control added to Amphi-King sold to China). Any remotely controlled vehicle provides the operator with a different vantage point relative to being onboard the vehicle, and in many instances will allow the operator to position themselves in a better position to observe the vehicle than if there were positioned therein. As shown in the SenwaTec video (EX1066), a POSA would have understood that line of sight, sufficient to control the vehicle and observe its attachments, like the pump of Truxor, would be afforded to an operator standing on the banks of the reservoir, for example, in the area shown below.



EX1066, 5:09 (annotated).

129. Nuhn and Mr. Prairie offer no analysis to support their position that getting stuck, rolling, and tipping would be more likely to occur if the Truxor or SenwaTec vehicles were equipped with remote controls. Even if this were the case, Mr. Prairie does not refute the fact that using such systems would increase the safety of the operator and does not refute the benefits this would provide. Regardless, even if there are tradeoffs between an on-board operator and a remote operator, none of these arguments negate the clear safety benefits that are afforded by remote operation of these vehicles. Aside from Mr. Prairie's perceived difficulties or belief that remote control would increase the likelihood of getting stuck or tipping, he provides no rationale as to why remote control could not be added to Truxor or SenwaTec.

130. Fifth, Mr. Prairie alleges that the hydraulic controls of Truxor and SenwaTec would be difficult to implement remote control over. EX2094, ¶¶176, 208. To the extent these difficulties exist, a POSA would have understood that they could be readily overcome. *See* EX1132, 109:14-133:9 (remote control added to Truxor DM5000); EX1131, 28:2-9 (remote control added to Amphi-King). A POSA would have understood that remote control of hydraulic systems was known in the art, including remote control of hydraulic systems on amphibious vehicles and pumping vehicles. For example, Carrier teaches a remotely controlled vehicle that includes wheels that are connected to hydraulic wheel motors and the Carrier vehicle regulates the flow of hydraulic fluid to the hydraulic wheel motors. EX1005, ¶¶[0026], [0064]. In addition, the '835 Patent shows that the use of remote control with hydraulic systems is not as difficult as Mr. Prairie asserts. The '835 Patent provides little or no information related to the structure and configuration of the remote control system, presumably due to its ease of implementation.

131. Contrary to Mr. Prairie's position, the PTAB concludes that "Patent Owner does not argue, and *we see no reason to believe, that adding remote control to Truxor is not within the ability of one of skill in the art.*" Paper 12 at 35 (emphasis added). The PTAB also provides that "[t]hough Patent Owner identifies these potential drawbacks, *there are almost always tradeoffs to different designs. On the record before us, this does not discredit Petitioner's reasoning* that adding

remote control to Truxor would increase the safety of the operator.” Paper 12 at 36 (emphasis added).

132. As explained previously (EX1004, ¶¶247-254), a POSA would have been motivated to combine Truxor with the remote-control teachings of Yoon or Carrier and would have had a reasonable likelihood of success. Mr. Prairie’s criticisms and perceived deficiencies with the Truxor and Yoon/Carrier combination are speculative and without basis, and the reasoning behind his arguments is flawed.

133. Mr. Prairie alleges that POSAs would not have been motivated to implement remote control into Truxor because operators would not be able to feel tactile feedback from the machine. EX2094, ¶¶176, 184. However, Mr. Prairie is wrong because regardless of his concerns regarding tactile feedback, a POSA would have understood that remotely controlled vehicles and their functions can be observed from nearby and visual information for a remote operator can be used in place of tactile information for an operator.

134. Mr. Prairie relies on EX2025 to support his opinion that hydraulic excavator controls are not easily converted to teleoperation. EX2094, ¶176. This argument is irrelevant. The ’835 Patent claims require remote control, not teleoperation. Moreover, EX2025 does not even mention “teleoperation” or provide any discussion of “remote control” operation. EX2025. A POSA would have understood that EX2025 is a study that uses a simulator of a hydraulic excavator.

The study has nothing to do with remote control of any vehicle, let alone an amphibious pumping vehicle.

135. Mr. Prairie cites another document (EX2028) that discusses “tele-remote control of excavators,” which a POSA would have understood to mean that the operator is not even on site and would not be standing onshore with a line of sight to the vehicle and its components. EX2094, ¶176. Once again, this document is irrelevant to the issue of remote control of an amphibious pumping vehicle. Mr. Prairie’s conclusions about remote control of the Truxor vehicle, based on a paper related to a unique control system for tele-remote operation of a miniature track excavator, are incorrect and unsupported. *Id.*, ¶176. In fact, this same document describes the benefits of remote control, including that “[o]perators no longer have to work onsite in the dangerous health-endagering [sic] construction environment and a flexible deployment of the workforce is possible.” EX2028, 1.

136. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED] Mr. Nuhn also testified that he re-programmed remote-control systems of liquid manure tankers to work on the Lagoon Crawler. *Id.*, 142:9-17. Mr. Nuhn’s testimony illustrates the ease with which remote control systems can be adapted for different control applications.

D. Dependent Claims 2-5, 7-16, 18-21, and 23-38

137. Claims 2-5, 7-16, 18-21, and 23-38 each depend from one of claims 1, 17, 39, or 40. Neither Nuhn nor Mr. Prairie provide any analysis or opinion regarding these claims and obviousness over Truxor in view of Yoon or Carrier, aside from referring back to previous claims from which they depend.

138. As discussed in my prior declaration, it is my opinion that these claims are obvious over Truxor in view of Yoon or Carrier. EX1004, Sections VII.B-H and VII.J-Q.

IX. GROUND 3: CLAIMS 1-5, 7-21, AND 23-40 ARE RENDERED OBVIOUS BY SENWATEC IN VIEW OF YOON OR CARRIER

139. Claims 1-5, 7-21, and 23-40 of the '835 Patent are rendered obvious by SenwaTec in view of Yoon or Carrier. SenwaTec teaches every limitation of these claims with the exception of the remote-control feature, which were well known to a POSA. POSAs would have been motivated to add remote control features to SenwaTec to improve its overall safety and expand its ability to operate in dangerous environments and would have a reasonable expectation of success in doing so. EX1004, Section IX.A. As described herein, Nuhn's and Mr. Prairie's allegations that SenwaTec combined with Yoon or Carrier would not render claims 1-5, 7-21, and 23-40 obvious are wrong.

A. Independent Claims 1, 17, 39, and 40

[1.0] An amphibious vehicle comprising:

[1.1] a floatable vehicle body;

[1.2] a ground engaging propulsion structure comprising a plurality of ground engaging elements powered by a hydraulic motor;

[1.3] a hydraulically powered liquid manure mover separate from the ground engaging propulsion structure, the liquid manure mover positioned within liquid manure when the vehicle is floating;

[1.4] a power source connected to a hydraulic pump, the power source configured to provide power to both the ground engaging propulsion structure and the liquid manure mover; and,

[1.5] a wireless remote control configured to enable an operator who is remote from the vehicle to: (1) control the ground engaging propulsion structure; (2) control a flow of liquid manure from the fluid pump; (3) control at least one of the speed and direction of the vehicle when the vehicle is ground engaging; and, (4) control at least one of the speed and direction of the vehicle when the vehicle is floating.

i. SenwaTec Discloses a Dredging Pump Capable of Pumping Liquid Manure.

140. Nuhn and Mr. Prairie allege that Claims 1, 17, 39 and 40 are not rendered obvious by SenwaTec in view of Yoon or Carrier, because SenwaTec does not disclose a liquid manure pump. Paper 23 at 53; EX2094, ¶195. As explained in my prior declaration (EX1004, Section IX), a POSA would have understood that the SenwaTec pump would have been capable of pumping liquid manure. This is further confirmed by the testimony of Mr. Lonnemann, the designer of the SenwaTec Amphi-King, who confirmed that the Amphi-King was capable of pumping liquid with solid contents of up to about 25% solids. EX1131, 70:20-71:3, 200:11-201:9.

141. In an effort to support its position, Nuhn provides a global assertion that “most centrifugal pumps are incapable of pumping liquid manure.” Paper 23 at 53. This is wrong and far overreaching. A number of references, including the ’835 Patent and the incorporated ’758 Patent, teach centrifugal pumps for pumping liquid manure. [REDACTED]

[REDACTED]; EX1034, 51-52; EX1048, 76-80; EX1060, 42-46. A POSA would have understood that most centrifugal pumps are capable of pumping liquid manure. Nuhn relies on a quote from Houle to support its position, but Houle too includes a centrifugal pump with a housing and rotating impeller. EX2010, Fig. 6. In fact, claim 1 of Houle discloses a “centrifugal pump of conventional design.” EX2010, 6:3-4. A POSA would not have understood that Houle teaches centrifugal pumps cannot pump liquid manure, and a POSA would not have looked to Houle to determine whether SenwaTec’s dredging pump is capable of pumping liquid manure, as Nuhn attempts to do without basis. Instead, a POSA would have understood that the quote relied on by Nuhn is an attempt to tout the benefits of the manure/slurry pump patented in 1983 relative to prior art pump systems.

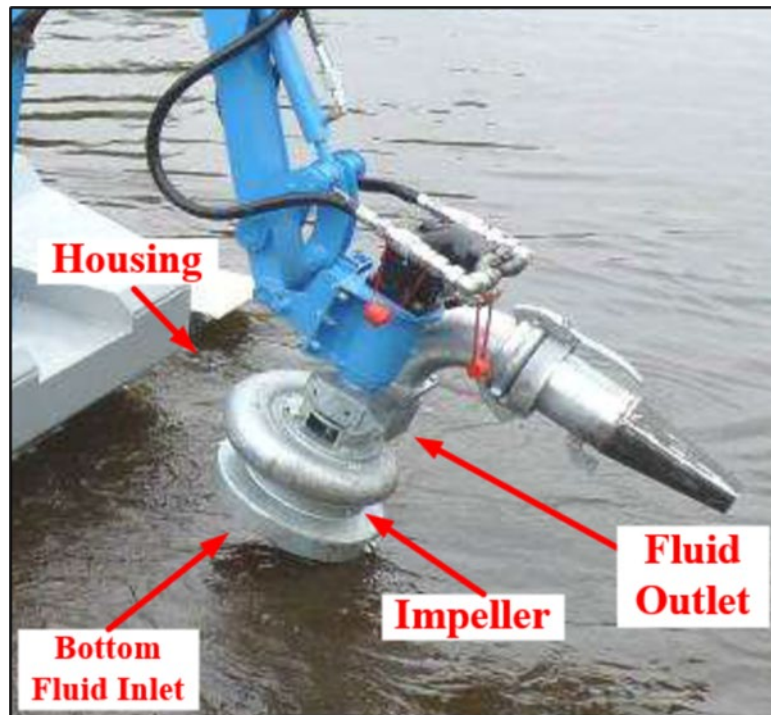
142. Again, in an effort to support these conclusions, Nuhn and Mr. Prairie rely on their proposed criteria that a POSA would only consider a pump to be liquid manure pump if it were designed, marketed, and/or tested for liquid manure pumping

applications. Paper 23 at 53. As shown above, these considerations are subjective, and a POSA would not rely on these arbitrary criteria to determine whether a pump was physically capable of pumping liquid manure. *See supra* Section VII.B-B.i.

143. Mr. Prairie contends that SenwaTec does not teach that the SenwaTec pump is capable of pumping liquid manure because municipal waste ponds are not like animal manure lagoons and contain bedding material, and because manure acts as a non-Newtonian fluid when pumped. EX2094, ¶195. Neither of these arguments are correct. First, EX1066 shows the SenwaTec vehicle operating in a human manure lagoon and the video clearly shows straw like material on the surface of the reservoir. EX1066, 7:59-8:22. In addition, there is no basis to conclude that the dredging pump would be incapable of pumping fluid laden with bedding particles, in manure lagoons that include bedding materials. Regarding, the non-Newtonian characteristics of some liquid and slurry manures, as shown above, not all manures exhibit non-Newtonian behavior and those that do are shear-thinning. *See supra* Section VIII.A.i. Mr. Prairie's arguments are contrary to significant volumes of literature teaching the use of centrifugal pumps for pumping manure. EX1034, 51-52; EX1048, 76-80; EX1060, 42-46. Contrary to Nuhn's and Mr. Prairie's position, the PTAB concluded that SenwaTec would pump liquid manure because it "teaches a dredge pump ... [that] appears capable of pumping liquid with suspended solids." Paper 12 at 44.

144. A POSA would have understood that the SenwaTec pump is a centrifugal pump including a housing and impeller, because it is described as a “Centrifugal pump with HARDOX inner casing, 6” suction x 6” discharge,” EX1012, 3. A POSA would have understood that such centrifugal pumps include a spinning impeller inside a housing. A POSA would have understood that the SenwaTec pump includes a bottom fluid inlet that draws fluid into the pump housing through an inlet, and that the spinning impeller accelerates the fluid, moving it from the inlet toward the outer edge of the pump housing where it is discharged through a fluid outlet. A POSA would have understood that, as illustrated in the annotated image in Paragraph 145 below, the SenwaTec pump includes a bottom fluid inlet, a fluid outlet, an impeller, and a housing. A POSA would have understood that the SenwaTec pump impeller would be located within the housing of the pump, above the bottom fluid inlet and adjacent to the fluid outlet.

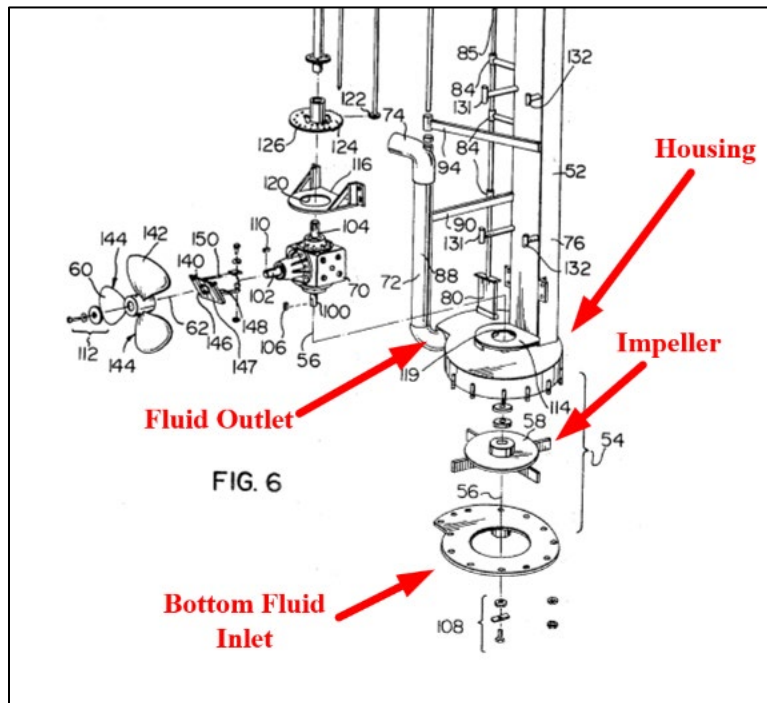
145. A POSA would have further understood that the SenwaTec pump is configured to be immersed in the fluid reservoir from which it is pumping. A POSA would have understood that the SenwaTec is configured to be submerged while the SenwaTec vehicle is floating.



EX1012, 1 (annotated).

146. A POSA would have understood that dredge pumps such as the SenwaTec pump have long been used to pump liquid manure. EX1034, 41-42, 54-58; EX1048, 38, 76-77; EX1060, 42-46, 104; EX1070, 1; EX1071, 3.

147. As shown in the image below, POSA would have also understood that each of the above-identified structural features of the SenwaTec pump are the same features that are described in Houle, which describes a centrifugal pump for pumping slurry manure. EX2010, 5:7-21. A POSA would have understood from the teachings of SenwaTec and these common structural features with the Houle pump that the SenwaTec pump could pump liquid manure, which a POSA would have understood is a lower solid content form of manure than slurry manure. EX1058, 11-13.



EX2010, FIG. 6 (annotated).

148. Once again, Mr. Prairie argues about the capability of centrifugal pumps for pumping liquid manure. As shown above, these arguments are incorrect and contradicted by the '835 Patent, Houle, and the manure pumping literature. *See supra* Sections VIII.A.i. Mr. Prairie's arguments regarding the alleged high total solids content and non-Newtonian behavior of liquid manure are similarly flawed. *See supra* Section VIII.A.i. As shown above, Nuhn and Mr. Prairie both ignore that regardless of how the term is construed, "liquid manure" includes mixtures of water and manure that are lower than 5% total solid contents and would therefore be pumped by the SenwaTec centrifugal dredge pump. *See supra* Section VIII.A.i.

149. Moreover, SenwaTec discloses a pump that was used to pump various forms and concentrations of manure. I understand that EX1066 and EX1067 are the full video and accompanying translation of EX1027. As shown in EX1066 at 8:54-10:18, SenwaTec pumped human manure from a holding lagoon, which was subsequently applied onto agricultural fields. A POSA would have understood that manure is commonly applied to agricultural fields as fertilizer, and therefore would have understood the material pumped by the SenwaTec vehicle in EX1066 and EX1067 to be manure.

150. EX1068, and the translation in EX1084, also depicts and describes the Amphi-King pumping manure. While Mr. Prairie attempts to distinguish between human manure and other types of animal manure based on its method of treatment, Mr. Prairie's support for these arguments is based purely on a single *US* EPA document. EX2094, ¶35 (citing EX2022). Mr. Funk, the operator of the vehicle in EX1066-EX1069, described how the human manure that he pumped in rural *Germany* using the Amphi-King was *not* artificially processed and included debris such as condoms, tampons, and toilet paper. EX1073, ¶32 (emphasis added). And while Nuhn argues that human manure in "municipal wastewater ponds do not contain animal bedding material (such [as] straw)[,]" the video of EX1066 shows the reservoir containing large amounts of straw-like material mixed in with the human manure. EX1066, 7:59-8:22; Paper 23 at 55; EX2094, ¶35. Nuhn also

attempts to distinguish the manure pumped by the Amphi-King based on the bacterial breakdown of the waste (*see* EX2094, ¶35), but this is the same processing technique that the intrinsic evidence describes with respect to farm animal manure: “After anaerobic bacteria breaks down the manure, the manure is pumped from the lagoon.” EX1014, ¶[0003].

151. Even ignoring the fact that Mr. Prairie relies on *US* EPA documents for his assertions regarding human manure processing in Germany, Mr. Prairie fails to consider that many of these “typical” human waste management processes are paralleled very closely by processes employed in agricultural animal waste manure management systems.

152. For example, Mr. Prairie provides that “[t]ypical wastewater treatment facilities for the treatment of human waste include a primary treatment stage and a secondary treatment stage.” EX2094, ¶35. However, primary and secondary treatment stages were known in the art and employed with manure management systems. For example, the US Department of Agriculture’s Animal Waste Management Field Handbook (“AWMFH”) provides several pages of discussion related to primary and secondary treatments in a manure management system. EX1573, 42-80.

153. AWMFH provides that “[p]rimary treatment includes the physical processes such as solids-liquids separation, moisture adjustment, and dilution.

Although not required, primary treatment is often followed by secondary treatment prior to storage or land application.” *Id.*, 42. AWMFH provides examples of solid/liquid separation techniques employed in manure management systems including “mechanical separation” and the use of “settling basins” to remove solids from liquid manure. AWMFH provides that “[a]nimal manure contains material that can often be reclaimed. Solids in dairy manure from animals fed a high roughage diet can be removed and processed for use as good quality bedding.” *Id.*, 42. The EPA document cited by Mr. Prairie describes similar primary processes for human wastewater involving solid-liquid separation. Like the settling basins described in EX1057, EX2022 describes sedimentation tanks where suspended solids sink to the bottom and the mass of solids is called primary sludge. EX2022, 11.

154. A POSA would have understood that human wastewater (manure), given its similarities to animal wastewaters (manure), contains nutrients, including phosphorous and nitrogen, which are similarly found in animal manure. Accordingly, human waste is often used in land-applications and irrigation of crops, just like liquid manure from processed animal waste in manure lagoons.

155. Mr. Prairie suggests that there is no evidence in the record that would lead a POSITA to conclude that the dredge pump disclosed in SenwaTec is a “‘liquid manure pump’ (i.e., a ‘pump that pumps liquid manure’ or a ‘pump with a structure that is capable of pumping liquid manure with suspended solids’).” EX2094, ¶195.

Aside from the obvious application and disclosure that the SenwaTec vehicle is used for dredging applications and would be capable of pumping solids, EX1027, screenshots from a video from UD UMWELT-DIENSTE GmbH illustrates the SenwaTec vehicle and pump being used to pump human manure. As shown in the images below, the SenwaTec vehicle is shown being deployed in a containment reservoir and is shown pumping heavy viscous materials. As supported by the declarations of Mr. Lonnemann (EX1013, 2), Mr. Funck (EX1073, ¶¶6-13), and Mr. Speerschneider (EX1075, ¶¶7-13), a POSA would have understood that the SenwaTec pump was used for pumping manure and agitating manure lagoons. A POSA would have understood from the images in the video of EX1067 that the reservoir had a “crust” of solid and/or semi-solid materials on the surface and that the SenwaTec vehicle and pump were being used to agitate and mix the contents of the reservoir. This video clearly shows the SenwaTec vehicle and pump being used to pump heavy viscous form of manure. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]



EX1066, 00:33, 02:10.

156. The examples above demonstrate the fallacy of Mr. Prairie's arguments and highlight the many similarities between human waste processing and animal

waste processing, including primary (pre-)treatments such as liquid-solid separation, the use of lagoons for secondary biological treatment, and the similar nutrient content and land application of human waste. Aside from his continued reference to crusts, Mr. Prairie has not shown that the pumping requirements for liquid manure are different from the capabilities of the SenwaTec vehicle and its dredge pump. A POSA would have understood that the capabilities of SenwaTec pump exceed those required for pumping liquid manure.

157. Mr. Prairie's arguments are conclusory, generally unsupported, and wholly inconsistent with what a POSA would have understood about dredging pumps and dredge vehicles, liquid manure, the Newtonian behavior of liquid manures, and the ability of centrifugal pumps to pump non-Newtonian fluids. For the reasons described herein, a POSA would have understood that the SenwaTec vehicle, with its dredge pump, was capable of pumping liquid manure.

ii. SenwaTec Discloses that the Liquid Manure Mover is Positioned Within the Liquid Manure When the Vehicle is Floating.

158. Nuhn argues that "SenwaTec's pump is attached to the end of a boom-arm and therefore can be raised above the waterline when the SenwaTec vehicle is floating." Paper 23 at 55. Nuhn further argues that because the pump is not always submerged when the vehicle is floating, it does not teach this limitation. Paper 23 at 56. Claims 1, 17, 39, and 40 do not preclude the ability of lifting the fluid pump out

of the reservoir. A POSA would have understood that the SenwaTec's dredge pump would not be used for pumping when it was positioned above the fluid surface. Similarly, a POSA would have understood that when SenwaTec's pump was used for pumping, it would be immersed in the surrounding fluid. A POSA would not have understood that the claims of the '835 Patent require that the pump housing never leave a position where it is immersed in the fluid.

159. In fact, the '835 Patent specification explains that the "fluid pump *may* comprise a pump housing configured for immersion within the fluid." EX1001, 2:65-66 (emphasis added). The '835 Patent specification also describes raising the pump and lowering the pump relative to the vehicle body and that the pump can be lowered into the fluid using a telescoping structure or a lever structure of the vehicle. EX1001, col 3:5-15. A POSA would not have understood from the plain language of the '835 Patent specification and claims that the housing of the fluid pump (or liquid manure mover) could never be raised and must always be immersed in the fluid whenever the vehicle is floating. A POSA would have understood that a pump that is positioned on a telescoping or lever structure that can be lowered into the fluid could also potentially be raised to a position above the fluid. In sum, contrary to Nuhn's and Mr. Prairie's arguments, a POSA would not have understood that the specification and claims of the '835 Patent require the fluid pump to always be submerged.

160. A POSA would have further understood that the SenwaTec pump is configured to be immersed in the fluid reservoir from which it is pumping and is configured to be submerged while the SenwaTec vehicle is floating. Mr. Prairie acknowledges that the SenwaTec pump “may be submerged in a waterway ... by lowering the boom arm.” EX2094, ¶198.

161. Nuhn argues that this limitation “requires the liquid manure mover to be mounted in a location that is always below the ‘waterline’ of the vehicle when the vehicle is floating.” Paper 23 at 47. This is wrong, because the ’835 Patent specification teaches that the fluid pump (portion of the liquid manure mover) can be mounted on a telescoping structure or lever structure and that the fluid pump may be lowered for immersion. EX1001, 3:5-15. A POSA would have understood that the SenwaTec vehicle is clearly capable of meeting the limitations of claims 1, 17, 39, and 40, and a POSA would have understood that the SenwaTec pump would be immersed in the fluid reservoir any and all times that it was used for pumping.

iii. The Combination of SenwaTec and Yoon or Carrier Discloses the Remote-Control Limitations of Claims 1, 17, 39, and 40.

162. Nuhn and Mr. Prairie assert that the SenwaTec combination fails to disclose all of the wireless remote-control limitations of Claims 1, 17, 39, and 40. Paper 23 at 56-57. Nuhn asserts that “Yoon does not disclose ‘a wireless remote

control configured to ... control the flow of liquid manure from ... the liquid manure mover/liquid manure pump.” Paper 23 at 57. Nuhn is again wrong.

163. Nuhn incorrectly bases its arguments on the fact that Yoon’s water pump is “protected” by a “sludge filtering device” and asserts that Yoon’s “water pump would clog if used to pump liquid manure, which is also consistent with Bazooka’s public statements that ‘most pumps cannot operate’ in manure lagoons.” *Id.* at 48. This argument fails because it represents a complete misunderstanding of the proposed combination of SenwaTec and Yoon or Carrier. In addition, a POSA would not have understood that the pump of Yoon would clog if used to pump liquid manure.

164. Nuhn’s representation that the Yoon pump would clog or otherwise fail to pump liquid manure is irrelevant because the proposed combination adopts the remote-control system of Yoon or Carrier to control the vehicle and pump of SenwaTec. The capabilities of the Yoon pump in that combination are meaningless, as that pump would not be used, only the remote-control system would be combined with the SenwaTec vehicle; neither Nuhn nor Mr. Prairie even attempt to argue that the remote-control systems of Yoon or Carrier would not be capable of controlling the liquid manure pump or liquid manure mover on the SenwaTec vehicle.

165. Nuhn’s arguments that Yoon would not be capable of pumping liquid manure, while totally irrelevant, are simply wrong. Yoon teaches that the vehicle

and pumping system are intended for use with “livestock wastewater.” EX1011, 4. A POSA would not have understood there to be any material difference between “livestock wastewater” and “liquid manure.” Further, a POSA would have understood that screens and “sludge filtering” devices were used in conjunction with pumping liquid manure. EX1004, ¶¶105-113. In addition, a POSA would have understood that the “sludge filtering device” of Yoon would not have prevented all solids from entering the pump and that the pump of Yoon was capable of processing suspended solids (like those found in liquid manure / livestock wastewater). Yoon clearly teaches that downstream of the amphibious vehicle’s pumping system, the fluid (containing solids) would be introduced into a solids separation device.

166. In addition, Nuhn and Mr. Prairie misrepresent Bazooka’s public statements and provide an incomplete quotation where they have substituted terms. Paper 23, 55 (citing EX2033). As an initial matter, a POSA would not look to and rely on Bazooka’s marketing materials to gather an understanding the capabilities of Yoon. The very notion that a POSA would have relied on marketing statements from Bazooka to help define and understand the capabilities of Yoon’s pump is bizarre, especially since the marketing materials in question were from 2024—long after the date of Nuhn’s alleged invention. Paper 23, iv (citing EX2033). Rather, a POSA would look to the teachings of Yoon and would have understood that the pump of Yoon was designed for liquid manure (livestock wastewater) pumping and would

have been capable of pumping liquid with suspended solids. Finally, Nuhn and Mr. Prairie misrepresent the Bazooka quotation. Rather than accurately quote Bazooka's marketing materials, Nuhn asserts that "'most pumps cannot operate' in manure lagoons." Paper 23 at 48. In reality, the quote from Bazooka's marketing is related to the propellers and the vehicle of Nuhn and "even the *thickest sludge* where most pumps cannot operate." EX2033, 9 (emphasis added). A POSA would have understood that "the thickest sludge" is not a reflection of the characteristics of liquid manure or the liquids in a typical manure lagoon.

167. Nuhn and Mr. Prairie do not provide any analysis and do not offer any arguments that the remote-control system of Yoon or Carrier would not function to control the flow of liquid manure from the dredge pump of SenwaTec. Indeed, a POSA would have been motivated to add remote control to the SenwaTec vehicle and would have had a reasonable expectation of success. *See supra* Section IX.C. Mr. Prairie bases his entire argument around his notion that SenwaTec "does not disclose that its pumps are liquid manure pumps[.]" EX2094, ¶200. As explained above, a POSA would have understood that the SenwaTec dredge pump was capable of pumping liquid manure. *See supra* Section IX.A.i.

B. SenwaTec Discloses the Claimed Combination of Elements

168. Mr. Prairie asserts that the claims of the '835 Patent specifically relate to a vehicle disrupting crust and recirculating liquid manure in a manure lagoon as

well as driving into, out of, and navigating the manure lagoon by wireless control. EX2094, ¶201. Mr. Prairie’s statement is contrary to the express language of the ’835 Patent claims. Specifically, claims 1-40 of the ’835 Patent do not provide any reference to “crust” or to the function of “disrupting the crust.”

169. In an effort to support this position, Mr. Prairie points to SenwaTec’s marketing brochure touting: “40 Years of Experience in the Development of: – Ditch Cleaner and Slope Mowers – Mowing and Clearing Boats – Weed Harvesters – Amphibious Vehicles – Cutter Suction and Excavating Dredges.” EX2094, ¶202. These representations of the SenwaTec company’s development experience are irrelevant to the capabilities of the SenwaTec vehicle, but nevertheless this is what Mr. Prairie relies on to support his arguments. Mr. Prairie concludes from this that if a POSA “were to even make a combination of SenwaTec with Yoon or Carrier, the result would be an amphibious remote-controlled weed clearing and dredging vehicle – not an amphibious manure lagoon agitation/pumping vehicle.” EX2094, ¶203. Mr. Prairie arbitrarily inserts the “weed clearing” term, but Mr. Prairie acknowledges that the combination would result in an amphibious remote-controlled pumping vehicle with a dredge pump. *Id.* A POSA would have understood that dredge pumps, including the dredge pump of SenwaTec, were capable of pumping liquid manure. *See supra* Section IX.A.i. A POSA would have understood that SenwaTec’s additional weed clearing attachments have nothing to do with the

capabilities of the amphibious dredging vehicle and pump of SenwaTec and whether they meet the limitations of the '835 Patent claims.

C. A POSA Would Have Had a Motivation to Combine SenwaTec with Yoon or Carrier with a Reasonable Expectation of Success

170. As discussed in my prior declaration, it is my opinion that a POSA would have had a motivation to combine SenwaTec and Yoon or Carrier and would have had a reasonable expectation of success in doing so. EX1004, Section IX.A.

171. Nuhn and Mr. Prairie provide the same general arguments regarding the motivation to combine SenwaTec and Truxor. As shown above, each of these arguments provided by Mr. Prairie are wrong and contradict the evidence regarding the motivations of a POSA. *See supra* Section VIII.C.

172. Nuhn argues that the number of control interfaces of SenwaTec would prohibit the implementation of remote control. Paper 23 at 58-59. Nuhn is wrong. Aside from pointing to the eight interfaces on the vehicle, Nuhn provides no explanation as to what these controls are for or why they could not be readily converted to remote control. Wireless control of amphibious vehicles and their systems, including wheels and tracks, engines, hydraulic systems and booms, and pumping systems, were known in the art. EX1005 ¶¶[0025], [0064]; EX1017 ¶¶[0004], [0121]; EX1010; EX1011 ¶¶[0033], [0047], [0048]. A POSA would have readily understood that remote control of the of these interfaces could be achieved

by simply adding channels to the remote control and receiver to control each of these interfaces. This is confirmed the testimony of Mr. Lonnemann, who described how SenwaTec implemented remote control of the SenwaTec Amphi-King back in 2016. EX1131, 183:21-186:8.

173. Nuhn's and Mr. Prairie's reliance on the number of control interfaces as an insurmountable hurdle to the implementation of remote controls is belied by the '835 Patent itself which teaches remote control of 9 different systems: 1) "an amount of fluid flow from at least the first nozzle" 2) "angular orientation of at least the first nozzle relative to the vehicle body," 3) "an amount of fluid flow from at least the second nozzle(s), 4) "an angular orientation of at least the second nozzle(s) relative to the vehicle body," 5) "the valve structure in order to proportion fluid flow between the plurality of fluid nozzles," 6) "rotational speed of the fluid pump," 7) "raise and lower the fluid pump," 8) "raise and lower the ground engaging propulsion structure," and 9) "start and stop the power source." EX1001, 4: 33-59. Similarly, Puck and Carrier each disclose remote control of multi-component systems. *See e.g.*, EX1004, Section VII.A.ii; EX1014, FIG. 7.

174. Nuhn and Mr. Prairie also suggest that remote control of SenwaTec's pumping functionality would be a problem because SenwaTec shows the operators of the vehicle standing up while pumping. Paper 23 at 59; EX2094, ¶214. First, the assumptions as to what the operators are doing and why they are doing it are

speculative, at best. I understand that Mr. Lonnemann testified in his deposition that these photographs depict him operating the vehicle during testing runs, and that in normal use, the vehicle would not operate if the operator were not sitting down while driving. *See* EX1131, 45:6-46:17.

175. Regardless, there is no rational connection between the operator standing to look at the pump and whether application of remote controls to the SenwaTec vehicle would be successful. In fact, a POSA considering the images Nuhn and Mr. Prairie rely on, might appreciate that the operator is standing to see over the edge of the vehicle and that the front end of the vehicle would have obstructed his view if seated. They fail to consider that if the operator were positioned onshore, he might have an unobstructed view of the pump because the front end of the vehicle would not be obstructing his view, if he were operating remotely from shore.



EX1012, 2 (annotated).

176. Mr. Prairie alleges that POSAs would not have been motivated to implement remote control into SenwaTec because operators would not be able to feel tactile feedback from the machine. EX2094, ¶208. However, Mr. Prairie is wrong because regardless of his concerns regarding tactile feedback, a POSA would have understood that remotely controlled vehicles and their functions can be observed from nearby and visual information for a remote operator can be used in place of tactile information for an operator.

177. Mr. Prairie relies on references to land-based excavators, described in EX2025 and EX2028, to support his opinion that the application of remote-control systems would not function with SenwaTec. As discussed previously, Mr. Prairie's reliance on these studies to assess whether the remote-control systems of Yoon and Carrier would be successful with the SenwaTec vehicle are misplaced and inappropriate. And Mr. Prairie's arguments are further belied by the testimony of Ian Nuhn, which demonstrates the ease at which remote controls systems can be adapted for different control applications. *See supra* Section VIII.C.

178. Mr. Prairie asserts that a POSA would expect instability issues on the vehicle by implementing remote control. EX2094, ¶215-217. To the extent a tilting risk exists, and SenwaTec has any instability issues, a POSA would have been motivated by the safety benefits afforded by adding remote operation to the vehicle. Mr. Prairie contends that a POSA would not have a reasonable expectation of success because the vehicle has to traverse steep embankments. EX2094, ¶218. Misquoting my prior declaration (EX1004, ¶336), Mr. Prairie asserts that manure lagoons typically have slippery steep embankments. EX2094, ¶217.

179. However, Mr. Prairie ignores the heavy-duty off-road tires and tracks that are disclosed by SenwaTec, which a POSA would have understood to be well-suited for negotiating such conditions. Of course, a POSA would have understood that all vehicles have less traction on slippery or icy embankments, but that does not

mean SenwaTec is incapable of traversing them or that SenwaTec fails to meet the claim limitations of the '835 Patent claims. Similarly, neither Nuhn nor Mr. Prairie provide any analysis to show that the SenwaTec vehicle lacks sufficient stability. In contrast, a POSA would look at the vehicle of SenwaTec and appreciate that it has a relatively low profile, relatively wide tracks, relatively long wheelbase, and aggressive tire treads and tracks as shown in the images below. Nuhn and Mr. Prairie's assertions are conclusory and contrary to what a POSA would have understood.



EX1012, 1-2.

180. In sum, Nuhn's and Mr. Prairie's arguments that the combination of SenwaTec with the remote-control systems of Yoon or Carrier would be unsuccessful are unreliable, based on inappropriate and unrelated references, and rely on arbitrary and baseless criticisms of the SenwaTec vehicle. As explained in

my previous declaration, a POSA would have been motivated to combine SenwaTec with the remote-control systems of Yoon or Carrier because of the safety benefits provided and would have had a reasonable expectation of success. EX1004, ¶¶295-298; *see supra* Section IX.C.

D. Dependent Claims 2-5, 7-16, 18-21, and 23-38

181. Claims 2-5, 7-16, 18-21, and 23-38 each depend from one of claims 1, 17, 39, or 40. Neither Nuhn nor Mr. Prairie provide any analysis or opinion regarding these claims and obviousness over SenwaTec in view of Yoon or Carrier, aside from referring back to previous claims from which they depend.

182. As discussed in my prior declaration, it is my opinion that these claims are obvious over SenwaTec in view of Yoon or Carrier. EX1004, Sections IX.C-I and IX.K-R.

X. GROUND 4: CLAIMS 1-40 ARE RENDERED OBVIOUS BY THE COMBINATION OF PUCK AND BRYHAM

183. Claims 1-40 of the '835 Patent are rendered obvious by Puck in view of Bryham. POSAs would have been motivated to add the ground engaging wheels to Puck and would have had a reasonable expectation of success.

A. Independent Claims 1, 17, 39 and 40

[1.0] An amphibious vehicle comprising:

[1.1] a floatable vehicle body;

[1.2] a ground engaging propulsion structure comprising a plurality of ground engaging elements powered by a hydraulic motor;

[1.3] a hydraulically powered liquid manure mover separate from the ground engaging propulsion structure, the liquid manure mover positioned within liquid manure when the vehicle is floating;

[1.4] a power source connected to a hydraulic pump, the power source configured to provide power to both the ground engaging propulsion structure and the liquid manure mover; and,

[1.5] a wireless remote control configured to enable an operator who is remote from the vehicle to: (1) control the ground engaging propulsion structure; (2) control a flow of liquid manure from the fluid pump; (3) control at least one of the speed and direction of the vehicle when the vehicle is ground engaging; and, (4) control at least one of the speed and direction of the vehicle when the vehicle is floating.

i. The Combination of Puck and Bryham Discloses a Liquid Manure Mover Positioned Within Liquid Manure When the Vehicle is Floating.

184. Nuhn and Mr. Prairie assert that the claims of the '835 Patent require that the pump be an immersible pump and that the pump must always be positioned in the liquid manure mover. Paper 23 at 61-63; EX2094, ¶¶221-223. This is wrong and contrary to the claim language. Rather, as explained above, the claims require that the *liquid manure mover* (which includes a pump, conduit, and nozzle) is positioned in the liquid manure when the vehicle is floating. *Supra* Section VI.A. As explained herein, the liquid manure pumping system (pump, conduit, and nozzle) disclosed by Puck is positioned within the liquid manure.

185. Nuhn and Mr. Prairie ignore their own proposed construction of “liquid manure mover” and disregard the plain language of the claims. The claim term “liquid manure mover” is more than just a pump and also includes a nozzle and conduit. *Supra* Section VI.A. Claims 1, 17, 39, and 40 require that the “liquid manure mover” be positioned within the liquid manure; contrary to Nuhn’s arguments, these claims do not require that the “pump” itself be immersed in the liquid manure. EX1001, Claims 1, 17, 39, and 40.

186. As illustrated in the images below, a POSA would have understood that Puck discloses a liquid manure mover which is positioned within the liquid manure. Puck teaches that “[t]he slurry pump (38) is coupled to a liquid manure intake, such as a slurry intake, which is a downwardly directed intake pipe (40)[.]” EX1014, ¶[0026]. Puck also teaches that “[t]he intake pipe (40) is constructed to extend ... below the surface of the lagoon (22)[.]” *Id.* Similarly, Puck teaches a plurality of nozzles 66, 68, 48 positioned in the liquid manure. A POSA would have understood that Puck’s liquid manure mover includes the nozzles 66, 68, 48 and intake pipe 40, which are arranged in the liquid manure when the vehicle is floating.

187. A POSA would have understood that Puck discloses a liquid manure mover, including the intake pipe, positioned in the liquid manure when the vehicle is floating. Nuhn ignores that liquid manure mover is a multi-component assembly including a pump, conduit, and nozzle and attempts to rewrite the language of its claims such that the pump is required to be immersed in the liquid rather than the liquid manure mover. I disagree.

ii. The Combination of Puck and Bryham Discloses a Power Source Configured to Provide Power to Both the Ground Engaging Propulsion Structure and the Liquid Manure Mover.

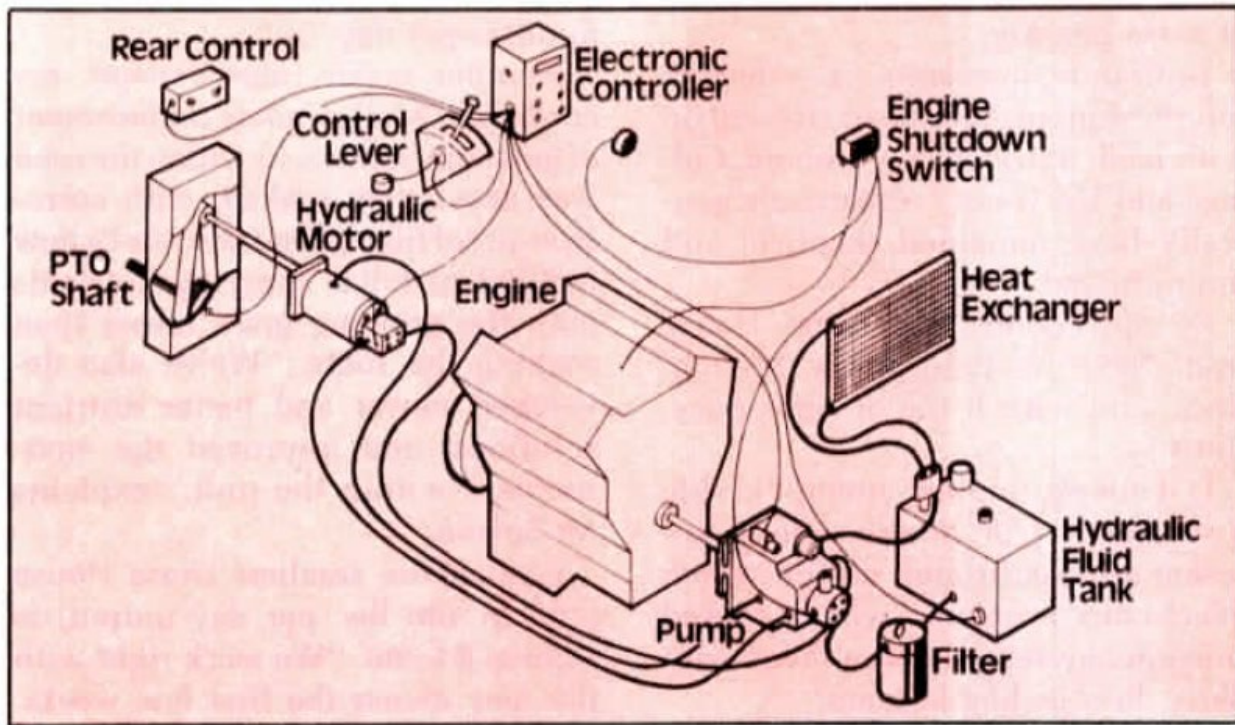
188. Nuhn and Mr. Prairie assert that neither Puck nor Bryham disclose a power source that provides power to both the liquid manure mover (including the slurry pump) and a ground engaging propulsion structure. Paper 23 at 63; EX2094, ¶¶224-226. This is wrong. A POSA would have been motivated to use the Puck power source to power both the liquid manure mover and the ground engaging propulsion structure using the Bryham hydraulic transmission. Such arrangements were well known in the art, and as explained below, a POSA would have understood that such an arrangement would be cheaper, lighter, and more efficient.

189. Nuhn and Mr. Prairie both point to the hydraulic pump on Puck, which is powered by a 12-volt battery. Paper 22 at 63-64; EX2094, ¶226. This is a red herring. It does not accurately reflect the proposed combination, *which would utilize*

the diesel engine power source of Puck (as taught by Bryham) to power the hydraulic pump and transmission of Bryham, delivering power to the slurry pump and wheels. As explained herein, the technology and motivation for using Puck's power source to power the wheels and the liquid manure mover clear.

190. Nuhn and Mr. Prairie disregard multiple configurations taught by Bryham that disclose a single power source to power the ground engaging propulsion system and the marine propulsion system. For example, Bryham teaches configurations where the ground engagement means are powered by the marine engine and a power take-off system is used to complete the drive train. EX1015, 15:33-16:42.

191. In view of these teachings of Bryham, it would have been obvious for a POSA to use the engine of Puck to power the Bryham hydraulic pump and transmission (EX1015, 15:61-67), which Bryham describes as driving the vehicle wheels. A POSA would have further understood that using the hydraulic drivetrain of Bryham to power the Puck pump with a PTO shaft would be trivial—as Mr. Prairie concedes (IPR2023-01161, EX2029 at ¶172), such configurations were well understood by POSAs since the 1970s:



EX1129, 18.

192. Without attempting to refute the accuracy of my opinion, Mr. Prairie alleges that I did not explain why powering the pump and ground engaging propulsions structure from a single engine would be less expensive, more efficient, take up less space and weigh less. EX2094, ¶¶225-226. Mr. Prairie disregards the understanding of a POSA with respect to well-known PTO systems.

193. A POSA would have understood that such PTO systems were used in a variety of applications, for example fire trucks/engines, wrecker trucks, refuse trucks, concrete mixers, and various industrial equipment, because of the benefits that they provide. The benefits of PTO systems were well-known to POSAs for a considerable period prior to the '835 Patent. Morrell (1980) describes many of the

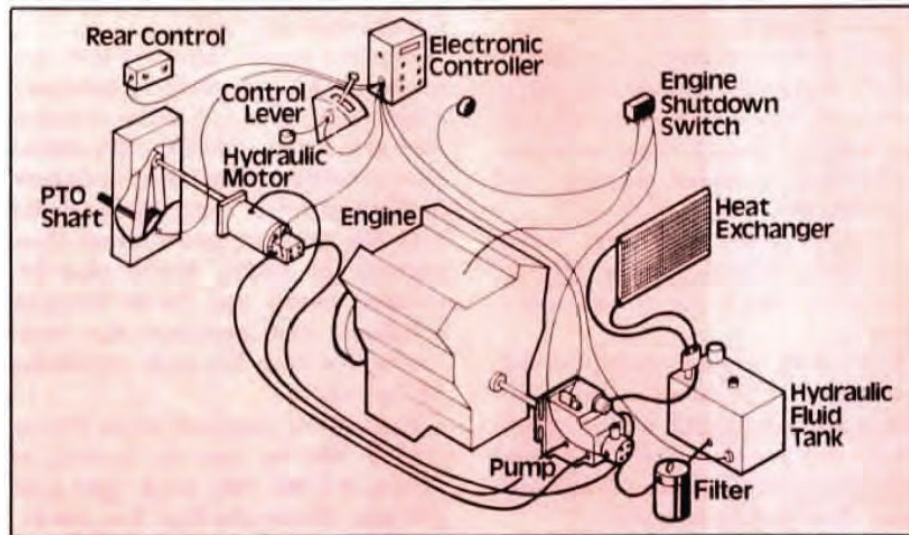
benefits associated with the use of PTO systems and some of the history, including an early example of a PTO application from 1904. EX1133, 2. For example, related to efficiency, one of the benefits I attribute to PTOs, Morrell provides that “power take-off has provided great versatility in the mechanization of the farm, and this has helped to lower the overall cost of food production.” *Id.*, 1. As another example, with regard to cost-savings with PTO use, Morrell provides that the “extra cost and complications of adding an engine to the implement prompted the re-introduction of the independent PTO.” *Id.*, 5. The PTO system was considered a major innovation and even revolutionary. Nelson provides that:

Improvements in tractor design and performance continued at a swift pace. In the 1920s the major innovation was the power take-off shaft. It enabled tractor power to be applied directly to harvesting implements, eliminating the need for auxiliary engines. The power take-off shaft also allowed the development of a variety of tractor powered spreaders and sprayers that would later revolutionize fertilizer and pesticide applications procedures.

EX1150, 71-72.

194. As to the weight and space requirements, a POSA would have understood that the cost of a hydraulically-powered PTO and the space required for such a PTO is typically less than a secondary engine and associated equipment. While a variety of PTO configurations exist, the relative size and relative cost between a hydraulically powered PTO and a secondary engine would have been

readily apparent to a POSA. An example of the relative size of a hydraulically powered PTO unit compared to the engine is illustrated in example image below.



EX1129, 18.

195. Mr. Prairie’s reference to a Bryham configuration where separate electric motors are used to drive the wheels does not negate or diminish the many benefits of using hydraulic PTO systems. EX2094, ¶263. Certainly, there are almost always trade-offs between designs and different configurations, and Bryham contemplates several different configurations. Mr. Prairie is wrong that the benefits of a PTO system would not have been obvious. A POSA would have been familiar with a variety of PTO options and would have understood the many benefits I have described herein.

196. Mr. Prairie also contends that a certain combination must be found in “teachings in the prior art references themselves” to conclude that the claimed

arrangement must be “obviously the best” to render the claims obvious. EX2094, ¶226. Mr. Prairie applies the wrong standard. I understand that Mr. Prairie’s “obviously the best” test is not the proper test for determining invalidity based on obviousness. Rather, I understand that one of the tests for obviousness is whether one would have arrived at the claimed arrangement after choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success. Here, it is my opinion that when choosing from the finite number of solutions for implementing control of the ground engaging wheels of Bryham combined with the vehicle of Puck, a POSA would have understood that powering the hydraulically powered wheels from the power source on the Puck vehicle that powers the slurry pump would provide the predictable result of powering both components and would have yielded a reasonable expectation of success. Further, a POSA would have understood that the diesel engine on the Puck vehicle was readily capable of providing output power to more than one device using the hydraulic transmission taught by Bryham.

iii. The Combination of Puck and Bryham Discloses Remote Control Configured to Control the Ground Engaging Means.

197. Nuhn and Mr. Prairie assert that Puck’s remote-control system would not provide wireless remote control of ground engaging propulsion structure of Bryham. Paper 23 at 64-65; EX2094, ¶¶227-228. They are wrong. A POSA would

have been motivated to configure the remote-control system of Puck to control the speed and direction of Bryham's wheels. EX1004, ¶¶341-342. A POSA would have understood that Puck's remote-control system was readily adaptable to control the wheels of Bryham using components readily available and known in the art.

198. These opinions and arguments are belied by the testimony of the named inventor, Ian Nuhn, who testified that he had little or no education as an engineer. When questioned whether he bought off-the-shelf remote-control components to drive his Lagoon Crawler prototype, [REDACTED]

[REDACTED] Mr. Nuhn's testimony illustrates the ease with which remote control systems can be adapted for different control applications, including the amphibious pumping vehicles at issue here.

199. Further, remote control systems were known in the art and were capable of controlling a variety of systems and components. Specifically, to the operation of wheel motors, Carrier teaches the remote control of a ground engaging propulsion system consisting of wheels driven by hydraulic motors and a series of valves to regulate the flow to control the vehicle. EX1005, ¶¶[0039]-[0045], [0064]-[0065]. Other patents teach the remote control of amphibious vehicles, including Yoon, Carrier, and Bennett-II. A POSA would have understood that the implementation of

remote control of an amphibious vehicle and its land-based propulsion system is a straightforward and predictable process.

200. The '835 Patent supports my conclusions on this topic. The '835 Patent teaches that the amphibious vehicle and its various systems can be controlled with a remote control, however it provides almost no detail as to the structure or details of the remote-control system or the devices it controls. EX1001, 4:32-58. For example, the '835 Patent provides that the “remote control structure may comprise a wireless transmitter and a wireless receiver.” *Id.*, 4:37-38. Regarding the ground-engaging propulsion system, the '835 Patent merely provides that the “remote control structure may be configured to control the speed and or direction of the vehicle when ground engaging and when floating.” *Id.*, 4:38-41. Almost no other details of the remote-control system or its structure are provided in the '835 Patent. As the '835 Patent implicitly acknowledges, a POSA would have been capable of filling in the details and would have understood that wireless devices were readily available to control a variety of devices including hydraulic valve structures configured to provide proportional flow. *Id.*, 4:50-52; EX1138, 4.

201. A POSA would have understood that Puck and its remote-control system were already configured to control the flow of hydraulic fluid. Puck uses hydraulic cylinders which are remotely controlled to adjust the orientation of the discharge nozzles for steering and propelling the vehicle. EX1014, ¶[0032]. A POSA

would have understood that this feature of Puck's remote-control system would be readily adapted to control the flow of hydraulic fluid to the wheel motors of Bryham.

202. Puck teaches "a wireless receiver (80) and a wireless transmitter (82), that allow the control panel (74) to operate as a wireless remote control, actuated by a remote[-]control system (84)." EX1014, ¶[0031]. A POSA would have readily understood that remote control of the wheels of Bryham could be achieved by simply adding channels to the remote control and receiver to the vehicle for changing the position of the hydraulic valves 107 used to selectively direct hydraulic fluid to the wheel motors 108 of Bryham. EX1015, 16:1-12. This is the same methodology already taught by Puck for remotely controlling gate valves to direct fluid to the nozzles. EX1014, ¶¶[0031], [0033].

203. Puck also teaches that its remote-control system can be used to adjust the throttle, and the remote-control system comprises throttle up and throttle down buttons. *Id.*, ¶[0032]. A POSA would have understood that throttling up and increasing the speed of an engine would increase the speed of devices coupled to the engine output, such as a hydraulic pump. A POSA would have understood that the throttle regulation of the Puck engine would be one method readily available for regulating the speed of Bryham's wheels using the remote-control system of Puck.

204. A POSA would have understood that there were a variety of options available for controlling the land-engaging propulsion structure of Bryham

wirelessly with the use of remote-control systems. A number of such examples are found in the prior art patent literature, and a POSA would have had a reasonable expectation of success in implementing a remote control of the Bryham wheels in combination with the Puck vehicle. Mr. Prairie does not provide any coherent explanation as to why the implementation of remote control of Bryham's ground-engaging propulsion system would not be straightforward and would not yield predictable results.

iv. The Combination of Puck and Bryham Discloses a Vehicle Wherein Each Wheel is Powered by Its Own Variable Speed Hydraulic Motor.

205. Regarding claims 39 and 40, Nuhn and Mr. Prairie assert that Puck and Bryham would not be combined to provide a ground engaging propulsion structure where each wheel is powered by its own variable speed hydraulic motor. Paper 23 at 65; EX2094, ¶229. Nuhn and Mr. Prairie assert that “the front wheel in Bryham (i.e., the one at the bow that swivels) is not powered at all and therefore is not powered by its own variable speed hydraulic motor.” EX2094, ¶229. They are wrong.

206. A POSA would have understood that the front wheel of Bryham may be powered, contrary to what Nuhn and Mr. Prairie assert. Bryham clearly teaches that all of the wheels may be powered, including the front wheel. Bryham discloses that the “ground engaging means consists of *at least* three wheels.” EX1015, 2:46-

47 (emphasis added). “[O]ne or more of the ground engaging means supported thereon is provided with motive power.... the motive power is provided by ... hydraulic motors.” *Id.*, 6:47-53 (emphasis added). From Bryham’s teachings that one or more of the wheels could be provided with motive power from hydraulic motors, a POSA would have understood that the number of powered wheels would not be limited to 2 (or any other number) and that all of the ground engaging means could be hydraulically powered, including the front wheel(s).

207. A POSA would have understood that Bryham teaches configurations where each wheel is powered by its own variable speed hydraulic motor. Mr. Prairie relies on an image of Figure 3A to support his conclusion that the front wheel of Bryham is not powered. EX2094, ¶229.

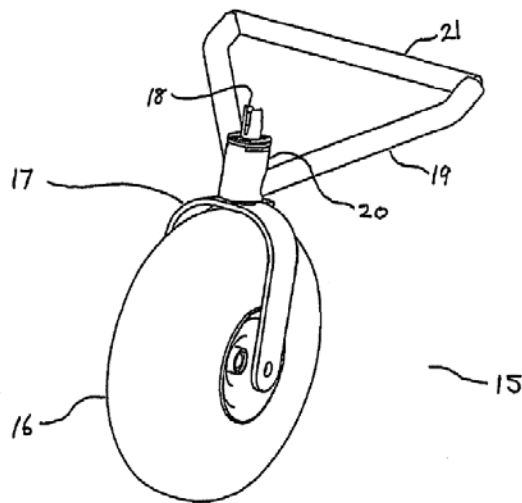


Figure 3A

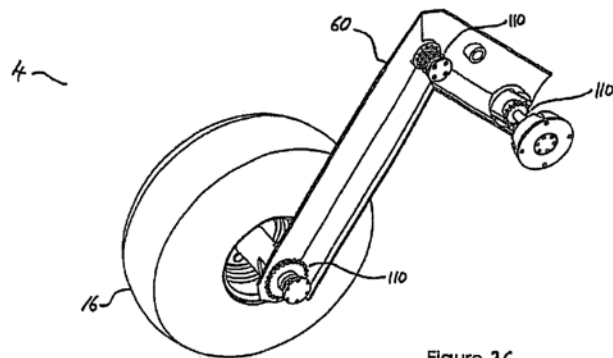


Figure 26

EX1015, FIGS. 3A and 26.

208. Nuhn and Mr. Prairie ignore the teachings of Bryham. A POSA would have understood that the front wheel shown in Figure 3A could be powered. Bryham teaches that “the hydraulic motor 108 can be mounted directly beside or within the ground engagement means 16[.]” EX1015, 16:6-8 (emphasis added). A POSA would have clearly understood from this description that Bryham discloses embodiments where both the front and rear wheels (reference number 16), would have a hydraulic motor mounted directly beside or within it. Nowhere does Bryham teach that powered wheels were limited to two rear wheels, as Nuhn and Mr. Prairie assert.

209. An archived webpage of Bryham’s commercial embodiment confirms the all-terrain nature of the vehicle and its ability to navigate steep embankments. EX1134, 1. This article from 2011, illustrates that Sealegs, the assignee to US Patent 7,314,395 and Bryham’s commercial embodiment, was producing all-wheel drive (AWD) vehicles. EX1134 provides that “[w]ith the front and two rear wheels driving, Sealegs can scale steep river banks and beachheads.... This new option is available on Sealegs amphibious boats built from May 2010 onward and means that an additional wheel motor is added to the front wheel. Having all three wheels driving provides additional traction to significantly increase Sealegs’ capabilities on steep slippery inclines or when traveling across heavy mud or quagmire.” *Id.* The teaching of Sealegs confirms that Bryham’s front wheel is powered.



Id.

210. A POSA would have understood that the wheels of Bryham would be operable at variable speed. Puck teaches that its remote-control system can be used to adjust the throttle, and the remote-control system comprises throttle up and throttle down buttons. EX1014, ¶[0032]. A POSA would have understood that throttling up and increasing the speed of an engine would increase the speed of devices coupled to the engine output, such as a hydraulic pump used to drive the hydraulic motors powering the Bryham wheels. EX1138, 4. A POSA would have understood that in most cases, increasing the speed of the hydraulic pump would also increase the speed of the hydraulic motors connected to the hydraulic

transmission. *Id.* A POSA would have understood that the throttle regulation of the Puck engine would be one method readily available for regulating the speed of Bryham's wheels using the remote-control system of Puck. *Id.*

B. A POSA Would Have Been Motivated to Combine Puck and Bryham

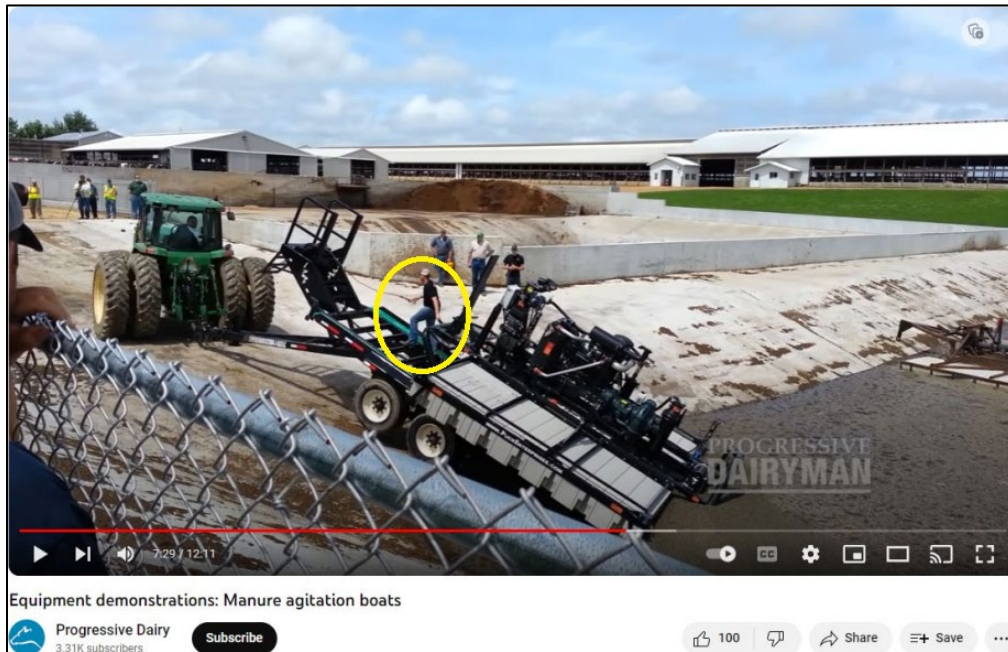
211. Nuhn and Mr. Prairie ignore the common understanding of a POSA, providing a scattershot of excessive, unsubstantiated, and meritless arguments regarding the motivation to combine Puck and Bryham. Below, I address each of these points and explain why all of them are wrong.

212. As explained in my prior declaration, a POSA would have been motivated to combine Puck and Bryham because it would make launching and retrieving the floating vehicle easier and safer, and it would eliminate the need for a trailer or a person to be in or adjacent to a hazardous and corrosive manure lagoon. EX1004, ¶¶333-342. Nuhn does not provide any counterargument to the fact that the combination of Puck and Bryham would make launching and retrieving the vehicle safer and easier.

213. Nuhn argues that there would not have been sufficient motivation to combine Puck and Bryham at least because: 1) Puck can be launched/retrieved without backing the trailer into the lagoon, 2) the combination would not solve the alleged problem of equipment exposure to corrosive lagoon environments, and

3) because the hydraulic wheels will lock if the vehicle breaks down or runs out of gas. Paper 23 at 69-70. Nuhn is wrong on all three points.

214. Nuhn and Mr. Prairie assert that launching and retrieving Puck's boat does not require a user to enter or go near a manure lagoon. EX2094, ¶¶276. Mr. Prairie cites a 2014 video by Progressive Dairyman (EX2008) which shows the Puck boat being launched. However, as shown in Mr. Prairie's cited video below, the launching process of the Puck vehicle *does* put a user in close proximity to the reservoir. A POSA would have understood that climbing over the trailer and vehicle would put the user at risk of falling into the reservoir or being dragged into the reservoir while the Puck vehicle is sliding or being pushed into a manure lagoon. Accordingly, a POSA would have been motivated to remove a user from that environment by adding the amphibious wheels of Bryham to the Puck vehicle to make launching and retrieving easier and safer, which is explicitly taught by Bryham.



EX2008, 6 (annotated).

215. Nuhn and Mr. Prairie also fails to consider that EX2008 does not show the Puck vehicle being retrieved from the reservoir (only launched), and Mr. Prairie does not consider other teachings of Puck that a POSA would have understood would require an individual to be either at the edge of or in the manure lagoon during such a process. Puck teaches that “the agitator (10) may be coupled to a cable (146) and winch (148) provided on the trailer (132).” EX1014, ¶[0038]. A POSA would have understood that to couple the cable and winch to the floating agitator, an operator would need to approach the edge of the lagoon and even wade into the manure lagoon to reach the Puck vehicle and connect the cable. Nuhn and Mr. Prairie fail to consider the retrieval process and base their arguments on only half of the process of launching and retrieving the Puck vehicle.

216. Regarding the corrosive environment, Mr. Prairie alleges that POSAs concerned with mitigating effects of corrosion would not add Bryham's wheels to the Puck vehicle. However, the Bryham vehicle and its amphibious undercarriage system were designed for use in a corrosive environment. EX1015, 1:55-58. On the other hand, vehicle trailers are often constructed from less corrosion resistant materials than the vessels they launch and retrieve. Bryham acknowledges this, teaching that the sea is often highly corrosive to the towing vehicle and its trailer and that the amphibious wheel system it teaches can be employed to solve such problems. *Id.*, 1:57-58.

217. Additionally, a POSA would have understood that many vessels are constructed of non-corrosive materials or materials that are less-susceptible to corrosion, like fiberglass. In addition, a POSA would have understood that non-fiberglass, metallic components of boats are often constructed from corrosion-resistant materials and are often bonded to protect them from corrosion. For example, one reference provides that "[t]he components of a thru-hull fitting or seacock shall be formed of galvanically compatible materials having the strength and resistance to corrosion necessary to withstand intended and abnormal use to which they are likely to be subjected." EX1139, 8. In addition, a POSA would have understood that watercraft often have cathodic bonding conductors, sacrificial anodes, and/or impressed current protection systems to help protect vessel

components from corrosion. EX1140, 11-13. A POSA would have understood that trailers are often constructed from steel because of its relatively low cost and relatively high strength, which is more susceptible to corrosion than the typical vessel construction materials. Further, a POSA would have understood that trailers are not typically protected with cathodic bonding, sacrificial anodes, or other corrosion protection measures. For these additional reasons, a POSA would have been motivated to add Bryham's wheels, specifically designed for a corrosive environment, to the vehicle of Puck to improve its safety and utility and to eliminate the need for a trailer to be used in a corrosive manure lagoon environment. Therefore, contrary to Mr. Prairie's opinions, the corrosive environment of a manure lagoon would motivate a POSA to add the amphibious wheels of Bryham to the Puck vehicle, as Bryham teaches.

218. Nuhn contends that "adding hydraulically powered wheels to Puck's boat would not have solved the problem of retrieving the boat easier and safer as Petitioner argues." Paper 23 at 70. Nuhn claims that hydraulic systems for wheels are "locked and will not rotate when there is no hydraulic flow (if the hydraulic pump is not running). *Id.* Nuhn asserts that this would impede retrieval and make it more difficult to retrieve than Puck's boat if it breaks down or runs out of gas, because the wheels will not turn. Nuhn relies solely on the declaration testimony from Ian Nuhn (EX2083, ¶61) as support for this claim. Paper 23 at 70. However, deposition

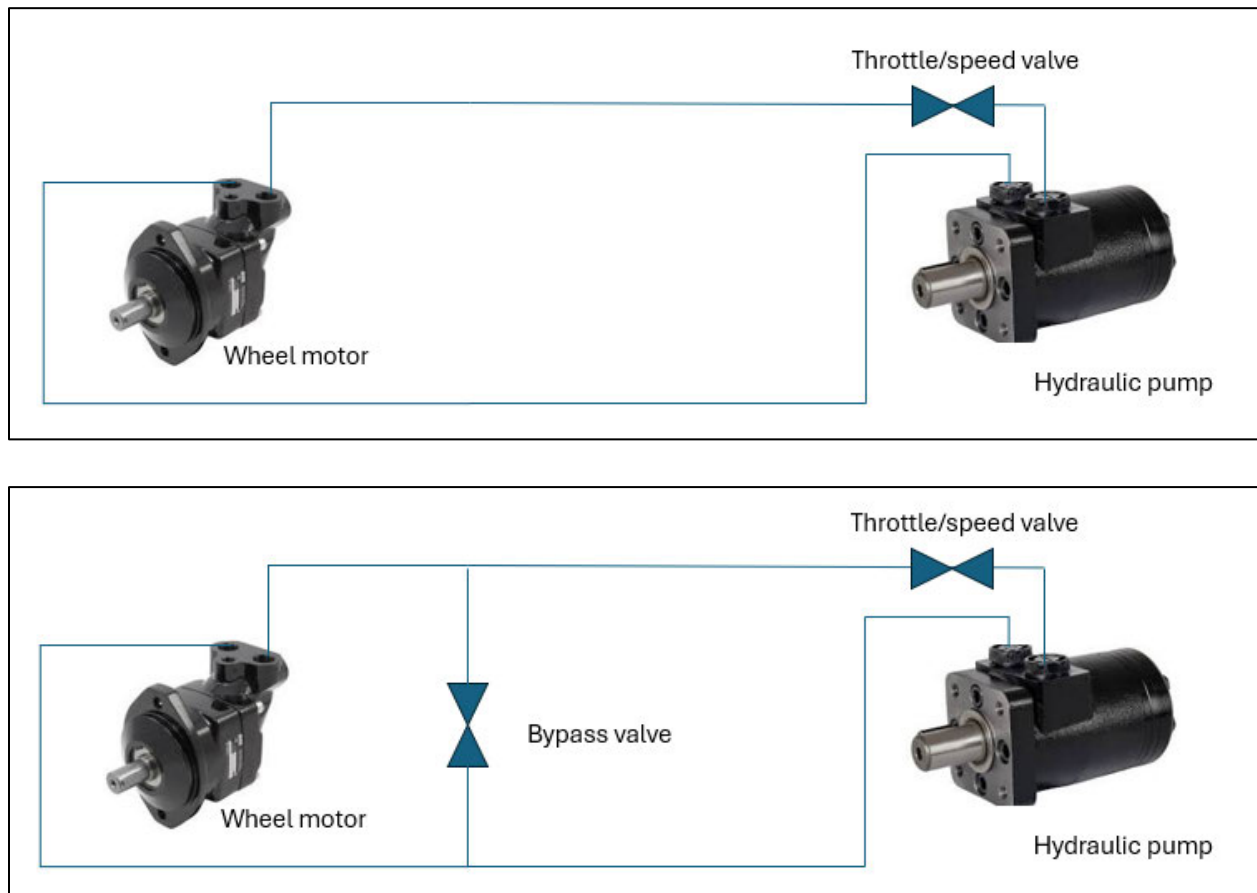
testimony from Ian Nuhn illustrates that this “problem” is the result of the specific brake design used on Nuhn’s Lagoon Crawler—*not* Puck or Bryham. There is no indication at all that Ian Nuhn has ever seen or inspected the commercial embodiment of Bryham. [REDACTED]

[REDACTED] However, as shown herein, this phenomenon and “problem” was neither necessary nor an inherent characteristic of hydraulically power wheel motors designs, as illustrated herein. [REDACTED]

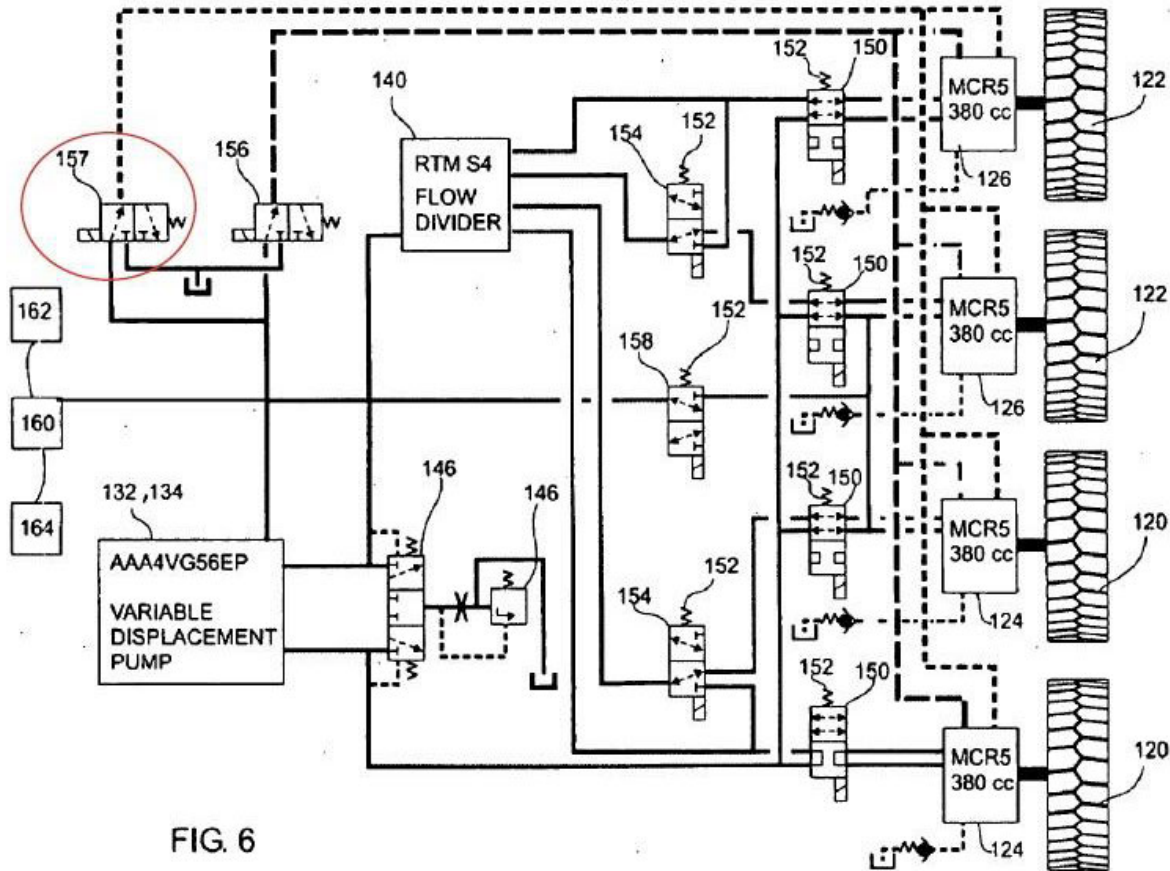
[REDACTED]

219. A simple schematic of a single wheel motor and a hydraulic pump system are illustrated below. A POSA would have understood that this system could be set up to operate in both directions using a system of conduits and valves and that the speed of the wheel motor could be regulated with a throttling valve or by varying the speed of the hydraulic pump. A POSA would have understood that a simple bypass valve could be integrated into the hydraulic circuit that would allow fluid to readily pass through the hydraulic wheel motor and in a loop. In the second schematic below, a by-pass valve is added. Opening the bypass valve would allow the wheel motors to spin freely and closing it would return control to the hydraulic pump system. This simple concept would have been understood by a POSA. Nuhn’s

basis for its arguments is rooted in a “problem” that is its own creation, and wholly absent from the prior art in question.



220. Carrier teaches a similar concept of using a valve to lock or unlock the wheel motors, to work as brake system, similar to the phenomenon Mr. Nuhn described in his declaration. Carrier teaches that a “second speed valve 156 and *brake valve 157* can be operably interposed between pump 130 and one of each of the wheel motors 124 and 126.” EX1005, ¶[0042] (emphasis added). A schematic of Carrier’s hydraulic wheel system is reproduced below indicating the brake valve 157.



EX1005, FIG. 6 (annotated).

221. A POSA would have understood that hydraulic valve systems can be opened or closed to lock or unlock hydraulic wheel motors, just like Carrier teaches with its “brake valve” above. Again, Nuhn’s “problem” and perceived deficiency is unique to its own product and the characteristics of specific brake system it selected. It is wholly absent from the cited prior art. Just because Nuhn has not managed to resolve what it paints as a design defect in its own product, does not mean POSAs were unaware of these simple solutions. Nuhn’s assertions that the same problem

with its design would necessarily plague all other vehicles in the same manner are wrong.

222. For the reasons described herein, a POSA would have understood that adding the hydraulically powered amphibious wheels of Bryham to the Puck vehicle would make launching and retrieving the Puck vehicle both easier and safe.

C. A POSA Would Have Had a Reasonable Expectation of Success in Combining Bryham with Puck

223. Nuhn and Mr. Prairie ignore the common understanding of a POSA, providing a scattershot of excessive, unsubstantiated, and meritless arguments regarding the reasonable expectation of success in combining Puck and Bryham. Below, I address each of these points and explain why all of them are wrong.

224. Nuhn argues that a POSA would not have had a reasonable expectation of success in combining Puck and Bryham. Paper 23 at 67. Nuhn argues about the stability of Bryham's wheels, the number of wheels powered, and the ability of the wheels to steer the vehicle. Paper 23 at 71-72. In addition, Mr. Prairie argues about whether the Bryham's wheels would interfere with Puck's dock sections and the ability of the Puck vehicle to be carried by Bryham's wheels. EX2094, ¶¶287-289. They are wrong on all points.

225. First, regarding the assertions that the combination would be inherently unstable and prone to tipping on steep lagoon embankments, Nuhn's and Mr.

Prairie's arguments are based on specific 3-wheeled exemplary embodiments and images provided in Bryham rather than what a POSA would have understood from the complete teachings of Bryham. While Bryham does disclose an embodiment that incorporates a "vee-hull," Bryham also discloses a number of different watercraft styles that could be utilized with its amphibious undercarriage systems. A POSA would have understood that Bryham is not limited to just "vee-hull" boats.

226. A POSA would have understood that Bryham could be utilized with a variety of different watercraft, including those that are more barge-like in shape, for example, an airboat. Bryham teaches that "[p]referably the amphibious vehicle is primarily a water-borne vehicle, for example but not limited to a boat, jet-boat, an inflatable boat, jet-ski, hydrofoil or air boat." EX1015, 2:43-45. Bryham also teaches that "preferably the ground engaging means consist of *at least* three wheels." *Id.*, 2:46-47 (emphasis added). A POSA would have understood that Bryham contemplates boxier "barge-like" air boat style configurations, which would lend themselves to a four-wheel configuration, rather than three. A POSA would have understood that airboats are not typically "vee-hulled" and are much flatter and boxier in shape and that they often have a broad up-turned bow.

227. Three-wheel and four-wheel amphibious configurations were known in the art, and a POSA would have been capable of deciding between these design choices and adapting either to the vehicle of Puck. Bryham contemplates

configurations with more than three wheels and the processes of applying a four-wheeled version of Bryham would be straightforward and would yield predictable results. A POSA would have understood that the logical location for Bryham's wheels would be at each corner of the steel frame 16 of Puck, which is typical for wheels on four-sided vehicles and more stable than a three wheeled configuration on the same vehicle.

228. Further, EX1122, an article published in 2011, shows an all-wheel drive Sealegs vehicle and discloses that AWD provides “additional traction to significantly increase Sealegs’ capabilities on steep slippery inclines.” EX1134, 1. As shown below, the Sealegs vehicle was readily capable of climbing inclines, and a POSA would not view it as inherently unstable and prone to tipping.



EX1134, 1.

229. Mr. Prairie's criticisms and perceived shortcomings of the amphibious vehicle of Bryham and its limited capabilities are wrong. As explained below, a POSA would have understood the capabilities of the Bryham vehicle and the combination of Puck and Bryham to be quite different than Mr. Prairie suggests.

230. Contrary to Mr. Prairie's assertion, a POSA would have understood that Bryham would be capable of climbing steep banks. Furthermore, a POSA would have understood that the ability to climb a steep embankment depends primarily on the vehicle having sufficient power/torque and the friction generated between the tires and the ground. Regarding the tires, given that Bryham teaches an amphibious

vehicle designed to operate in wet environments, Mr. Prairie's assertion that it would not work well on a "slippery embankment" is misplaced. Bryham teaches the use of all-terrain tires that would be well-suited for this purpose. Bryham teaches "[a]ll terrain balloon type tires are used to enable the boat to travel over a variety [of] shoreline terrain." EX1015, Abstract. A POSA would have understood all-terrain tires to generally have an aggressive and often knobby tread layout for traction on a variety of surfaces. A POSA would have understood that the all-terrain tires of Bryham would be well-suited for traversing the embankments of a manure lagoon, contrary to Mr. Prairie's opinions. The '835 Patent does not teach any structure or feature that a POSA would have been understood to give it greater capabilities than Bryham for traversing "steep and slippery embankments," as Mr. Prairie contends. EX2094, ¶289. An archived webpage of Bryham's commercial embodiment confirms the all-terrain nature of the vehicle and its ability to navigate steep embankments. EX1134, 1.

231. Bryham also teaches that the "undercarriage assemblies can be extended in such a way as to give the amphibious vehicle stability when supported and/or traveling on the ground engaging means on a relatively wide range of shoreline terrain." EX1015, 3:7-11. A POSA would have understood that Bryham's operating environment, a wide range of shoreline terrain, would include wet, muddy, rocky, steep, and uneven terrains. *See* EX1134.

232. Second, regarding the allegations that the combination would have poor traction with only two-powered wheels and would get stuck, as explained above, Bryham teaches that all of the wheels can be powered (*supra* Section X.A.iv), Bryham teaches configurations with more than four-wheels (*supra* Section X.A.iv), and Bryham teaches all-terrain type tires (*supra* Section X.A.iv). And as illustrated in an image from an archival 2011 article, a POSA would not have understood the vehicle to have poor traction. EX1134, 1.

233. Third, regarding the assertions that the “one small front wheel” would be prone to sliding and would be ineffective in turning the vehicle, Nuhn provides no basis for its conclusory assumptions that the front tire of Bryham is undersized. Bryham does not disclose that any of its drawings are to scale. I understand that unless otherwise noted, patent drawings are not to scale. From the images of Bryham, a POSA would have understood that the front tire of Bryham is approximately the same size as the rear; a POSA would not have concluded that the front tire is too small and would be ineffective in turning the vehicle in a wet environment. EX1015, FIG. 1. Mr. Prairie, without basis, concludes that the Bryham vehicle would generally be incapable of performing its disclosed function of traversing a variety of shorelines and surrounding terrains. EX2094, ¶¶290-291; EX1015, Abstract, 18:47-48. In contrast, a POSA would have understood from the explicit teachings of Bryham that the vehicle is steerable, and that the vehicle is

capable of traversing a variety of shoreline terrains. Bryham teaches all-terrain tires (EX1015, Abstract.). Nuhn's assertions that the Puck and Bryham combination would have an undersized front tire with poor traction capability are baseless.

234. Fourth, Mr. Prairie contends that the combination may not be successful because Bryham's wheels would interfere with the modular dock sections of Puck. EX2094, ¶286. Mr. Prairie is wrong. He does not provide any drawings or analysis to support his position that the wheels of Bryham would necessarily interfere with the dock sections of Puck, or why they would need to occupy the same space. Alternately, even if the addition of Bryham's wheels would somehow interfere with the dock sections, Mr. Prairie has not offered any explanation why a POSA would not have a reasonable expectation of success in moving or adjusting the wheel attachment points or dock section geometry using their ordinary problem-solving skills to provide a functional combination.

235. Mr. Prairie is also wrong because he has not demonstrated that there is any need for the wheels to occupy the same space as the dock sections. Furthermore, a POSA would have known how to select a reasonable attachment point for the amphibious wheels of Bryham to the vehicle of Puck. Puck offers a natural choice for attaching Bryham's wheels, which is to the frame of the vehicle identified as reference numbers 14, 16, 18, and 20 in the images below. A POSA would have understood that a natural choice for attaching the wheels of Bryham to the vehicle

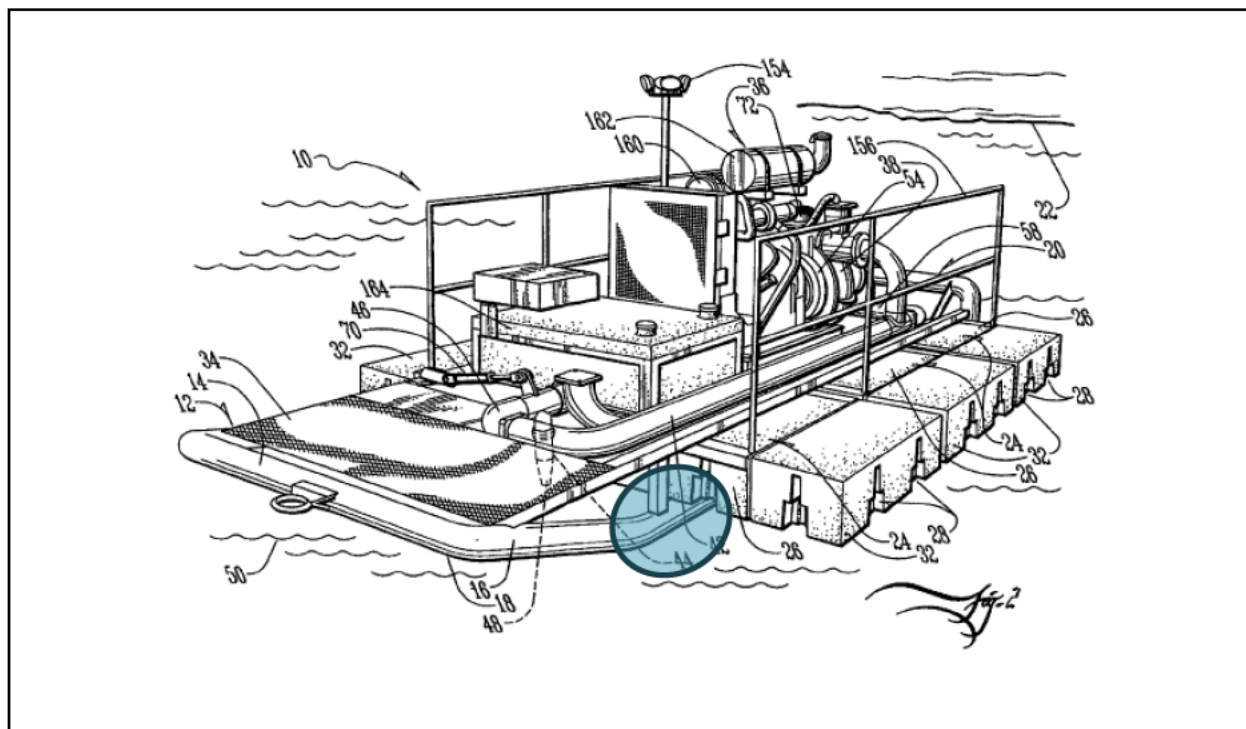
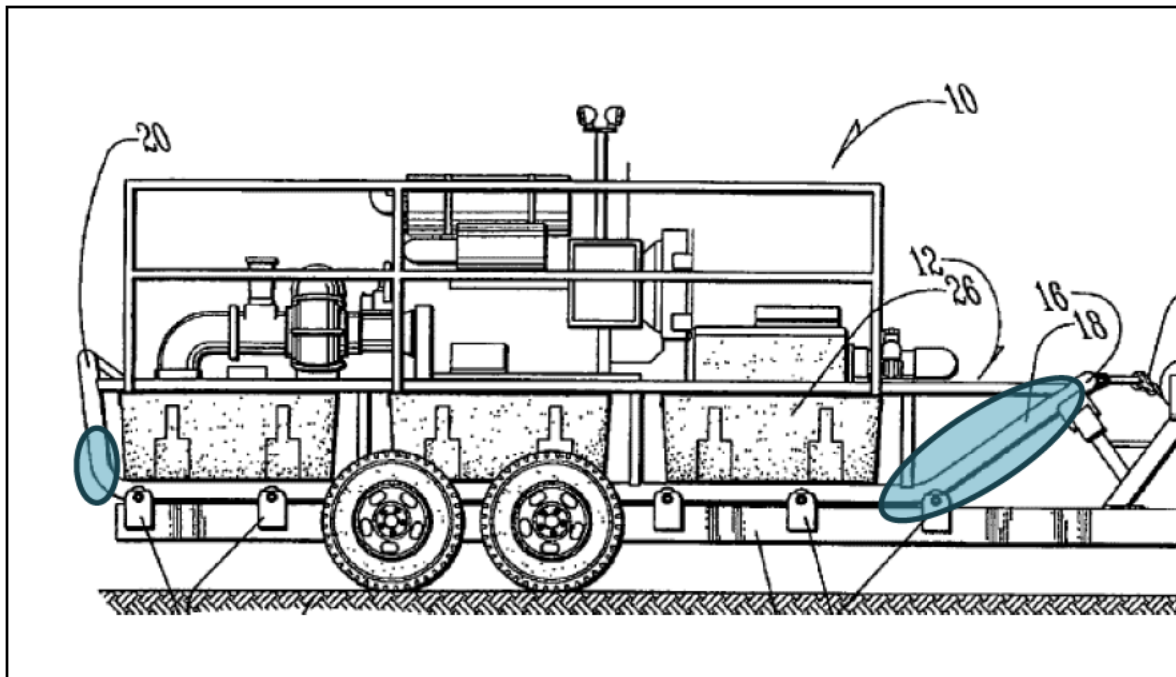


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EX1014, FIG. 8 (annotated).

236. Fifth, Mr. Prairie asserts that Puck's vessel is not designed so that its weight can be carried at 3-discreet points. EX2094, ¶287. This argument is without basis and starts with the false premise that Bryham and the combination of Puck and Bryham would be limited to only three wheels. It is not. Regardless, Puck teaches that it includes a "frame (14) preferably constructed of welded tubular steel pipes (16)." EX1014, ¶[0022]. Whether constructed with three or four wheels, Mr. Prairie has provided no basis why the Puck vehicle could not be carried at three discreet points. In fact, the Puck vehicle is designed to be pulled out of a lagoon, lifted onto a trailer by a winch attached to a single point on the front of the vehicle. *Id.*, ¶[0038]; FIG. 9. Mr. Prairie's assertion that the vehicle, which is welded out of steel pipes

and is designed to be pulled out of a lagoon from one discreet point, could not be carried at three discreet points is unsupported and illogical.

237. Sixth, Mr. Prairie contends that the dock sections of Puck are not designed to be held together when raised off of the surface of the lagoon. EX2094, ¶288. Mr. Prairie's argument is without merit. Initially, a POSA would have understood that Puck contemplates configurations other than floating dock sections for buoyancy. For example, Puck teaches that "[t]he vessel (12) may alternatively be constructed of any suitable material or may be constructed with a more standard hull." EX1014, ¶[0022]. Regardless, a POSA would have understood that the modular dock sections of Puck, and their connections to the vehicle and frame, would be sufficiently strong that they would not fall apart under their own weight when lifted out of the water. Mr. Prairie has done nothing to show that the dock sections of the Puck vehicle would fall apart if they were "suspended above the ground." EX2094, ¶288. This is speculative and inconsistent with the teachings of Puck, which provides that "[t]he frame (14) defines a plurality of receiver slots (24) into which are provided modular dock sections (26), such as those known in the art." EX1014, ¶[0022]. A POSA would have understood from the teachings of Puck that the dock sections of Puck are fitted within receiver slots which would hold the floating dock sections and transmit the buoyant forces to the frame of the vehicle.

238. Similarly, a POSA would have understood that the vehicle of Puck could be constructed of a different material and/or using “more standard hull” design. *Id.* A POSA would have understood that more standard watercraft hull designs would include fiberglass and metal constructions and a variety of shapes, including “vee-shaped” hulls. Mr. Prairie has not demonstrated that the more standard hull designs contemplated by Puck would fall apart under their own weight when lifted out of the water. Moreover, a POSA would have understood that the dock sections would not be the natural choice as an attachment point for the wheels of Bryham to the Puck vehicle and would not be required to support the weight of the vehicle. A natural choice for attaching the wheels, which would support the vehicle out of the water and while transitioning between modes, would be Puck’s frame made of “welded tubular steel pipes,” (*id.*) rather than to the floating dock sections themselves.

239. In sum, the numerous arguments put forth by Nuhn and by Mr. Prairie for concluding that the combination of Puck and Bryham would not have a reasonable expectation of success have been demonstrated to be counterfactual, misleading, and in some instances, completely imagined. These arguments are contrary to the explicit teachings in the art and contrary to what a POSA would have understood.

D. Dependent Claims 2-16 and 18-38

240. Claims 2-16 and 18-38 each depend from one of claims 1, 17, 39, or 40. Neither Nuhn nor Mr. Prairie provide any analysis or opinion regarding these claims and obviousness over Puck in view of Bryham, aside from referring back to previous claims from which they depend.

241. As discussed in my prior declaration, it is my opinion that these claims are obvious over Puck in view of Bryham. EX1004, Section X.

XI. GROUND 5: CLAIMS 1-40 ARE RENDERED OBVIOUS BY THE COMBINATION OF PUCK AND BRYHAM AND BENNETT-II

242. Nuhn asserts that the combination does not render claims 1-40 obvious based on two assertions: 1) the power source is not configured to provide power to both the ground engaging propulsion structure and the liquid manure mover, and 2) Bennett-II tells a POSA nothing about how to modify Puck's remote-control system to control Byham's 3-wheeled ground engagement system. Paper 23 at 73-74. Nuhn is wrong on both points.

243. In addition, Mr. Prairie discusses the motivation to combine and expectation of success regarding the Puck, Bryham, and Bennett-II combination. EX2094, ¶¶274-293. However, this discussion is generally a regurgitation of the same arguments made with respect to Claim 4. As explained previously, Mr. Prairie and Nuhn are incorrect in their assertions regarding the motivation to combine and

expectation of success in combining Puck and Bryham. *Supra* Sections X.A and X.B.iii.

244. While Mr. Prairie makes arguments about the relative traction and steering capabilities of Bennett-II and Bryham (EX2094, ¶292), this is completely irrelevant. A POSA would have had a reasonable expectation of success in implementing remote control, as taught by Bennett-II, to provide remote control of Bryham's wheels. Mr. Prairie's assertions otherwise are based on flawed assumptions and do not demonstrate that a POSA would not have had a reasonable expectation of success in combining the Bryham wheels and the remote-control system of Bennett-II with the Puck vehicle.

A. Independent Claims 1, 17, 39, and 40

i. The Combination of Puck, Bryham, and Bennett-II Disclose a Power Source Configured to Provide Power to Both the Ground Engaging Propulsion Structure and the Fluid Pump.

245. Nuhn and Mr. Prairie dispute whether powering separate components with a single engine would be cheaper, more efficient, take up less space, and weigh less. As demonstrated above, POSAs understood these advantages with using a single engine to power multiple components and would have been motivated to do so. *Supra* Section X.A.ii.

246. Furthermore, Bennett-II teaches an amphibious vehicle with a single power source, which is configured to power the ground engaging propulsion

structure, hydraulic pump, and auxiliary propulsion pumps. EX1017, ¶¶[0079], [0082]-[0083]. Bennett-II provides that “gearbox 510 drives an attachment shaft 511 for transferring engine torque to an attachment or implement (e.g., a work tool) attached to vehicle 10.” *Id.*, ¶[0079]. Bennett-II provides an embodiment where “attachment shaft 511 is used to drive a jet pump and/or propeller member to assist in propelling vehicle in water during amphibious operation.” *Id.* A POSA would have understood that there are benefits to powering multiple systems with a single power source, including auxiliary fluid pumps and the ground engaging propulsion structure. *Supra* Section X.A.ii.

247. A POSA would have been motivated to power the ground engaging propulsion structure of Bryham using the engine of Puck’s vehicle, as taught by Bennett-II, because of these same benefits. A POSA would have been motivated to power a hydraulic pump using Puck’s engine to provide power to the ground engaging wheels of Bryham and the slurry pump of Puck. *Supra* Section X.A.ii. The addition of Bennett-II’s remote control system would provide control of hydraulic fluid to the hydraulic motors of Bryham in the same manner that Bennett-II employs a series of valves for regulating the flow of hydraulic fluid to control its ground engaging propulsion.

ii. The Combination of Puck, Bryham, and Bennett-II Disclose all the Remote Control Limitations.

248. Regarding Bennett-II, Nuhn alleges that the teachings of Bennett-II would not inform a POSA that Puck's remote-control system could be modified to control Bryham's ground engagement system. Paper 23 at 74. Mr. Prairie bases his arguments on his perceived differences between Bryham's and Bennett-II's ground engaging propulsion structure. EX2094, ¶292. However, as explained above, these propulsion structures include many of the same common features that would be similarly controlled using the remote control of Bennett-II. *Supra* Section X.A.iii.

249. Nuhn argues that, while Bennett-II discloses remote control of an amphibious vehicle's ground engaging propulsion structure, a POSA would not have understood how to implement such a remote control on the wheels of Bryham. These allegations are once again belied by the bare description of the remote control in the '835 Patent itself, which further shows the ubiquitous and generally known nature of remote-control systems when Nuhn filed its provisional patent application.

250. Bennett-II teaches an amphibious vehicle with a hydraulic drive system for controlling differential speeds and steering of the vehicle tracks. EX1017, ¶¶[0083], [0092], [0099]. The Bennett-II drive system is highly analogous to the Bryham drive system in that it includes a plurality of powered wheels (EX1017, ¶[0048]), a hydraulic drivetrain (*id.*, ¶[0083]), and hydraulic drive motors powering

the wheels (*id.*), and valves controlling the flow of hydraulic fluid to the hydraulic drive motors (*id.*, ¶¶[0093]-[0094]).

251. Bennett-II describes how the vehicle can be controlled on land with a remote control. EX1017, ¶¶[0043], [0121]. Bryham teaches wheels that are powered with hydraulic energy and that the hydraulic wheel motors are driven “via valves.” EX1015, 16:1-6. Like Bryham, the hydraulic motors powering the Bennett-II tracks are controlled by valves which vary the flow of hydraulic fluid to the hydraulic motors. EX1017, ¶¶[0093]-[0094]. A POSA would have understood that to remotely control the vehicle on land, as taught by Bennett-II, the remote control of Bennett-II would adjust the position of the valves 612, 614, 616, 618 to regulate the flow of hydraulic fluid and selectively power the Bennett-II tracks. *Id.* A POSA would have understood that the remote control of Bennett-II, which controls valves to selectively provide hydraulic flow to wheel motors, could equally be used to control the hydraulic flow to the hydraulic wheel motors of Bryham. A POSA would have understood that, as disclosed by Puck, the remote control could be controlled to vary the position of such valves to operate the ground engaging propulsion structure at variable speed and direction. EX1014, ¶¶[0033]-[0034]; *supra* Sections X.A.iii and X.B.

252. Nuhn argues that remote control of the Bryham ground engaging propulsion structure would require substantial modification. However, Bennett-II’s

remote control system is already configured to regulate the flow of hydraulic fluid to control the ground engaging propulsion structure. EX1017, ¶¶[0043], [0093]-[0096], [0121]. This is the same mechanism for controlling the wheels of Bryham. EX1015, 16:5-12. Thus, a POSA would therefore have understood that the remote-control system of Bennett-II would control the ground engaging propulsion system of Bryham with little or no modifications required and a POSA would have reasonable expectation of success.

B. POSA Would Have Had a Reasonable Expectation of Success in Combining Puck, Bryham, and Bennett-II

253. The arguments presented by Nuhn and Mr. Prairie regarding the Puck, Bryham, and Bennett-II combination are generally the same as they provide for the Puck and Bryham combination. Nuhn and Mr. Prairie are incorrect in their assertions for the same reasons as I have described above. *Supra* Section X.C.

254. Mr. Prairie asserts that the teachings of Bennett-II would not inform a POSA that Puck's remote-control system could be modified to control Bryham's ground engagement system. EX2094, ¶292. Mr. Prairie bases his arguments on his perceived differences between Bryham's and Bennett-II's ground engaging propulsion structure. *Id.* However, as explained above, these propulsion structures include many of the same common features that would be similarly controlled using the remote control of Bennett-II. *Supra* Section X.B.iii. Mr. Prairie's arguments

about the relative traction and steering capabilities of Bennett-II and Bryham are irrelevant as to the motivation of a POSA to combine the Bennett-II remote control with the Bryham wheels and with the Puck vehicle and remote-control system.

C. Dependent Claims 2-16 and 18-38

255. Claims 2-16 and 18-38 each depend from one of claims 1, 17, 39, or 40. Neither Nuhn nor Mr. Prairie provide any analysis or opinion regarding these claims and obviousness over Puck in view of Bryham and Bennett-II, aside from referring back to previous claims from which they depend.

256. As discussed in my prior declaration, it is my opinion that these claims are obvious over Puck in view of Bryham and Bennett-II. EX1004, Section XI.

XII. SECONDARY CONSIDERATIONS OF NON-OBVIOUSNESS

A. The Challenged Claims Lack Nexus to Nuhn's Secondary Considerations

257. In the '425 Patent IPR, Nuhn identified four different versions of its products, Gen 1-3 and the Crawler X as practicing the claims of the '425 Patent. IPR2023-01161, Paper 27 at 44-45; IPR2023-01161 EX2029, ¶¶404-506. Now, Nuhn only identifies the Crawler X, model years 2022 to present, as practicing the claims of the '835 Patent. Paper 22 at 40. Nuhn provides no evidence showing that any of its Gen 1-3 products practice the claims of the '835 Patent—let alone that they are coextensive. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED] Nuhn's production model Gen 1-3 products are therefore not covered by the claims of the '835 Patent.

258. Despite arguing that Nuhn's Lagoon Crawler commercial embodiments are commensurate in scope with the claims of the '835 Patent, neither Nuhn nor Mr. Prairie provide any analysis or evidence that the Lagoon Crawler X is coextensive in scope with all claims of the '835 Patent. Rather, his analysis is limited to claim 1.

259. It is my opinion that the claims of the '835 Patent are not coextensive in scope with Nuhn's Lagoon Crawler X. I understand that a patentee is entitled to a rebuttable presumption of nexus between the asserted evidence of secondary considerations and a patent claim if the patentee shows that the asserted evidence is tied to a specific product and that the product is the invention disclosed and claimed. Thus, I understand that presuming nexus is appropriate when the patentee shows that the asserted objective evidence is tied to a specific product and that product embodies the claimed features, and is coextensive with them. On the other hand, I understand that when the specific product is not coextensive with the patented invention the patentee is not entitled to a presumption of nexus.

260. I understand that a patent claim is not coextensive with a product that includes a critical unclaimed feature that is claimed by a different patent and that materially impacts the product's functionality.

261. I understand that Nuhn has filed for a motion to amend its patent claims in the present IPR, as well as in the IPR related to the '835 Patent. I understand that in connection with its motion to amend in the '835 Patent, Nuhn argued that:

The prior art does not teach or suggest the claimed arrangements where *[1]* the liquid manure pump is positioned along the underside of the floatable vehicle body, *[2]* is immersed in the liquid manure when the vehicle is floating, *[3]* has a substantially vertically oriented drive shaft, and/or *[4]* is located in the space between the four ground engaging wheels, or *[5]* where the nozzle is located above the floatable vehicle body to spray manure back into a manure lagoon and/or *[6]* is forward of the power source while the liquid manure pump is rearward of the power source, as required by the Substitute Claims. [EX2094, ¶368].

These differences between the prior art and the claimed arrangements of components are material. The particular claimed arrangements of components directly contribute to the new and unexpected results and commercial success experienced by Nuhn's invention. EX2094, ¶369. These particular claimed arrangements, which discussion [sic] the position of the liquid manure pump along the underside of the floatable vehicle body and rearward of the power source and the position of the nozzle above the floatable vehicle body and forward of the power source provide a vehicle where the displacement of the vehicle body, the churning action of the ground engaging elements work, and the arial spray of manure from the nozzle work together in synergy to break up thick crust around the vehicle, generating a working pocket or opening within which the liquid manure pump can operate without clogging. *Id. Placing these elements elsewhere would destroy this synergy*, which depends on the specific location of the liquid manure pump and/or nozzle as claimed.

Paper 21 at 19-20 (emphasis added).

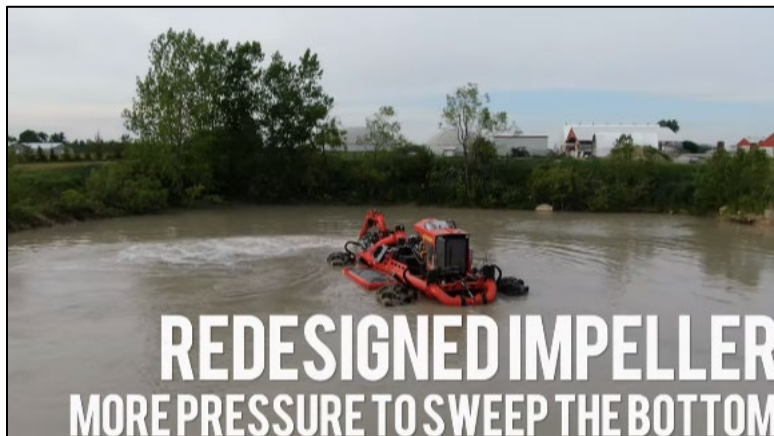
262. It is my opinion that, in light of Nuhn's statements, A POSA would understand these features recited in Nuhn's amended claims to be significant.

Therefore, because the '835 Patent does not claim features that Nuhn describes as “material” or essential to the synergy of the alleged invention, the '835 Patent claims are not coextensive with the Lagoon Crawler X.

263. As explained below, each of these additional features are embodied in Nuhn’s Lagoon Crawler X. Based on Nuhn’s statements to the Patent Office, it is reasonably likely that Nuhn’s secondary considerations evidence is attributable to these additional features, as opposed to the features described in the '835 Patent claims.

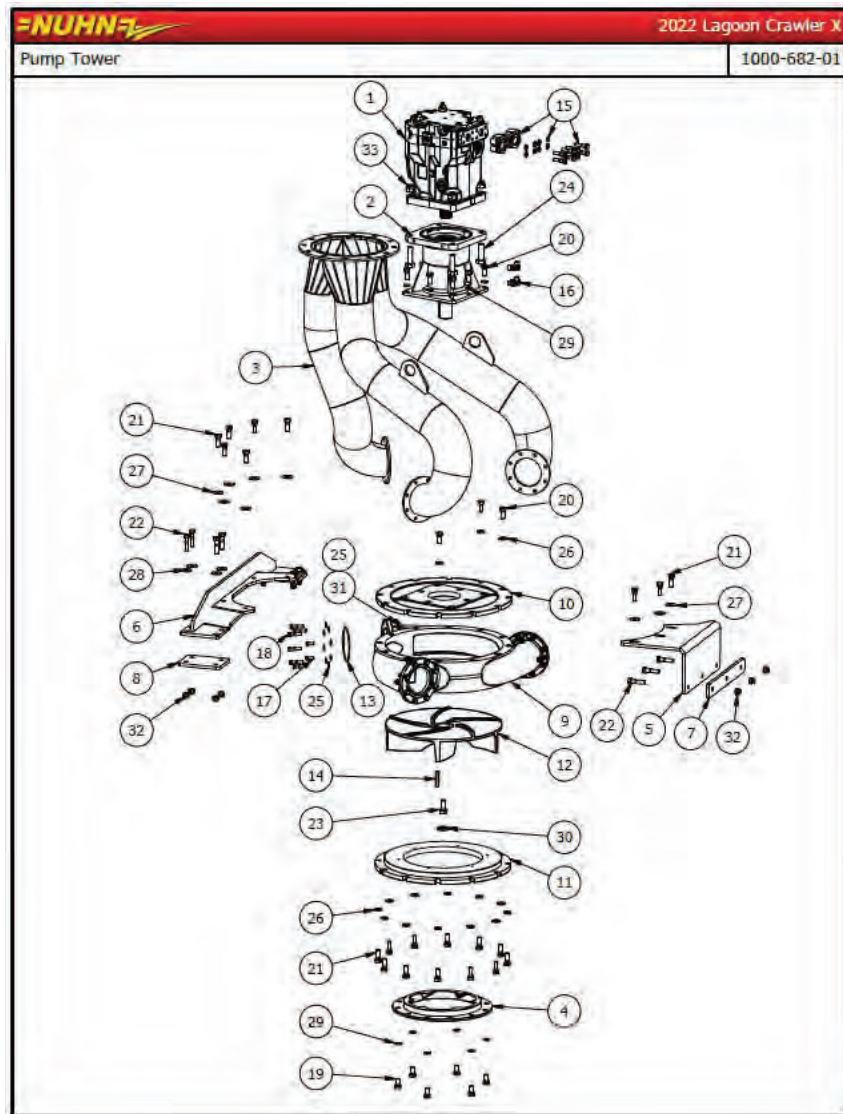
The immersible liquid manure pump of the liquid manure mover including a housing and an impeller that are positioned along the underside of the floatable vehicle body ('835 Patent, substitute claim 57 and 79)

264. A video of the Lagoon Crawler X shows an impeller positioned on the bottom of the vehicle so it can “sweep the bottom” of the lagoon.



EX1155 3.

265. The parts catalog for the 2022 Lagoon Crawler X illustrates a pump tower having both a housing and impeller that is positioned alongside the underside of the vehicle.



EX2047, 36.

=NUHN=			2022 Lagoon Crawler X
Pump Tower			1000-682-01
PARTS LIST			
ITEM	QTY	PART NUMBER	TITLE
1	1	106-438	Hyd. Motor - HMV280 w/drive coupling, Mount SAE E, Shaft ANSI 33T 16/32dP
2	1	106-191	2.25" Mech. Seal Assembly - SAE E Mount - SAE F Spline 15T
3	1	111-880	Crawler X - Triple Port Header - 12" for 20.5" housing
4	1	107-550-1	20.5" Header Pump - Inlet Chopper - 12" ID - Flush Teeth
5	1	111-881-1	Crawler X - Front Pump Tower Housing Brace
6	1	111-882-1	Crawler X - Pump Tower - Top Housing Brace
7	1	110-656-1	Crawler - Pump Tower Belt - 3 Bolt - 2.5" x 18.75" x 0.5"
8	2	110-657-1	Crawler - Pump Tower Belt - 4 Bolt - 5.75" x 7.75" x 0.5"
9	1	105-228-1	20.5" Triple Port - Housing - 1A - Machined, 0.625" Bolts
10	1	105-229-1	20.5" Triple Port - Cast Top Cover - 1A - 0.625" bolts
11	1	106-792-1	20.5" Triple Port - Cast Inlet Cover - 14" ID with BC - 2A - 0.625" Bolts
12	1	111-415-1	20.5" Triple Port Pump - Cast Impeller with 2.25" Bushing - 5 Blade Flat Top
13	3	103-968	O-Ring - #359 DAE Buna - 6.125"OD x 5.75"ID
14	1	102-399 x 2.75"	Keystock - 0.5" x 0.5" x 2.75"
15	1	105-922	Hyd. Adaptor - #20 Split Flange Kit (Code 62) 1902-20
16	2	104-806	Hyd. Adaptor - 90° Elbow - #8 MORS x #8 MOR (FS6801-08-08)
17	6	109-940	Bolt - Hex Head - 0.4375" x 1" - GR8
18	18	109-921	Bolt - Hex Head - 0.4375" x 2" - GR8
19	6	104-427	Bolt - Hex Head - 0.625" x 1.25" - GR5
20	11	111-222	Bolt - Hex Head - 0.625" x 1.5" - GR8
21	21	105-487	Bolt - Hex Head - 0.625" x 1.75" - GR8
22	11	101-060	Bolt - Hex Head - 0.625" x 2.5" - GR5
23	1	109-229	Bolt - Hex Head - 0.75" x 1.75" - GR8
24	4	103-191	Bolt - Hex Head - 0.875" x 3" GR8
25	24	107-282	Washer - Flat - 0.4375" x 0.922" OD - GR8
26	15	112-996	Washer - 1.25" OD x 0.625" ID x 0.19" thk
27	9	104-863	Washer - Flat - 0.625" x 1.75" Zinc USS Thru-Hardened - Yellow
28	8	100-899	Washer - Flat - 0.625"
29	14	101-187	Washer - Lock - 0.625" - Medium Split
30	1	109-186	Plate - Weld On Hex Washer - 0.75"
31	18	106-117	Nut - Nylock - 0.4375" - GR8
32	11	100-905	Nut - Nylock - 0.625" - GR2
33	4	100-906	Nut - Nylock - 0.875" - GR2

Id., 37.

The immersible liquid manure pump of the liquid manure mover is positioned within liquid manure when the vehicle is floating ('835 Patent, substitute claim 41, 57, 79, 80)

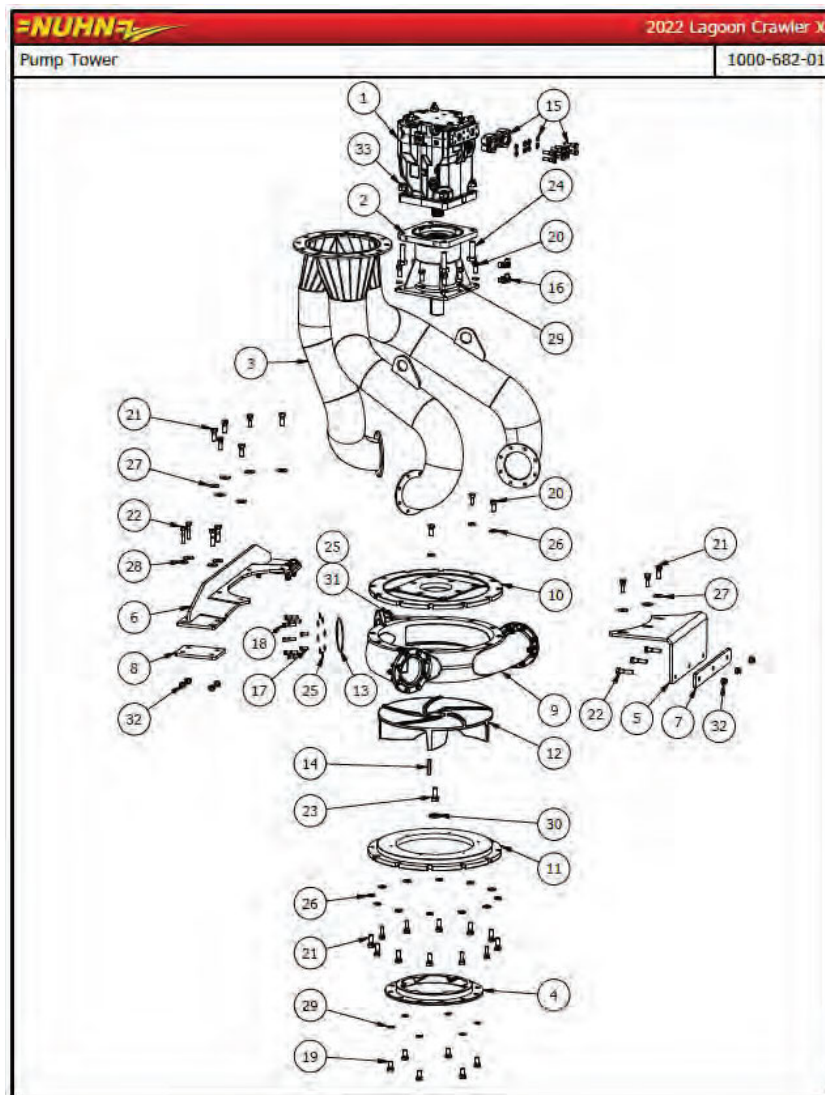
266. A brochure for the Lagoon Crawler X shows the pump submerged within liquid manure when the vehicle is floating in the lagoon.



EX2046, 2.

The immersible liquid manure pump of the liquid manure mover including a substantially vertical drive shaft powering an impeller ('835 Patent, substitute claim 41, 79, 80)

267. The parts catalog for the 2022 Lagoon Crawler X illustrates a pump tower with a vertically oriented shaft and a semi-open impeller.



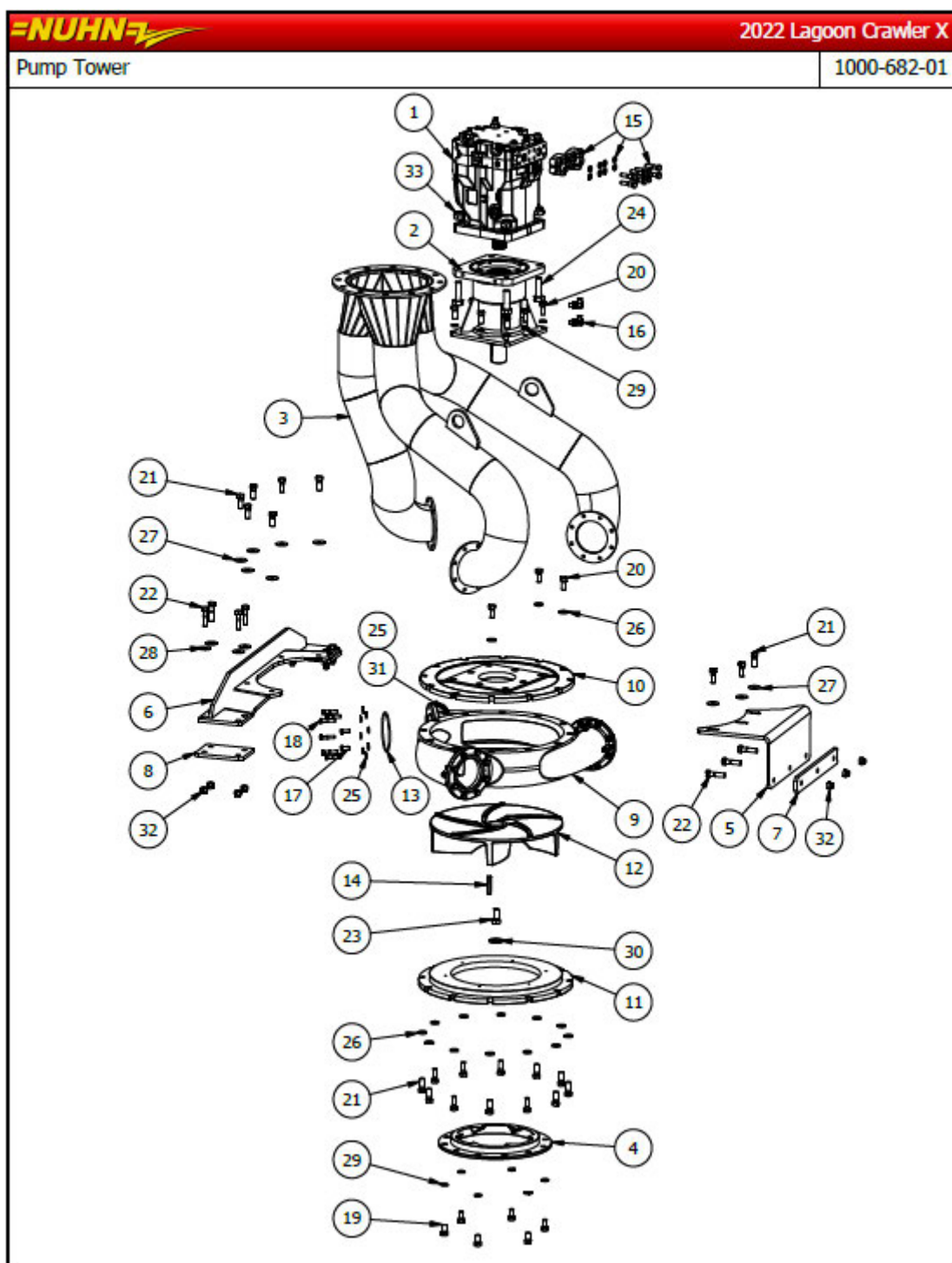
EX2047, 36.

=NUHN=			2022 Lagoon Crawler X
Pump Tower			1000-682-01
PARTS LIST			
ITEM	QTY	PART NUMBER	TITLE
1	1	106-438	Hyd. Motor - HMV280 w/drive coupling, Mount SAE E, Shaft ANSI 33T 16/32dP
2	1	106-191	2.25" Mech. Seal Assembly - SAE E Mount - SAE F Spline 15T
3	1	111-880	Crawler X - Triple Port Header - 12" for 20.5" housing
4	1	107-550-1	20.5" Header Pump - Inlet Chopper - 12" ID - Flush Teeth
5	1	111-881-1	Crawler X - Front Pump Tower Housing Brace
6	1	111-882-1	Crawler X - Pump Tower - Top Housing Brace
7	1	110-656-1	Crawler - Pump Tower Belt - 3 Bolt - 2.5" x 18.75" x 0.5"
8	2	110-657-1	Crawler - Pump Tower Belt - 4 Bolt - 5.75" x 7.75" x 0.5"
9	1	105-228-1	20.5" Triple Port - Housing - 1A - Machined, 0.625" Bolts
10	1	105-229-1	20.5" Triple Port - Cast Top Cover - 1A - 0.625" bolts
11	1	106-792-1	20.5" Triple Port - Cast Inlet Cover - 14" ID with BC - 2A - 0.625" Bolts
12	1	111-415-1	20.5" Triple Port Pump - Cast Impeller with 2.25" Bushing - 5 Blade Flat Top
13	3	103-968	O-Ring - #359 DAE Buna - 6.125"OD x 5.75"ID
14	1	102-399 x 2.75"	Keystock - 0.5" x 0.5" x 2.75"
15	1	105-922	Hyd. Adaptor - #20 Split Flange Kit (Code 62) 1902-20
16	2	104-806	Hyd. Adaptor - 90° Elbow - #8 MORS x #8 MOR (FS6801-08-08)
17	6	109-940	Bolt - Hex Head - 0.4375" x 1" - GR8
18	18	109-921	Bolt - Hex Head - 0.4375" x 2" - GR8
19	6	104-427	Bolt - Hex Head - 0.625" x 1.25" - GR5
20	11	111-222	Bolt - Hex Head - 0.625" x 1.5" - GR8
21	21	105-487	Bolt - Hex Head - 0.625" x 1.75" - GR8
22	11	101-060	Bolt - Hex Head - 0.625" x 2.5" - GR5
23	1	109-229	Bolt - Hex Head - 0.75" x 1.75" - GR8
24	4	103-191	Bolt - Hex Head - 0.875" x 3" GR8
25	24	107-282	Washer - Flat - 0.4375" x 0.922" OD - GR8
26	15	112-996	Washer - 1.25" OD x 0.625" ID x 0.19" thk
27	9	104-863	Washer - Flat - 0.625" x 1.75" Zinc USS Thru-Hardened - Yellow
28	8	100-899	Washer - Flat - 0.625"
29	14	101-187	Washer - Lock - 0.625" - Medium Split
30	1	109-186	Plate - Weld On Hex Washer - 0.75"
31	18	106-117	Nut - Nylock - 0.4375" - GR8
32	11	100-905	Nut - Nylock - 0.625" - GR2
33	4	100-906	Nut - Nylock - 0.875" - GR2

Id., 37.

The immersible liquid manure pump of the liquid manure mover including a housing and the impeller located in a space between the four ground engaging wheels ('835 Patent, substitute claim 79)

268. The parts catalog for the 2022 Lagoon Crawler X illustrates a pump comprising an impeller and housing.

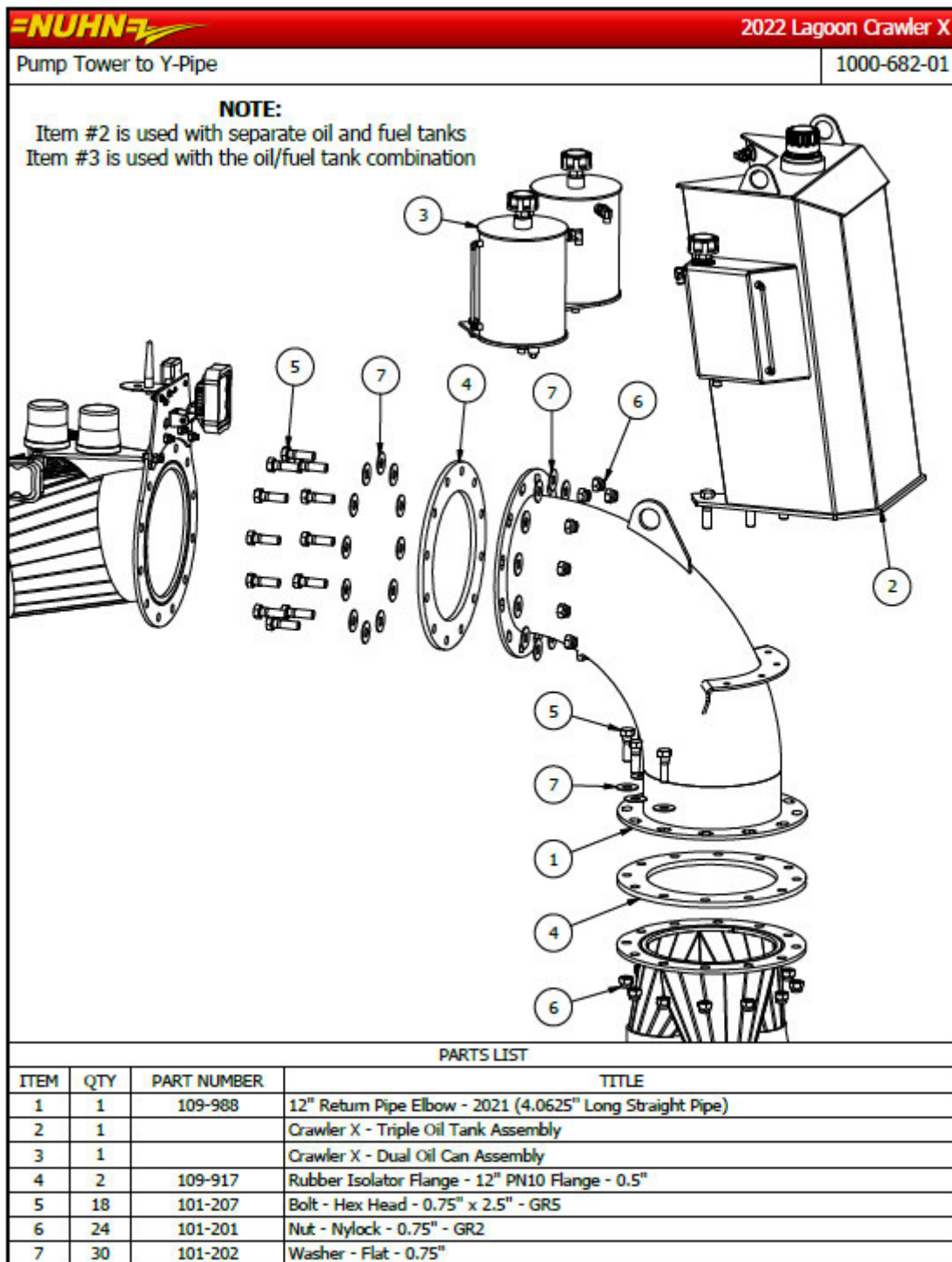


Id., 36.

=NUHN-			2022 Lagoon Crawler X
Pump Tower			1000-682-01
PARTS LIST			
ITEM	QTY	PART NUMBER	TITLE
1	1	106-438	Hyd. Motor - HMV280 w/drive coupling, Mount SAE E, Shaft ANSI 33T 16/32dP
2	1	106-191	2.25" Mech. Seal Assembly - SAE E Mount - SAE F Spline 15T
3	1	111-880	Crawler X - Triple Port Header - 12" for 20.5" housing
4	1	107-550-1	20.5" Header Pump - Inlet Chopper - 12" ID - Flush Teeth
5	1	111-881-1	Crawler X - Front Pump Tower Housing Brace
6	1	111-882-1	Crawler X - Pump Tower - Top Housing Brace
7	1	110-656-1	Crawler - Pump Tower Belt - 3 Bolt - 2.5" x 18.75" x 0.5"
8	2	110-657-1	Crawler - Pump Tower Belt - 4 Bolt - 5.75" x 7.75" x 0.5"
9	1	105-228-1	20.5" Triple Port - Housing - 1A - Machined, 0.625" Bolts
10	1	105-229-1	20.5" Triple Port - Cast Top Cover - 1A - 0.625" bolts
11	1	106-792-1	20.5" Triple Port - Cast Inlet Cover - 14" ID with BC - 2A - 0.625" Bolts
12	1	111-415-1	20.5" Triple Port Pump - Cast Impeller with 2.25" Bushing - 5 Blade Flat Top
13	3	103-968	O-Ring - #359 DAE Buna - 6.125"OD x 5.75"ID
14	1	102-399 x 2.75"	Keystock - 0.5" x 0.5" x 2.75"
15	1	105-922	Hyd. Adaptor - #20 Split Flange Kit (Code 62) 1902-20
16	2	104-806	Hyd. Adaptor - 90° Elbow - #8 MORS x #8 MOR (FS6801-08-08)
17	6	109-940	Bolt - Hex Head - 0.4375" x 1" - GR8
18	18	109-921	Bolt - Hex Head - 0.4375" x 2" - GR8
19	6	104-427	Bolt - Hex Head - 0.625" x 1.25" - GR5
20	11	111-222	Bolt - Hex Head - 0.625" x 1.5" - GR8
21	21	105-487	Bolt - Hex Head - 0.625" x 1.75" - GR8
22	11	101-060	Bolt - Hex Head - 0.625" x 2.5" - GR5
23	1	109-229	Bolt - Hex Head - 0.75" x 1.75" - GR8
24	4	103-191	Bolt - Hex Head - 0.875" x 3" GR8
25	24	107-282	Washer - Flat - 0.4375" x 0.922" OD - GR8
26	15	112-996	Washer - 1.25" OD x 0.625" ID x 0.19" thk
27	9	104-863	Washer - Flat - 0.625" x 1.75" Zinc USS Thru-Hardened - Yellow
28	8	100-899	Washer - Flat - 0.625"
29	14	101-187	Washer - Lock - 0.625" - Medium Split
30	1	109-186	Plate - Weld On Hex Washer - 0.75"
31	18	106-117	Nut - Nylock - 0.4375" - GR8
32	11	100-905	Nut - Nylock - 0.625" - GR2
33	4	100-906	Nut - Nylock - 0.875" - GR2

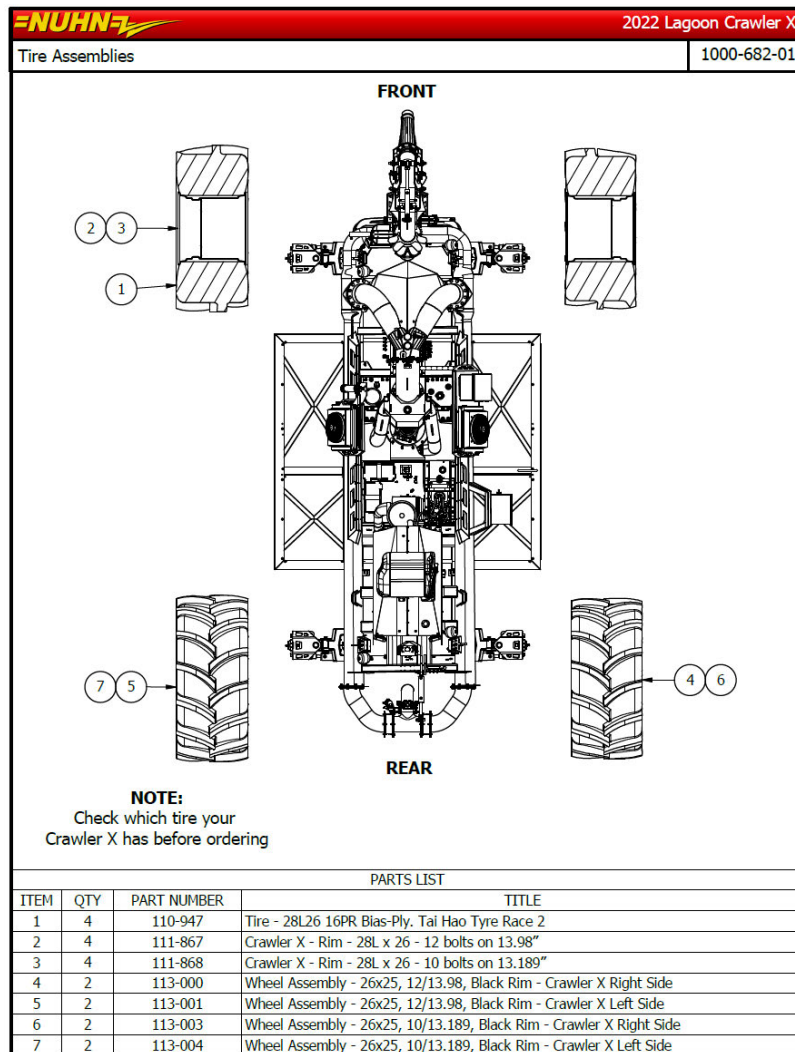
Id., 37.

269. The parts catalog for the 2022 Lagoon Crawler X illustrates the positioning of the pump below a Y-pipe.



Id., 31.

270. The parts catalog for the 2022 Lagoon Crawler X illustrates the positioning of the Y-pipe, which is directly above the fluid pump, in between the four ground engaging wheels.



Id., 42.

The at least one fluid nozzle positioned above the floatable vehicle body to direct a flow of liquid manure from the liquid manure mover through the air and back into the manure lagoon ('835 Patent, substitute claim 57)

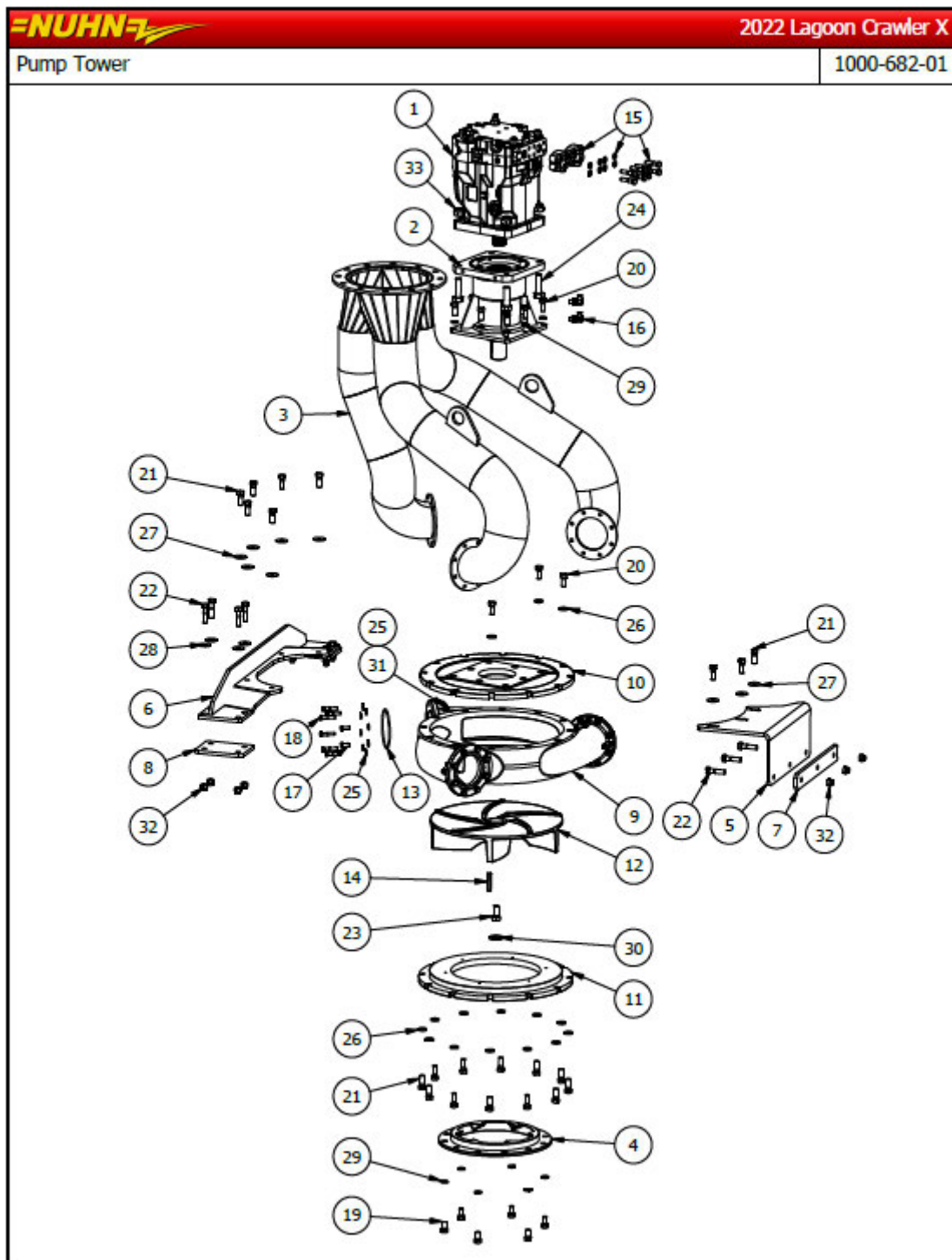
271. A video of the Lagoon Crawler X shows a flow of liquid manure propelled from a nozzle through the air and back into the lagoon.



EX1155, 2.

The at least one fluid nozzle is forward of the power source while the liquid manure pump is rearward of the power source ('835 Patent, substitute claim 41, 80)

272. The parts catalog for the 2022 Lagoon Crawler X illustrates a pump comprising an impeller and housing.

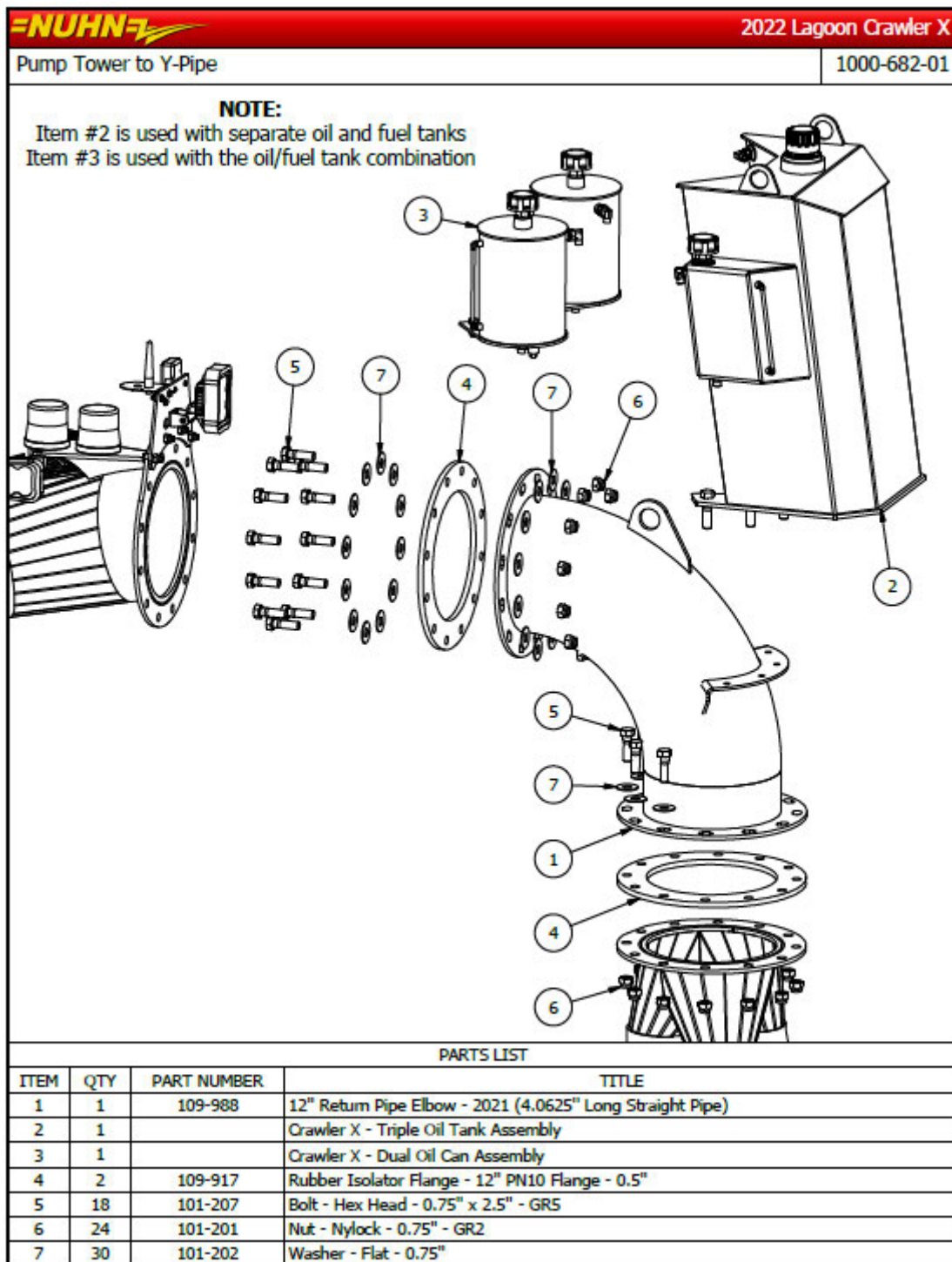


EX2047, 36.

=NUHN-7			2022 Lagoon Crawler X
Pump Tower			1000-682-01
PARTS LIST			
ITEM	QTY	PART NUMBER	TITLE
1	1	106-438	Hyd. Motor - HMV280 w/drive coupling, Mount SAE E, Shaft ANSI 33T 16/32dP
2	1	106-191	2.25" Mech. Seal Assembly - SAE E Mount - SAE F Spline 15T
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6	1	111-882-1	Crawler X - Pump Tower - Top Housing Brace
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11	1	106-792-1	20.5" Triple Port - Cast Inlet Cover - 14" ID with BC - 2A - 0.625" Bolts
12	1	111-415-1	20.5" Triple Port Pump - Cast Impeller with 2.25" Bushing - 5 Blade Flat Top
13	3	103-968	O-Ring - #359 DAE Buna - 6.125"OD x 5.75"ID
14	1	102-399 x 2.75"	Keystock - 0.5" x 0.5" x 2.75"
15	1	105-922	Hyd. Adaptor - #20 Split Flange Kit (Code 62) 1902-20
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19	6	104-427	Bolt - Hex Head - 0.625" x 1.25" - GR5
20	11	111-222	Bolt - Hex Head - 0.625" x 1.5" - GR8
21	21	105-487	Bolt - Hex Head - 0.625" x 1.75" - GR8
22	11	101-060	Bolt - Hex Head - 0.625" x 2.5" - GR5
23	1	109-229	Bolt - Hex Head - 0.75" x 1.75" - GR8
24	4	103-191	Bolt - Hex Head - 0.875" x 3" GR8
25	24	107-282	Washer - Flat - 0.4375" x 0.922" OD - GR8
26	15	112-996	Washer - 1.25" OD x 0.625" ID x 0.19" thk
27	9	104-863	Washer - Flat - 0.625" x 1.75" Zinc USS Thru-Hardened - Yellow
28	8	100-899	Washer - Flat - 0.625"
29	14	101-187	Washer - Lock - 0.625" - Medium Split
30	1	109-186	Plate - Weld On Hex Washer - 0.75"
31	18	106-117	Nut - Nylock - 0.4375" - GR8
32	11	100-905	Nut - Nylock - 0.625" - GR2
33	4	100-906	Nut - Nylock - 0.875" - GR2

Id., 37.

273. The parts catalog for the 2022 Lagoon Crawler X illustrates the positioning of the pump below a Y-pipe.



Id., 31.

274. A brochure for the Lagoon Crawler X shows the Y-pipe, which is directly above the fluid pump, rearward of the engine and a fluid nozzle forward of the engine.



EX2046, 2.

275. As described above, each of the features noted above are described in other pending claims before the USPTO. Nuhn characterized these features as being *material* and *contributing directly* to its products commercial success and new and unexpected results. Nuhn stated that failing to include these features would “destroy [the product’s] synergy, which depends on the specific location of the liquid manure pump and/or nozzle as claimed.”

276. Each of these features is present in Nuhn’s Lagoon Crawler products. Accordingly, given that Nuhn’s secondary considerations are tied to features other than those recited in the ’835 Patent claims, it is my opinion that there is no nexus between Nuhn’s secondary considerations evidence and the claims of the ’835 Patent.

B. Nuhn's Amphibious Vehicle Provided Only Expected Results

277. I understand that unexpected results used to support patentability of a claimed feature must be tied to the limitations recited in the claims.

278. Regarding Nuhn's "unexpected results," Nuhn and Mr. Prairie argue extensively about the "pocket" created by the vehicle and how this "pocket" "start[s] a 'working zone' for the pump to operate in[.]" Paper 22 at 34-36. However, to the extent that this pump/pocket arrangement refers to anything other than what is already disclosed in Truxor or SenwaTec, that arrangement does not appear in any of the claims of the '835 Patent, which say nothing about where the pump is located on the vehicle or in relation to the lagoon. Rather, the only difference from Truxor or SenwaTec that appears the claims of the '835 Patent is the remote control of the vehicle components—a feature that was added to those products in 2013 and 2016, respectively. EX1131, 185:3-10; EX1132, 109:16-22. Allowing the operator to control the vehicle functions from outside the vehicle is not an unexpected result of the addition of remote control.

279. Mr. Prairie also identifies the vehicle being able to crawl through, rather than over, the crust of a liquid manure lagoon as an "unexpected result." This is also an unclaimed feature, and not all liquid manure lagoons even have crusts. As for those that do, a POSA would have understood that an amphibious vehicle would be heavy enough to break through a crust on a lagoon and could assist in agitating the

material contained in the lagoon. Once again, this is the same result that was realized by the use of the SenwaTec product in manure reservoirs. *Supra* Section IX.B.i.

280. Nuhn also notes how others were skeptical of the placement of the nozzles/pump on the vehicle. Specifically, Nuhn alleges that others were skeptical about whether this configuration would be controllable or whether the pump would clog. Paper 22 at 40. However, Nuhn completely ignores that Puck was already successfully using this same arrangement of a pump with a bottom fluid inlet and nozzles in its product before 2013. *See, e.g.*, EX1014; EX1119. As Nuhn concedes, Puck was the market leader in large lagoon agitation at that time. These features were well understood and accepted prior to Nuhn's alleged invention.

C. The Lagoon Crawler Implemented Only Known Features

281. Nuhn argues that prior to its alleged invention, others were skeptical about the development of the Lagoon Crawler and the results achieved by the Lagoon Crawler product were "unexpected." However, others were already successfully using and marketing these techniques for manure agitation before 2013.

282. Nuhn attributes the skepticism of its product to concerns regarding the performance of the hydraulically driven wheel system in a manure lagoon. However, Nuhn ignores the fact that others, including UD-Umweltdinste (SenwaTec) and Sealegs (the commercial embodiment of Bryham), were already using and marketing amphibious vehicles with hydraulically driven wheels in sewage reservoirs and other

corrosive environments prior to Nuhn's alleged invention. *See* EX1066; EX1157; EX1134.

283. Nuhn also notes how others were skeptical of the placement of the nozzles/pump on the vehicle. Specifically, Nuhn alleges that others were skeptical about whether this configuration would be controllable or whether the pump would clog. However, Nuhn completely ignores that Puck was already successfully using this same arrangement of a pump with a bottom fluid inlet and nozzles in its product before 2013. *See, e.g.*, EX1014; EX1119. As Nuhn concedes, Puck was the market leader in large lagoon agitation at that time. A POSA would have understood and accepted these features prior to Nuhn's alleged invention.

D. Bazooka's Wolverine Product Is not a Copy of Nuhn's Lagoon Crawler

284. It is my opinion that Bazooka's Wolverine product is not a copy of the Lagoon Crawler. I understand that the Wolverine utilizes propellers to propel its vehicle, not nozzles, as claimed in the '835 Patent and utilized by the Nuhn's Lagoon Crawler. EX2096, 1; *see* EX1001 ("[T]he vehicle does not comprise a propeller."). Propeller propulsion and nozzle propulsion are different methods of propelling vehicles in fluid, have different efficiencies, and produce different fluid flow results. Additionally, propellers and pumps/nozzles differ in their respective agitation capabilities and characteristics. I also understand that Bazooka's Wolverine product

does not include wheels that raise and lower relative to the vehicle body, as is the case in Nuhn's Lagoon Crawler products.

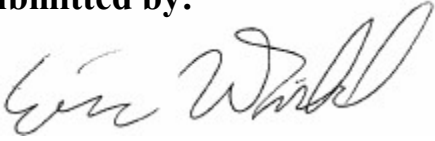
285. In this same vein, I understand that Bazooka's product also only includes a single fluid outlet (as opposed to the seven outlets of the Lagoon Crawler) and lacks any kind of valve structure that is used to direct the flow of manure out through its fluid conduit. Removal of these extraneous features may be beneficial, as it may reduce cost, complexity, and number of failure modes for the vehicle.

XIII. CONCLUSION

286. I reserve the right to supplement my opinions as appropriate.

287. I hereby declare 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.

Submitted by:



October 1, 2024

Date

Eric S. Winkel, Ph.D., P.E., CFEI,
CVFI
Senior Managing Consultant
MI P.E. | Expires: March 11, 2025

Technical Review by:



October 1, 2024

Date

Daniel B. Honeycutt, MSME, PE
Senior Consultant
NC P.E. | Expires: December 31,
2024

Appendix A

List of Materials Considered

Patents and Patent Applications

Declarations

- Declaration of Benny D. Puck, Dated August 28, 2024

Non-Patent Literature

- Puck Enterprises, Inc., *Puck Agitation Boat - 2012*, YOUTUBE (Sept. 19, 2012), <https://www.youtube.com/watch?v=1fRPrwGUyM0> (referred to as “Exhibit A” in EX1121)
- Puck Enterprises, Inc., *Puck Lagoon Agitation Boat and MobileStar Pump Control*, YOUTUBE (Dec. 28, 2011), <https://www.youtube.com/watch?v=cMplzZ6lRYE> (referred to as “Exhibit B” in EX1121)
- Puck Enterprises, Inc., *Puck Agitation Boat - Jeremy Puck*, YOUTUBE (Aug. 10, 2011), <https://www.youtube.com/watch?v=1MqPldkqOq4> (referred to as “Exhibit C” in EX1121)
- Puck Enterprises, Inc., *Puck Agitation Boat - Ben Puck*, YOUTUBE (July 29, 2011), <https://www.youtube.com/watch?v=gfNO0bi0uk0> (referred to as “Exhibit D” in EX1121)
- Puck Enterprises, Inc., *Puck Agitation Boat - Front Cannon 8.30.11*, YOUTUBE (Sept. 9, 2011), <https://www.youtube.com/watch?v=4whiyZZ9N3s> (referred to as “Exhibit E” in EX1121)
- *Between*, MERRIAM-WEBSTER.COM, <http://web.archive.org/web/20130518001225/https://www.merriam-webster.com/dictionary/between>
- Progressive Dairy, *Equipment demonstrations: Manure agitation boats*, YOUTUBE (July 9, 2014), <https://www.youtube.com/watch?v=FXRS-9Ip1pE> (referred to as “Exhibit C” in EX1120)
- *Hydrostatic Pto’s Run in Reverse*, 1 FARM SHOW 1, 7 (1977)
- RICHARD S. HARTENBERG & JACQUES DENAVIT, KINEMATIC SYNTHESIS OF LINKAGES 38-39 (Robert M. Drake, Jr. & Stephen J. Kline, eds., 1964)
- Deposition Transcript of Ansgar Lonnemann, Taken on September 6, 2024
- Deposition Transcript of Reidar Olofsson, Taken on September 5, 2024

- *Casappa Polaris Gear Pump*, ONEHYDRAULICS (Oct. 1, 2024), <https://www.onehydraulics.com/products/plp20-9s0-03s1-loc-oc-n-el-casappa-polaris-gear-pump-9-17cc-3625psi-rated-3500rpm-ccw-9t-16-32dp-shaft-sae-a-2-bolt-flange-0-625-5-8-10-sae-inlet-0-625-5-8-10-sae-outlet-aluminum-body-flange?srsId=AfmBOopjmhYtBYy5xJF7u8DVhJf3cHsySDL9fFmys59ZKHW7e2sreRGC>
- METALCRAFT MARINE INCORPORATED, FIRESTORM 30 WITH OUTBOARDS (2004)
- Deposition Transcript of Ian Nuhn, Taken on September 26, 2024
- ABYC, H-27 SEACOCKS, THRU-HULL FITTINGS, AND DRAIN PLUGS (2021)
- ABYC, CATHODIC PROTECTION (2021)
- HUSKY FARM EQUIPMENT LIMITED, HUSKY LIQUID MANURE H 5000 PUMP PART MANUAL (1982)
- Ernie Sundstrom, *Stir dredge*, YOUTUBE (Apr. 13, 2012), <https://www.youtube.com/watch?v=RDyAyLgMETY> (referred to as “Exhibit A” in EX1120)
- snapshotxx, *Sundstrom Pit Pumping stir boat*, YOUTUBE (Mar. 12, 2013), <https://www.youtube.com/watch?v=tTtFx1AUQi0> (referred to as “Exhibit B” in EX1120)
- SUNDSTROM'S PIT PUMPING, LLC., <http://www.sundstrompitpumping.com/> (last visited Oct. 1, 2024).