

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

UATP IP, LLC,

Petitioner,

v .

SLICK SLIDE LLC,

Patent Owner

Case PGR2024-00054

U.S. Patent No. 11,998,854

PATENT OWNER'S PRELIMINARY RESPONSE

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LIST OF EXHIBITS

Exhibit Number	Description
EX2001	UATP information (https://www.urbanair.com/attractions/indoor-slide-park/)
EX2002	Murakami website (https://murakamiscreen.com/murakami-product/mesh-adhesives/)
EX2003	Fiber-on-fiber friction measurement using hanging fiber, Azam Alirezazadeh
EX2004	Mesh, Merriam-Webster.com (retrieved from https://merriam-webster.com/dictionary/mesh)
EX2005	Sheeting, Merriam-Webster.com (retrieved from https://merriam-webster.com/dictionary/sheeting)
EX2006	Mesh, The Fairchild Books Dictionary of Textiles
EX2007	Sheeting, The Fairchild Books Dictionary of Textiles
EX2008	Sailcloth, Merriam-Webster.com (retrieved from https://merriam-webster.com/dictionary/sailcloth)
EX2009	Canvas, The Fairchild Books Dictionary of Textiles
EX2010	Burlap, The Fairchild Books Dictionary of Textiles
EX2011	Sailcloth, The Fairchild Books Dictionary of Textiles
EX2012	Jute Burlap (retrieved from https://fabricwholesaledirect.com/products/standard-10-oz-jute-burlap-60-inch-fabric)
EX2013	ASTM G115 (retrieved from https://www.astm.org/standards/g115)
EX2014	https://koyo.jtekt.co.jp/en/support/bearing-knowledge/8-4000.html
EX2015	The coefficient of friction of cartilage (Forsey, 2006)
EX2016	ASTM D1894 (retrieved from https://www.astm.org/d1894-24.html)
EX2017	ASTM D883 (retrieved from https://www.astm.org/d0883-24b.html)
EX2018	ASTM F1918 (retrieved from https://www.astm.org/f1918-21.html)
EX2019	Lower weight sailcloths (retrieved from https://www.sailrite.com/shop/fabric/marine-fabric/sailcloth)
EX2020	The weights of the fabrics (retrieved from https://www.kayospruce.com/facts-measurements for the standard conversion of sailcloth weight from g/m ² to ounces)
EX2021	Nylon (retrieved from https://www.mcmaster.com/products/nylon-film/)
EX2022	Dacron (retrieved from https://foammart.com/product/dacron-roll/ and https://foamforyou.com/outdoor-dacron-foam?srsId=AfmBOopu-5B9zLoVKgtjSp9uUPDfGx7ckTQs_Khck86n0hnBeGTmUuH)
EX2023	Molybdenum disulfide, Vazirisereshk, M.R. et al, "Solid lubrication with MoS ₂ : A Review, Lubricants
EX2024	Diamond-like carbon, Berman, D., "Graphene: a new emerging lubricant," Materials Today

EX2025	Static friction coefficient of some plastics against steel and aluminum under different contact conditions, Benabdallah, Science Direct
EX2026	Expert Declaration of Dr. Stephen Spiegelberg
EX2027	Expert Declaration of Dr. Jon Rust

STATEMENT OF MATERIAL FACTS IN DISPUTE

Petitioner, UATP IP, LLC, did not submit a statement of material facts in its Petition. Accordingly, no response is due pursuant to 37 C.F.R. § 42.23(a), and no facts are admitted.

I. INTRODUCTION AND SUMMARY OF ARGUMENT

Pursuant to 37 C.F.R. §42.107(a), patent owner Slick Slide LLC (“Patent Owner” or “Slick Slide”) submits this Preliminary Response in response to the Petition for Post Grant Review (“PGR”) filed by UATP IP, LLC (“Petitioner” or “Urban Air”) challenging claims 1-17 and 22-28 of U.S. Patent No. 11,998,854 (“the ‘854 patent”).

Unlike the lower “reasonable likelihood” standard for granting institution in an *Inter Partes* Review (IPR) proceeding, a PGR may not be instituted unless the petitioner satisfies a higher burden: that it is “more likely than not” that at least one of the challenged claims is unpatentable. 35 U.S.C. §324(a). Petitioner has failed to meet that burden, and institution should be denied. Each of Petitioner’s asserted grounds is legally deficient for the reasons identified below.

As a preliminary matter, however, Slick Slide notes that Urban Air’s Petition ignores – indeed does not mention much less substantively address – a fundamental aspect of the ‘854 patent. Specifically, Urban Air’s Petition ignores entirely that one particular claim term incorporated into nearly every challenged claim is expressly defined in the patent. Urban Air’s failure to mention or present arguments based thereon, renders its Petition flawed and deficient.

First, Urban Air’s Petition is an improper serial challenge. One of the references relied upon in the Petition was already fully considered by the United States Patent and Trademark Office (the “Office”) and overcome during prosecution. The second and third references are cumulative to references of record that were considered during prosecution. Further, Petitioner has failed to identify a “material error” during examination as required by the precedential *Advanced Bionics* decision. Institution should be denied under 35 U.S.C. §325(d).

Second, Urban Air’s grounds asserted in its Petition are legally deficient for at least the

following additional reasons outlined in the chart below, which summarizes certain of the Patent Owner’s arguments.

Ground	Deficiencies of the Ground(s)
1A-1B claims 1-4, 6-7, 14-17, 22-28 anticipated or obvious over Phillips and WN0400	• Phillips does not teach the claimed “mesh layer.” • Phillips does not teach the claimed coefficient of friction range, being “a range of between about 0.03 to about 0.2.” • Phillips teaches away from the claimed mesh layer, because it uniformly and repeatedly teaches a sheeting, which is the opposite of a mesh layer. • a POSITA would not incorporate a mesh layer with Phillips and Petitioner has not demonstrated otherwise. • Petitioner has failed to demonstrate motivation to combine a mesh layer or the disclosure of WN0400 with Phillips, including because Phillips teaches away from such a combination.
2A-2B claims 1-7, 14-17, 22-28 obvious over Phillips, Fallgatter, WN0400	• Fallgatter does not teach the claimed “mesh layer.” • Fallgatter teaches that the combination would result in a coefficient of friction outside of the claimed range, being “a range of between about 0.03 to about 0.2.”
3A claims 8-13 not enabled	• These claims are enabled, as confirmed by Slick Slide’s expert who has the experience required to make that determination; Urban Air’s expert has no experience relating to the issues involved.
3B claims 5, 26 indefinite	• These claims are definite; Urban Air’s arguments ignore the unambiguous claim language only to fabricate a purported vagary where none exists.

In addition to and underscoring the deficiencies of the Petitioner’s grounds identified above, and applicable to each asserted ground, Petitioner has entirely failed to acknowledge—let alone substantively address—the undisputed fact that the ‘854 patent explicitly defines the claimed coefficient of friction (“CoF”) as being demonstrated using a specific ASTM standard. Remarkably, neither the Petitioner nor its expert even mentions this standard for determining

CoF. As a result of this oversight, none of the references relied upon by the Petitioner to demonstrate the presence of the claimed CoF is reliable, would be considered reliable by a POSITA, or can be used to demonstrate this claim limitation.

In view of the foregoing, the Petition fails to demonstrate that it is more likely than not that at least 1 of challenged claims 1-17 and 22-28 of the '854 Patent is unpatentable. Institution should be denied.

II. THE PARTIES

Urban Air provides little information in its Petition as to the identify of itself or Slick Slide or the business that both are in. Accordingly, Slick Slide provides the following brief description of the parties to aid the Board in its consideration of Urban Air's Petition.

A. Patent Owner, Slick Slide LLC

Family entertainment centers, which include facilities like trampoline parks, indoor adventure or action parks, and indoor slide parks, have experienced significant growth in the United States in recent years. Within this broader trend, indoor slide parks, a subset of family entertainment centers, have also seen notable expansion. For example, Slick City Action Park (a related company of Slick Slide), which brands itself as the world's first indoor slide and air court park, has grown incredibly rapidly and, on top of that success, recently announced significant plans for even further expansion. The growing popularity of indoor slide parks can be attributed to their innovative attractions.

Slick Slide, one of the companies driving this surge in growth, is a family-friendly business that provides entertainment for both children and adults. In particular, Slick Slide specializes in recreational attractions and equipment, with a focus on innovative and customized recreational slides. As a leader in the industry, Slick Slide has developed cutting-edge slides that

deliver a highly sought-after sliding experience. Slick Slide has supplied its innovative and customized slides to family entertainment centers across the United States. By incorporating unique technology and creative designs, Slick Slide's slides provide personalized experiences that set its products apart. These innovations have been instrumental in driving the growing demand for family entertainment centers in general, and indoor slide parks in particular, across the United States.

One such innovation includes Slick Slide's patented "dry slide" technology claimed in the '854 patent. Compared to a water slide, a dry slide is a slide that operates without the use of fluids or wet lubricants flowing down the slide surface or between the rider (or ride vehicle) and the slide surface. Due to the absence of a lubricating flow, traditional dry slides typically cannot achieve the same slide speeds as comparably sized water slides.

Slick Slide has developed and perfected its dry slide technology through extensive testing and evaluation of various ride vehicle and slide configurations. As a result of these efforts, Slick Slide has developed dry slide technology that enables a performance closely replicating the speed and thrill of a water slide, dramatically enhancing the dry sliding experience compared to conventional dry slides. This innovation is the subject of the '854 patent and has positioned Slick Slide as a leader in the industry, expanding the appeal of dry slides and indoor slide parks.

B. Petitioner, UATP IP, LLC

UATP IP, LLC, d/b/a Urban Air Adventure Park, is an operator of "adventure parks." Adventure parks are a category of family entertainment center that typically includes indoor play facilities equipped with trampolines, ziplines, ropes courses, and other attractions. Urban Air operates these adventure park facilities throughout the United States, primarily through

franchisees. Urban Air’s adventure park facilities primarily feature attractions such as trampolines, ziplines, ropes courses, and climbing walls, for example.

Not wanting to miss out on the growing demand for indoor slides in family entertainment centers, spurred by Slick Slide’s innovative slide designs and dry slide technology, Urban Air announced earlier this year the introduction of “new indoor slides” in its facilities. In fact, Urban Air boldly claims to have “created a brand new of world [sic] patent-pending exhilarating slides for kids to explore.” EX2001, 1. However, this statement sharply contrasts with the reality: many of Urban Air’s “new” slide designs closely resemble Slick Slide’s flagship slide designs. Even more telling, Urban Air’s slides share identical or nearly identical names. For instance, four out of the five slides Urban Air claims to have designed are named: “Max Launch Slide,” “Launch Slide,” “Racer Slide,” and “Scoop Slide” —names that have become well-known in the industry for slide designs that originate from Slick Slide. *Id.*, 3.

Not only has Urban Air copied these names, but the slide designs themselves are strikingly similar. This raises serious questions about the originality of Urban Air’s creations. Based on information and belief, Urban Air has made minimal changes to each of Slick Slide’s slide designs, without even renaming them, and is now attempting to patent these minor modifications.

Urban Air is a direct competitor of Slick City. Based on information and belief, Urban Air seeks to replicate Slick Slide’s dry slide technology in its own slides to improve their performance and increase their appeal to consumers.

III. TECHNOLOGY BACKGROUND

Recreational slides have existed for decades, serving as a staple of recreational activities

for both children and adults. *See e.g.*, Petition, 1-5; EX1003, ¶¶34-38.¹ Petitioner notes that slides for recreational purposes have been well-known since at least the early 1900s. *Id.* As such, it takes a truly innovative advancement to transform a familiar concept into a product that drives significant market demand. Slick Slide's revolutionary dry slide technology exemplifies such innovation.

Since the introduction of its slides incorporating the dry slide technology, Slick Slide has experienced unprecedented growth across its slide offerings. Slick Slide's slide sales have rapidly climbed into the multi-million-dollar range within a short period of time. According to Gary Schmit, inventor of the '854 patent and co-founder of Slick Slide, installations of these slides at family entertainment centers have consistently led to significant increases in attendance and sales at those locations. The superior performance of Slick Slide's dry slide technology over conventional offerings has not only appealed to children but has also captured the interest of adults, further broadening its market appeal. The success of Slick Slide's business is clear evidence of the high demand generated by its innovative slide technology.

Slick Slide, through its related company Slick City, operates family entertainment centers that showcase its cutting-edge slides. Currently, Slick City operates locations across the United States, with an additional seventeen under construction and thirty-seven franchise territories awarded. According to discussions with Mr. Schmit, Slick City continues to expand aggressively nationwide, actively engaging with new franchisees. This rapid expansion is a direct result of Slick Slide's dry slide technology, which offers superior performance, an unmatched user experience, and a thrilling experience not achievable with conventional slides.

Breakthroughs like this address long-standing industry challenges and deliver a novel

¹ All UATP exhibits will be referred to by EX. For example, UATP-1003 is referred to herein as EX1003.

experience that captivates consumers. This level of innovation is not incremental—particularly in the recreational slide industry, where slides have been well-known since at least the early 1900s. Instead, it represents a creative leap far beyond what would be obvious to those skilled in the art. The overwhelming market demand for Slick Slide’s dry slide technology highlights the transformative nature of its advancements. These facts strongly suggest that the innovations claimed in the ’854 patent are nonobvious and represent a genuine technological leap.

IV. OVERVIEW OF THE ’854 PATENT

The ’854 patent is titled “Low-Friction Recreational Slide System.” EX1001, cover page. The ’854 patent issued on June 4, 2024.

C. Specification

The ’854 patent is directed to “a recreational slide system that includes a dry recreational slide” and “a ride vehicle.” EX1001, 4:15-20. The recreational slide system (10) is shown in Fig. 1 of the ’854 patent, a copy of which is reproduced below for reference. The ride vehicle (14) of

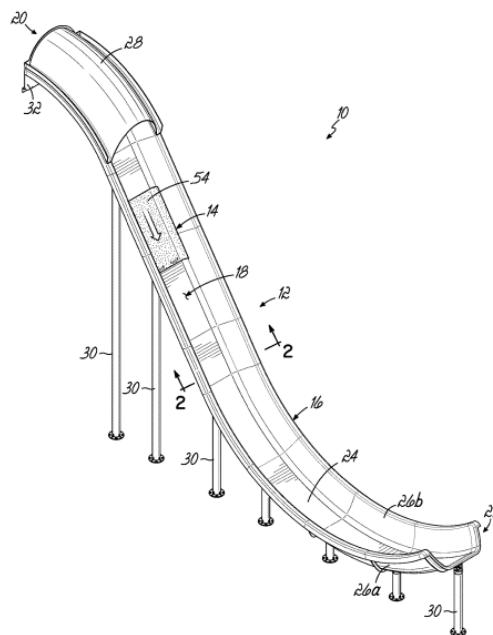


FIG. 1

the slide system (10) is “configured to be positioned between a rider and a slide surface [18] of the slide [12] for sliding down the slide [12].” *Id.*

The ‘854 specification describes that the ride vehicle “includes a fabric layer that forms a top surface configured to contact the rider and a mesh layer that forms a bottom surface configured to contact the slide surface.” *Id.*, 2:5-8. As shown in Fig. 4 of the ‘854 patent, a copy of which is reproduced below, the mesh layer is an open weave (as per the definition of mesh) and therefore includes “a plurality of interstitial openings that define an open area of the mesh layer.” *Id.*, 2:50-51. “[T]he open area of the mesh material 46 may be within a range of between about 25% to about 65%.” *Id.*, 10:32-33.

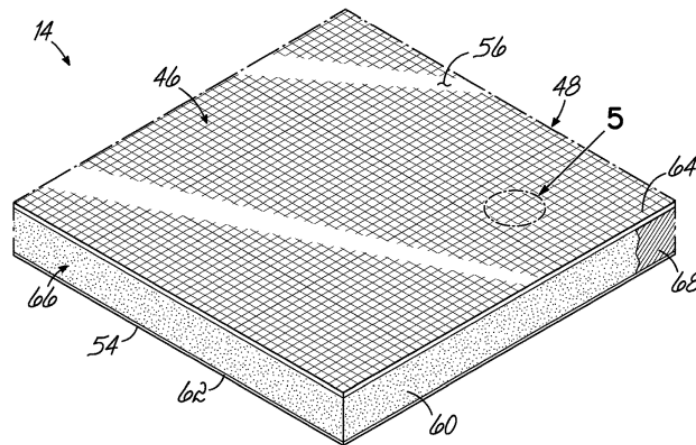


FIG. 4

The mesh material of this specification was developed for use with the ride vehicle based on “performance tests and analysis.” *Id.*, 11:15-17. The ‘854 specification describes that the mesh layer “cooperates with the slide surface to achieve an improved, i.e., reduced, coefficient of friction therebetween.” *Id.*, 5:38-40. “The resultant coefficient of between the mesh material of the ride vehicle 14 and the slide surface 18 may be within a range of between about 0.03 to about 0.2, and particularly within a range of between about 0.05 to about 0.12, and in particular about

0.09, and therefore provides the rider with a fast rate of descent down the slide 12 (i.e., speed).” *Id.*, 5:41-46.

The slide of the recreational slide system is a “dry recreational slide, otherwise referred to as a non-wet lubricated slide.” *Id.* A dry slide is considered to be “any slide that is free of any fluid or wet lubricant flowing down the slide surface and between a rider or the ride vehicle and the slide surface.” *Id.*, 1:43-45. In one embodiment, the slide surface of the slide “includes a dry lubricant material in the form of a coating that cooperates with the mesh material of the ride vehicle to achieve a low coefficient of friction therebetween.” *Id.* However, “the slide surface 18 may not have a dry lubricant coating 34.” *Id.*, 5:65-67.

The ‘854 patent describes, “the slide surface 18 includes a dry lubricant material provided as a coating 34 that is applied to the slide body 16 along the entire length of the slide surface 18 (i.e., between the top entrance 20 of the slide 12 to the bottom exit 22).” *Id.*, 5:56-62. “[T]he formulation for the dry lubricant material that is applied to the slide is a mixture comprising the following: (i) a resin, (ii) a lubricant, (iii) a thermal conductor, and (iv) a hardener, otherwise referred to as a hardening or curing agent.” *Id.*, 7:13-17. Fig. 2A, below, illustrates an embodiment in which “the dry lubricant coating 34 covers substantially the entirety of the sliding surface 36a, 36b, 38 of each sidewall 26a, 26b and the base wall 24.” *Id.*, 6:13-16.

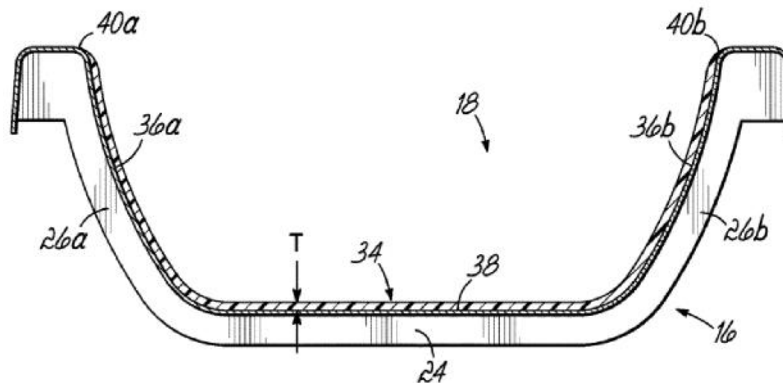


FIG. 2A

As background to the invention, the '854 patent explains that “[f]or most [slide] riders, a fast slide speed (i.e., a fast rate of descent down the slide) is more thrilling... and therefore is more desirable.” *Id.*, 1:26-29. “To this end, maintaining a low coefficient of friction between the rider or a ride vehicle that supports the rider and the slide surface provides for a fast and exciting slide.” *Id.*, 1:29-32. As additional background, “[t]he coefficient of friction between a rider (or ride vehicle) and the slide surface of a typical dry slide is often within the range of between 0.15 to 0.3, and is typically about 0.25.” *Id.*, 1:48-51. Unlike typical dry slides, the '854 patent describes that “[t]he coefficient of friction between the mesh layer of the ride vehicle and the non-wet lubricated slide surface may be within a range of between about 0.03 to about 0.2, and particularly within a range of between about 0.05 to about 0.12.” *Id.*, 2:8-12, 1:48-51.

A. Claims

The '854 patent has 28 claims. Claims 1, 18, 22, and 25 are independent. Claims 2-17 depend either directly or indirectly from claim 1, claims 19-21 depend either directly or indirectly from claim 18, and claims 23, 24 and 26-28 depend either directly or indirectly from claim 22. Claims 1-17 and 22-28 are the subject of the Petition and are presented below.

Independent claim 1 recites:

1. A recreational slide system, comprising:
 - a slide including a slide body with a non-wet lubricated slide surface that extends between a top entrance of the slide and a bottom exit of the slide; and
 - a ride vehicle configured to support a rider down the slide, the ride vehicle including a top surface configured to contact the rider and a mesh layer that forms a bottom surface configured to contact the slide surface;
 - wherein a coefficient of friction between the mesh layer of the ride vehicle and the non-wet lubricated slide surface is within a range of between about 0.03 to about 0.2.

Claims 2-17 depend from claim 1 and further recite kinetic coefficient of friction (claim 2), the slide surface includes a dry lubricant material (claim 3) in the form of a dry lubricant coating (claims 4-7), the dry lubricant coating comprises a resin, a lubricant, a thermal conductor, and a hardener (claims 8-13), and the weave of threads that form the mesh layer of the ride vehicle (claims 14-17).

Independent claim 22 recites:

22. A ride vehicle configured to support a rider down a non-wet lubricated recreational slide, the ride vehicle comprising:
an elongate body that extends between a first end and an opposite second end, the body including a central core positioned between a top surface of the ride vehicle and a woven mesh layer that forms a bottom surface of the ride vehicle that is configured to contact the non-wet lubricated recreational slide;
wherein the mesh layer includes a plurality of interstitial openings that define an open area of the mesh layer, wherein the open area of the mesh layer is within a range of between about 35% to about 50%.

Claims 23, 24 and 26-28 depend from claim 22 and further recite specifics of the mesh layer of the ride vehicle (claims 23 and 24), that the ride vehicle includes a fabric liner (claim 26), and a recreational slide system including the ride vehicle (claims 27 and 28).

Independent claim 25 recites:

25. A ride vehicle configured to support a rider down a non-wet lubricated recreational slide, the ride vehicle comprising:
an elongate body that extends between a first end and an opposite second end, the body including a central core positioned between a top surface of the ride vehicle and a woven mesh layer that forms a bottom surface of the ride vehicle that is configured to contact the non-wet lubricated recreational slide;
wherein the mesh layer includes a plurality of weft threads each having a thread diameter within a range of between 0.1 mm to 0.6 mm and a plurality of warp threads each having a thread diameter within a range of between about 0.1 mm to about 0.6 mm.

B. The Prosecution History

Patent Owner filed the ‘854 patent as U.S. Patent Application No. 18/349,347 (the “‘347 application”) on July 10, 2023. EX1002, 22-29. Concurrently with filing the application, Patent Owner filed a Track One Request for prioritized examination under 37 C.F.R. §102(e)(1). *Id.*, 30-31. The Request for prioritized examination was granted on August 23, 2023. *Id.*, 50-51. Patent Owner then submitted an Information Disclosure Statement on October 25, 2023, citing Boatwright (EX1022), Fallgatter et al., WO2023/069789,² two additional references, and the Search Report under Section 17 and the Combined Search and Examination Report under Sections 17 & 18 received from the United Kingdom Intellectual Property Office in UK Patent Application No: GB2314317.5,³ all of which the Examiner considered. EX1002, 54-59.

Patent Owner then submitted a first Supplemental Information Disclosure Statement on November 2, 2023, citing Forrest B. Phillips (WO 2000/046487),⁴ three additional references, and the International Search Report and Written Opinion issued by the International Searching Authority in International Application No. PCT/US2023/069866,⁵ all of which the Examiner considered. EX1002, 65-68.

On November 8, 2023, the Examiner issued an Office Action citing three additional references, including Fallgatter (EX1005), and making rejections under 35 U.S.C. §112 (claim 8) and §103 (claims 1-11, 14-15, 18-24, and 27-29) (the “Office Action”). EX1002, 71-74. The

² The US counterpart being Fallgatter (EX1005).

³ UK Patent Application No. GB2314317.5 is a direct national counterpart filing of the ‘347 application filed in the United Kingdom.

⁴ WO 2000/046487 is the foreign counterpart of Phillips (EX1023) and shares the same sole inventor, Forrest B. Phillips, as Phillips (EX1004) and Phillips (EX1025). Certain relevant portions of these disclosures are cumulative, as will be discussed in subsequent sections of this paper.

⁵ International Application No. PCT/US2023/069866 is a direct counterpart filing of the ‘347 application made under the PCT.

Examiner determined that the subject matter of claims 12, 16-17, and 25-26 was not taught by the prior art and was therefore allowable. EX1002, 74-75.

Applicant conducted a Telephonic Interview with the Examiner on December 8, 2023, to discuss the Examiner's rejections of the claims. EX1002, 105-106. As summarized by the Examiner in the Applicant-Initiated Interview Summary, "[n]o agreement was reached as further intensive review of the prior art is needed when the arguments are submitted in writing." EX1002, 106.

Applicant filed an Amendment in response to the Office Action on January 1, 2024 (the "Amendment"). *Id.*, 107-121. The arguments discussed during the Telephonic Interview were included in the Amendment, explaining why the claims are allowable over Fallgatter alone and in combination with other references of record. *Id.*, 116-119. Claims 18, 22, and 26 were amended to include allowable subject matter. *Id.*, 119-122.

Patent Owner then submitted a second Supplemental Information Disclosure Statement on January 23, 2024, citing Phillips (EX1023) and twenty other references, all of which the Examiner considered. *Id.*, 122-127.

A Notice of Allowance was mailed on February 14, 2024. EX1002, 130-137. Patent Owner paid the Issue Fee on February 15, 2024. *Id.*, 158-160. The Issue Notification was mailed on February 28, 2024, indicating an Issue Date of March 19, 2024. *Id.*, 161-162.

On March 12, 2024, Patent Owner filed a Request for Consideration under the Quick Path Information Disclosure Statement (QPIDS) Program of an Information Disclosure Statement filed after payment of the Issue Fee. *Id.*, 167-169. The request included a Request for Continued Examination, Petition to Withdraw from Issue, and the Information Disclosure Statement citing the Examination Report and third party observations received in UK Patent

Application No: GB2314317.5. *Id.*, 163–178. These materials were considered by the Examiner after the Petition to Withdraw from Issue was granted on March 12, 2024. *Id.*, 170-172.

Patent Owner then submitted a Supplemental Information Disclosure Statement on March 27, 2024, citing one reference and the Examination Report received in UK Patent Application No: GB2401780.8, all of which the Examiner considered.⁶ *Id.*, 175–181.

A corrected Notice of Allowability was mailed on April 24, 2024. *Id.*, 184-187.

V. CLAIM CONSTRUCTION

Claims are ordinarily given their “ordinary and customary meaning,” which is “the meaning that the term would have to a person of ordinary skill in the art in question at the time of the invention.” *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312-13, 1315 (Fed. Cir. 2005). To construe a claim term, the PTAB should look to “the words of the claims themselves, the remainder of the specification, the prosecution history, and extrinsic evidence concerning relevant scientific principles, the meaning of technical terms, and the state of the art.” *Id.* at 1314. “A patent’s specification, together with its prosecution history, constitutes intrinsic evidence to which the PTAB gives priority when it construes claims.” *Knowles Elecs. LLC. v. Cirrus Logic, Inc.*, 883 F.3d 1358, 1361-62 (Fed. Cir. 2018).

In claim construction, a threshold question is whether the claim term requires construction, i.e., whether the claim term is in dispute. For purposes of this preliminary response, Patent Owner submits that the terms “Mesh Layer” and “Coefficient of Friction” require construction.⁷ All remaining claim terms should be construed according to the *Phillips* standard.

⁶ UK Patent Application No. GB2401780.8 is a divisional of UK Patent Application No. GB2314317.5 which is a direct counterpart filing of the ‘347 application filed in the United Kingdom.

⁷ The Patent Owner reserves the right to propose alternative constructions for both claim terms if a trial is instituted, or constructions for terms not addressed in this Preliminary Response.

A. Mesh Layer

Patent Owner submits that the term “mesh layer” must be construed consistent with its usage in the intrinsic evidence, including the specification, figures, and claims. *See V-Formation, Inc. v. Benetton Grp. SpA*, 401 F.3d 1307, 1310 (Fed. Cir. 2005) (holding intrinsic record “usually provides the technological and temporal context to enable the court to ascertain the meaning of the claim to one of ordinary skill in the art at the time of invention”).

The ‘854 patent describes the claim term “mesh layer” as follows, “a mesh layer 64 formed of the mesh material 46.” EX1001, 9:65-66. “[T]he mesh material is a woven mesh” and “the mesh material 46 includes a number of warp threads 70 which extend generally perpendicular to a number of weft threads 72 to form a plurality of interstitial openings 74 therebetween.” *Id.*, 10:19-25. The specification of the ‘854 patent, for example, provides “the interstitial openings 74 may be within a range of between about 45 micron to about 1200 micron, for example, and the open area of the mesh material 46 may be within a range of between about 25% to about 65%, for example.” *Id.*, 10:30-35.

An accepted resource in this industry is The Fairchild Books Dictionary of Textiles, which defines mesh as “[a]ny fabric (woven, knit, crochet, lace, or knotted), which is characterized by open spaces...”. EX2006; EX2004; EX2026, ¶¶92; EX2027, ¶¶58, 62.

A POSITA would understand from the specification that “mesh layer” means a layer of mesh material which is characterized by open spaces between threads. *Id.*

B. Coefficient of Friction

Patent Owner submits that the term “coefficient of friction” must be construed consistent with its usage in the intrinsic evidence, including the specification, figures, and claims. *See V-Formation*, 401 F.3d at 1310 (holding intrinsic record “usually provides the technological and

temporal context to enable the court to ascertain the meaning of the claim to one of ordinary skill in the art at the time of invention”).

The ‘854 patent defines the claim term “coefficient of friction.” Specifically, “[a]s will be understood by a person skilled in the art, the coefficient of friction between the ride vehicle and the slide surface is the ratio of the frictional force between two surfaces to the normal force pressing the surfaces together. That is, Coefficient of Friction (μ)=Force of Friction (F)/Normal Force (N).” EX1001, 4:38-43.

The ‘854 patent further defines the claim term “coefficient of friction” in terms of a specific ASTM standard. “The coefficient of friction between surfaces of the mesh material 46 and the slide surface 18 may be determined using the American Society for Testing and Materials International (ASTM) Coefficient of Friction ASTM D1894 standard test method (July, 2023), which may be used to determine both kinetic (moving) and static (starting) coefficient of friction of one surface being dragged across another.” EX1001, 11:31-42. The ‘854 patent specifies that “[t]he ASTM D1894 test method can be found at www.astm.org.” *Id.* In that respect, “[f]or the ASTM D1894 test, the material specimen is attached to a sled of defined weight” which “is pulled across another surface at a speed of 150 mm/minute.” *Id.*

A POSITA would understand from the specification that “coefficient of friction” means the frictional force between two surfaces to the normal force pressing the surfaces together, as determined using the ASTM D1894 test method. EX2026, ¶¶63-66.

VI. PETITIONER’S ASSERTED REFERENCES

A. Phillips (EX1004)

Phillips is a U.S. Patent (7,896,779) titled “Sliding Exercise Apparatus and Recreational Device”, which issued on March 1, 2011, and which lists Worldslide, LLC as the Assignee.

EX1004, cover page. Phillips is directed to “an exercise apparatus and recreational system composed of a plurality of interconnecting parts which include a slide.” *Id.*, 1:13-15. Phillips describes multiple types of sliding vehicles for use with the slide (10). *Id.*, 2:3-11.

Fig. 1 of Phillips, a copy of which is reproduced below, illustrates one example of the slide (10). Phillips describes this embodiment of the slide (10) as having “bumpers 14 and 15 and support area below top surface 20 as inflatable membranes.” *Id.*, 4:52-53. Phillips describes the top surface (20) of the slide as “composed of a flexible sheeting layer of a durable, low friction material enabling the user to traverse the slide whether the top surface 20 is wet or dry.” *Id.*, 4:21-24. Phillips consistently describes the materials used in the slide and associated elements as membranes or sheeting materials.

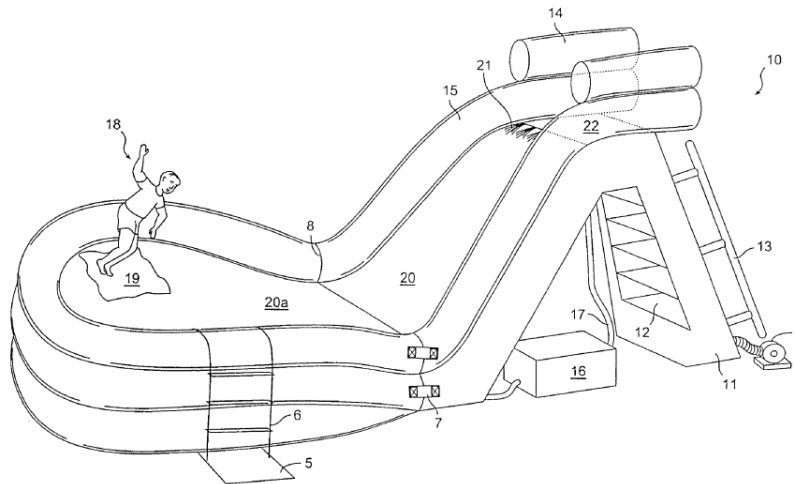
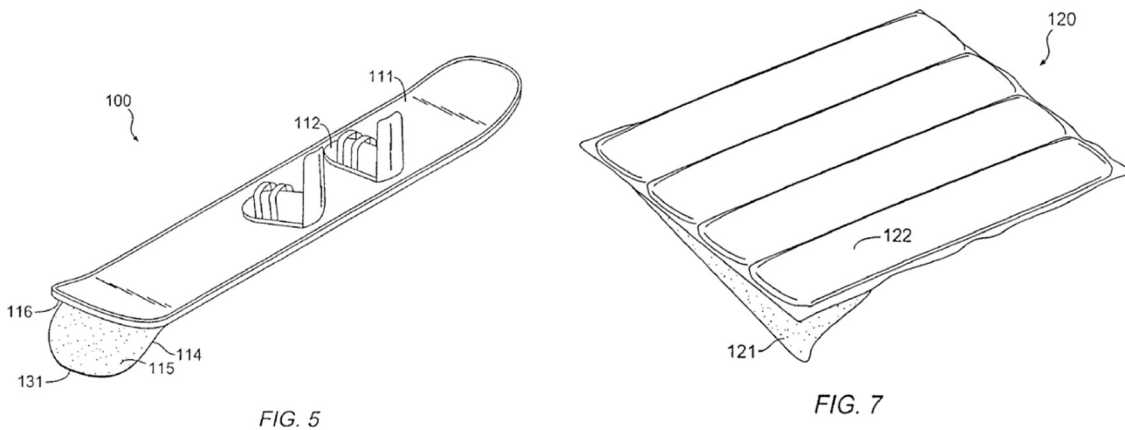


FIG. 1

Phillips also describes different types of sliding vehicles that are configured to interact with the slide. *Id.*, 2:3-11. For instance, Phillips describes sliding vehicles such as sports boards, which are “supported by a low friction, durable membrane either attached to a sports board or as stand-alone sheeting material.” *Id.*, 1: 22-25. In the embodiment shown in Fig. 1, Phillips explains that “user 18 is supported by membrane 19 in the form of low friction durable sheeting material.” *Id.*, 4:40–41.

Like the slide (10), Phillips consistently describes the materials used in the sliding vehicles as membranes or sheeting materials, describing that “[b]oth membrane 6 and top surface 20 can each be composed of low friction high durable material such as a member selected from the group consisting of nylon, Teflon, sailcloth, Dacron, vinyl, artificial turf, synthetic carpet and polyester resins.” *Id.*, 4:43-46.

Phillips describes several embodiments of sliding vehicles that include the low friction, durable membrane, such as a sports board (100) and sliding element (120). *Id.*, 7:6-7, 21-23.



For the sports board (100), Phillips describes that the “durable low friction sheeting material 114 can be applied to bottom surface 116 by applying adhesive 115 to sheeting material 114 and adhering it to board 111.” *Id.*, 7:10-12. Likewise, for the sliding element (120), Phillips describes that the “low friction durable sheeting material 121 is adhered to a body section 122.” *Id.*, 7:23-25. Notably, in every disclosed embodiment, Phillips describes attaching the low friction, durable sheeting material to sliding vehicles using adhesive.⁸

⁸ In addition to the sports board (100) and sliding element (120) example, Phillips describes the low friction sheeting material “being selectively adhered to clothing or protective gear of a user so that one could employ the present invention without the need for a separate sports board or slidable membrane material whatsoever.” EX1004, 7:34-38; “employ patches of such material adhered to selected body portions such as the soles of one’s shoes or on the surfaces of knee and elbow pads.” *Id.*, 8:46-48;

Phillips does not use the term “mesh” to describe the low friction, durable sheeting material for use with the sliding vehicles. Instead, Phillips consistently describes the material as membranes or sheeting materials.

Phillips does explicitly distinguish the low friction, durable sheeting material from “nylon netting.” In that regard, Phillips describes the use of nylon netting for attaching “various sliding elements 1606 can be added end-to-end or side-to-side to slide element 1602 in order to create slides of additional length and/or width.” EX1004, 9:50-52. Specifically, Phillips describes that “[a]ttachment can be by any well-recognized means Such as through the use of Velcro hook and loop connectors, Snaps, Zippers, ropes, springs, nylon netting and similar expedients.” *Id.*, 9:53-55. This distinction highlights that nylon netting serves a different purpose and is not equivalent to the low friction, durable sheeting material central to Phillips’ slide and sliding vehicle embodiments.

B. WN0400 (EX1006)

WN0400 is a SKU (Stock Keeping Unit) representing a product specification for nylon netting that is allegedly available from the company Industrial Netting.⁹ EX1006. WN0400 is considered by Industrial Netting to be “Nylon Netting,” as can be

Home / Materials / Nylon Netting / **WN0400 - 400 Micron Nylon Mesh 45% Open Area**

Products

Applications

Materials

Polypropylene

Polyethylene

• **Nylon Netting**

Polyester Netting

PTFE Netting

Temperature Guidelines

Clearance Items

Netting & Mesh Services



⁹ Patent Owner does not concede that WN0400 qualifies as a printed publication, but does not dispute this assertion based on the arguments presented in at least Section IX of this paper.

seen in the screenshot from EX1006 reproduced above. The WN0400 SKU is for a product titled “400 Micron Nylon Mesh 45% Open Area.” *Id.* Industrial Netting describes WN0400 as a Nylon Mesh woven from “Monofilament Nylon 6 fiber 42 threads per inch” and which includes “400 micron hole opening[s] with 45% open area.” *Id.*.

C. Fallgatter (EX1005)

Fallgatter is a U.S. Patent Publication (2023/0129814) titled “Portable Dry Recreational Slide”, which was filed on October 24, 2022, published on April 27, 2023, and which lists GoSlide LLC as the Applicant and the Assignee. EX1005, cover page.

Fallgatter is directed to a “portable dry recreational slide that can be stored and transported in a compacted configuration.” *Id.*, [0035]. “The slide body is made of a low-friction textile, most preferably a textile substrate such as a woven nylon, woven polyester or non-woven polyethylene with a low friction coating such as a silicone coating.” *Id.*, [0006]. The “friction-reducing coating...defines the sliding surface.” *Id.*, [0042].

Fallgatter further describes that “the dry slide includes one or more vehicles which participants can use to distribute weight and/or which include low-friction surfaces so as to enhance the sliding experience.” *Id.*, [0006]. The “textile vehicle 60 can comprise a body 61 formed of a textile that is the same or similar to the slide body 22.” *Id.*, [0046]. Fallgatter describes that “a bottom surface 62 of the textile vehicle 60 comprises a low-friction coating 54. In that regard, “[w]hen a rider uses the textile vehicle 60, the low-friction bottom surface 62 of the textile vehicle 60 slides over the low-friction slide surface 30, providing enhanced sliding performance.” *Id.*, [0006]. Thus, according to Fallgatter, enhanced sliding performance is achieved in a system where both the bottom surface of the textile vehicle and the slide surface include the low-friction coating.

Fallgatter further describes that “[p]referably, the low-friction coating 54 has a static coefficient of friction less than about 0.30, more preferably less than about 0.25, and even more preferably about 0.21 or less.” *Id.*, [0042]. Fallgatter also describes that “[t]he friction-reducing coating comprises a silicone compound and having a dry coefficient of friction less than a coefficient of friction of the textile substrate and less than about 0.25. *Id.*, [0016]. Thus, it logically follows that the textile substrate without the coating must have a coefficient of friction greater than 0.25.

VII. PERSON OF ORDINARY SKILL IN THE ART

Contrary to Petitioner’s suggestion, a person of ordinary skill in the art as of the Critical Date (“POSITA”) would have had at least (1) a Bachelor’s degree in engineering, materials science, or a related field, with (2) experience in textile design, engineering, or fiber science. EX2026, ¶¶38-45; EX2027, ¶¶33-40. Experience in textile engineering and fiber science is necessary for understanding the distinctions between mesh and sheeting, and how those interact with other materials when in contact with them, as well as mechanical properties such as wear. EX2026, ¶44; EX2027, ¶40. Experience in textile engineering and fiber science is also necessary for understanding the manner in which materials with interstices are affixed to other materials, including with adhesive, and the impact the attachment mechanism has on the interaction with other materials when in contact with them. *Id.*

With respect to claims 1-17 and 27-28 of the ’854 patent, a POSITA would also require at least 5 years of measurement and analysis experience in the field of coefficient of friction. EX2026, ¶45. This is necessary because the morphology of fabrics has a decisive effect on the frictional resistance occurring in friction of the fabrics, and friction measurements are extremely dependent on the condition of the contacting surfaces on the test specimens. *Id.* A POSITA

without this experience would likely misunderstand, and likely misuse, coefficient of friction data for which the reported results do not detail the protocol, morphology, and other aspects of the analysis. *Id.*

VIII. PETITIONER’S WANG DECLARATION IS ENTITLED TO LIMITED WEIGHT

“To offer expert testimony from the perspective of a skilled artisan in a patent case—like for claim construction, validity, or infringement—a witness must at least have ordinary skill in the art.” *Kyocera Senco Indus. Tools Inc. v. Int’l Trade Comm’n*, 22 F.4th 1369, 1376-77 (Fed. Cir. 2022). Opinions from witnesses who lack that qualification “are neither relevant nor reliable,” are not “based on any specialized knowledge, training, or experience that would be helpful to the fact-finder,” and “serve[] only to cause mischief and confuse the factfinder.” *Id.* at 1377.

Petitioner fails to demonstrate that Dr. Wang is qualified to render the opinions in his declaration as they relate to the field of coefficient of friction. Dr. Wang identifies zero personal experience or graduate education related to measurement and analysis in the field of coefficient of friction.

Perhaps more egregious is that Dr. Wang fails to mention, much less address substantively in any manner whatsoever, the definition of the claim term “coefficient of friction” set forth in the ‘854 patent. In addition, Dr. Wang relies heavily upon references that purport to disclose data relating to coefficient of friction, but not a single reference complies with the definition of the claim term set forth in the ‘854 patent, and in fact each reference violates the standards incorporated therein.

The Board should ignore Exhibit 1003 and afford it no weight as it relates to measurement and analysis experience in the field of coefficient of friction, being at least claims

1-17 and 27-28. *See Kyocera*, 22 F.4th at 1377-78 (ALJ abused discretion by admitting expert testimony of witness lacking POSITA qualification).

IX. THE PETITION SHOULD BE DENIED UNDER 35 U.S.C. §325(d)

The Board should exercise its discretion under 35 U.S.C. §325(d) and deny institution because the challenges presented in the Petition are cumulative to—and indeed weaker than—those already considered and rejected by the Examiner. Fallgatter was already considered during examination of the ‘854 patent, and describes a “textile ride vehicle.” EX1005, [0046].

Moreover, the primary reference, Phillips, describes a sliding vehicle supported by “a member selected from the group consisting of nylon, Teflon, sailcloth, Dacron, vinyl, artificial turf, synthetic carpet and polyester resins.” This description is cumulative of what Fallgatter and other references considered during examination of the ‘854 patent disclose. EX1004, 4:43-46. As such, the Board should exercise its discretion and deny institution.

35 U.S.C. §325(d) provides:

In determining whether to institute . . . , the Director may take into account whether, and reject the petition or request because, the same or substantially the same prior art or arguments previously were presented to the Office.

The purpose of this provision is to protect patent owners from serial challenges and the resulting burden on the patent owner and the Office in managing multiple proceedings involving the same patent. *See* 157 Cong. Rec. S1041-42 (daily ed. Mar. 1, 2011) (statement of Sen. Kyl). The Board uses a two-part framework for evaluating §325(d): (1) whether the same or substantially the same prior art or arguments were previously presented to the Office; and (2) if so, whether the petitioner has demonstrated that the Office erred in a manner material to the patentability of the challenged claims. *Advanced Bionics, LLC v. Med El Elektromedizinische Geräte GmbH*, IPR2019-01469, Paper 6 at 8-9 (P.T.A.B. Feb. 13, 2020).

A. The Petition relies on the same or substantially the same prior art or arguments that were previously presented to the Office

As to the first inquiry (whether the art or arguments are the same or substantially the same), the Board has identified several non-exclusive factors for consideration, which include “the similarities and material differences between the asserted art and the prior art involved during examination,” “the cumulative nature of the asserted art and the prior art evaluated during examination,” and “the extent of the overlap between the arguments made during examination and the manner in which petitioner relies on the prior art.” *Advanced Bionics*, Paper 6 at 9 n.10.

Here, the references that Petitioner asserts is the same (Fallgatter) or substantially the same (Phillips and WN0400) as the references that the Examiner considered during prosecution of the ‘854 patent. Petitioner relies on two patent documents, Phillips and Fallgatter, and the WN0400 publication, as set forth in the Petitioner’s grounds summarized below:

Ground	Claims	Basis
1A	1-4, 6-7	§§102/103—Phillips
1B	1-4, 6-7, 14-17, 22-28	§103—Phillips in view of WN0400
2A	1-7	§103—Phillips in view of Fallgatter
2B	1-7, 14-17, 22-28	§103—Phillips and Fallgatter in view of WN0400

The prosecution history of the ‘854 Patent supports a determination that the same or substantially the same prior art was previously presented to the Office. In that regard,

Fallgatter was cited repeatedly throughout prosecution of the ‘854 patent. The relevant portions of the prosecution history are summarized below:

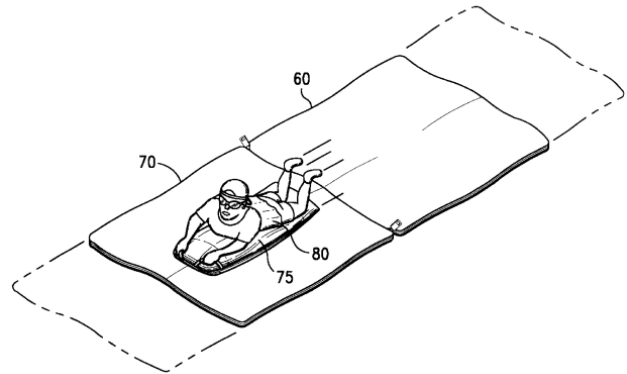
- On November 8, 2023, the Examiner issued an Office Action, which included a §103 based on Fallgatter alone, a §103 based on Fallgatter a secondary reference, and another §103 based on Fallgatter and a different secondary reference. EX1002, 71-75.
- On February 14, 2024 the Examiner issued a Notice of Allowance in which the Examiner indicated that Fallgatter was the closest prior art. EX1002, 130-137.
- On April 24, 2024, the Examiner issued a corrected Notice of Allowability in which the Examiner stated that the allowance stands as stated in the Notice of Allowance of February 14, 2024, again concluding that Fallgatter was the closest prior art. EX1002, 184-187.

By citing Fallgatter repeatedly during prosecution of the ‘854 patent and highlighting Fallgatter as the “closest prior art,” it is clear that the Examiner fully considered and understood the reference. Ultimately, however, Patent Owner overcame the Examiner’s rejections and the Examiner allowed the claims currently at issue—in two separately issued notices of allowance—fully cognizant of the teachings of Fallgatter.

Phillips (EX1004) was not cited during the prosecution of the ‘854 patent (referred to as ‘779 Phillips). However, the relevant portions of ‘779 Phillips relied on by the Petitioner are substantially similar—and in some respects identical—to what Phillips (EX1023, referred to as ‘879 Phillips) discloses. ‘879 Phillips was considered by the Examiner during the prosecution of the ‘854 patent. Although not specifically discussed by the Examiner, ‘879 Phillips was cited by

the Examiner (*see* list of considered reference, EX1002, 152). Thus, ‘879 Phillips was squarely before the Examiner, although the Examiner appears to have viewed it as less relevant than Fallgatter, for example.

Both ‘779 Phillips and ‘879 Phillips share the same sole inventor, Forrest B. Phillips. Like ‘779 Phillips, ‘879 Phillips discloses “a sliding exercise apparatus.” EX1023, Abstract. The sliding apparatus “consists of a combination of sheeting material and a sled.” *Id.*, 2:1-4. “The sheeting material can be in the form of a bedding sheet, blanket, comforter or case for any of these bedding items having at least one surface clad in a low friction high durable coating upon which a suitably configured sled can traverse.” *Id.*, 2:4-8.



The sled has “the bottom surface of which is clad with a low friction durable coating.” *Id.*, Abstract. The low-friction, highly durable cladding for both the sheeting material and the sled is characterized as “composed of, for example, sail cloth, nylon, Dacron, polyester or Texlon,” and “would enable the user to achieve reasonable speeds at suitable durations to create an entertaining recreational device without the need for any particular companion expedient.” *Id.*, 4:8-13; 5:4-9. The materials disclosed in the ‘879 Phillips are identical to those in the ‘779 Phillips, which the Petitioner relies upon in the Petition, and are also described in the same sliding context. Indeed, the Office already considered these disclosures during prosecution of the ‘854 patent, and ‘779 Phillips does not introduce any new disclosure. Instead, ‘779 Phillips is merely cumulative of what the Office has already reviewed.

The similarities between the ‘779 Phillips and ‘879 Phillips disclosures are shown in the table below.

	‘779 Phillips	‘879 Phillips
Title	Sliding Exercise Apparatus and Recreational Device	Pillow Slide
Slide	Slide “includes a surface which can be inclined as a durable low friction sheeting material,” being “a member selected from the group consisting of nylon, Teflon, sailcloth, Dacron, vinyl, artificial turf, synthetic carpet and polyester resins.	“[S]heeting material...having at least one surface clad in a low friction high durable coating” that is “composed of, for example, sail cloth, nylon, Dacron, polyester or Texlon. ”
Sliding Vehicle	Sliding vehicle “supported by a low friction, durable membrane” or “sheeting material” being “a member selected from the group consisting of nylon, Teflon, sailcloth, Dacron, vinyl, artificial turf, synthetic carpet and polyester resins.	A sled in the form of a pillow case, “the bottom surface of which is clad with a low friction durable coating” that is “composed of, for example, sail cloth, nylon, Dacron, polyester or Texlon. ”

Indeed, ‘779 Phillips is not materially different from ‘879 Phillips, which was considered by the Office. In fact, the relevant portions of their disclosures are the same, if not identical, and presented in the same context—sliding. Petitioner has failed to identify any material differences between the disclosures of ‘779 Phillips and ‘879 Phillips. Thus, the factor addressing “the similarities and material differences between the asserted art and the prior art involved during examination” weighs in favor of denying institution.

Moreover, ‘779 Phillips is cumulative of the prior art considered by the Office during examination of the ‘854 patent. In addition to what ‘879 Phillips discloses, Fallgatter

discloses “the slide body is made of a low-friction textile, most preferably a woven textile substrate such as a **woven nylon**, polyester or polyethylene.” EX1005, [0006]. Fallgatter also discloses that the “textile vehicle 60 can comprise a body 61 formed of a textile that is the same or similar to the slide body 22.” *Id.*, [0046]. Additionally, Fallgatter recognizes “that other materials may be available, or may become available, that may be operative but may have other negative aspects. For example, high-density polyethylene, PTFE (**Teflon**) and fluorinated polymers may exhibit low friction, but can be unsuitable due to excessive weight and/or high cost.” *Id.*, [0044].

The table below illustrates the cumulative disclosures between ‘779 Phillips, ‘879 Phillips, and Fallgatter.

	‘779 Phillips	‘879 Phillips	Fallgatter
Title	Sliding Exercise Apparatus and Recreational Device	Pillow Slide	Portable Dry Recreational Slide
Slide	Slide “includes a surface which can be inclined as a durable low friction sheeting material,” being “a member selected from the group consisting of nylon, Teflon, sailcloth, Dacron , vinyl, artificial turf, synthetic carpet and polyester resins.	“[S]heeting material...having at least one surface clad in a low friction high durable coating” that is “composed of, for example, sail cloth, nylon, Dacron, polyester or Texlon. ”	“the slide body is made of a low-friction textile, most preferably a woven textile substrate such as a woven nylon, polyester or polyethylene.” “other materials may be available...For example, high-density polyethylene, PTFE (Teflon) and fluorinated polymers”

Sliding Vehicle	Sliding vehicle “supported by a low friction, durable membrane” or “sheeting material” being “a member selected from the group consisting of nylon, Teflon, sailcloth, Dacron, vinyl, artificial turf, synthetic carpet and polyester resins.	A sled in the form of a pillow case, “the bottom surface of which is clad with a low friction durable coating” that is “composed of, for example, sail cloth, nylon, Dacron, polyester or Texlon. ”	the “textile vehicle 60 can comprise a body 61 formed of a textile that is the same or similar to the slide body 22,” being “a woven textile substrate such as a woven nylon, polyester or polyethylene.” “other materials may be available...For example, high-density polyethylene, PTFE (Teflon) and fluorinated polymers”
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Indeed, ‘779 Phillips is cumulative of the prior art evaluated during examination, not only in the materials considered for the sliding vehicles and slides, but also their constructions. Therefore, the factor addressing “the cumulative nature of the asserted art and the prior art evaluated during examination,” also weighs in favor of denying institution.

Although not cited during prosecution, WN0400 discloses a woven nylon. *See* EX1006. Fallgatter also discloses “woven nylon,” as set forth above. Petitioner has not shown how WN0400 is materially different from what is disclosed in Fallgatter. Indeed, WN0400 is cumulative of the prior art evaluated during examination of the ‘854 patent, and thus the factors addressing “the similarities and material differences between the asserted art and the prior art involved during examination,” and “the cumulative nature of the asserted art and the prior art evaluated during examination,” weigh in favor of denying institution.

Upon closer review, there is no evidence that ‘779 Phillips or WN0400 add anything beyond what the Office has already considered, particularly based on its review of Fallgatter and

consideration of other references of record, such as ‘879 Phillips. Furthermore, Petitioner fails to explain how the “sheeting material” disclosed by ‘779 Phillips (or WN0400) is meaningfully different from what is disclosed in at least Fallgatter, but also ‘879 Phillips, such that it would constitute “new grounds” not previously considered by the Office.

B. Petitioner Fails to demonstrate that the Office erred in a manner material to the patentability of the challenged claims

Having established that the same or substantially the same prior art was considered by the Office, it is next necessary to determine whether the Petition demonstrates that the Office erred in a manner “material” to the patentability of the challenged claims. *Advanced Bionics*, IPR2019-01469, Paper 6 at 8-9.

Petitioner has not identified any material error made by the Office. The Examiner did not misapprehend or overlook specific teachings of Fallgatter. Instead, the Examiner thoroughly considered Fallgatter, including—in the Examiner’s own words—“additional intensive review of the prior art” following the submission of the Amendment in response to the Office Action citing Fallgatter. EX1002, 106.

The fact that the Examiner cited Fallgatter three separate times in the Office Action (alone and in combination with two other references), demonstrates that the Examiner thoroughly evaluated Fallgatter’s teachings on appropriate coefficients of friction between the slide surfaces and ride vehicles in multiple contexts. EX1002, 74-75. Furthermore, Patent Owner’s arguments in the Amendment specifically addressed Fallgatter’s broader teachings regarding coefficients of friction. Patent Owner’s arguments were extensive and well-reasoned, raising multiple substantive issues with Fallgatter’s teachings and requiring the Examiner to assess not only the materials and construction of the slide surface and ride vehicle disclosed in

Fallgatter but also the extent to which Fallgatter's disclosure supports a specific coefficient of friction between those surfaces. EX1002, 116-119.

Patent Owner's arguments in the Amendment were far from "baseless and nonsensical," as the Petitioner claims. EX1003, 227. On the contrary, the Examiner's citation of Fallgatter in the Office Action, both individually and in combination with other references, demonstrates that these arguments were given rigorous and thorough consideration. If the arguments were "baseless and nonsensical," the Examiner would not have allowed the claims over Fallgatter and the other references of record.

The Petitioner has failed to identify any material error that would justify reconsideration of the prior art in combination with Phillips, whose disclosure overlaps with and is cumulative to that of Fallgatter and other references already considered during examination. To that end, the Petitioner's reliance on Phillips is merely an attempt to disguise its effort to persuade the Board to reconsider arguments and prior art that were fully evaluated during examination under the guise of "new grounds," amounting to an impermissible and transparent serial challenge. The Board should exercise its discretion and deny the petition.

X. THE PETITION IS DEFECTIVE AND SHOULD BE DENIED BECAUSE IT FAILS TO ADDRESS KNOWN OBJECTIVE INDICIA OF NON-OBVIOUSNESS

Obviousness is a question of law based on underlying facts. *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 427 (2007). The underlying facts are the four *Graham* factors, namely: (1) the scope and content of the prior art; (2) differences between the prior art and the claims at issue; (3) the level of ordinary skill in the pertinent art; and (4) objective indicia of nonobviousness, often called secondary considerations, such as long-felt but unmet need, industry skepticism, industry praise, and commercial success. *Id.*; *Graham v. John Deere Co.*, 383 U.S. 1, 17–18

(1966). A determination of obviousness “requires consideration of all four Graham factors, and it is error to reach a conclusion of obviousness until all those factors are considered.” *Apple Inc. v. Samsung Elecs. Co.*, 839 F.3d 1034, 1048 (Fed. Cir. 2016) (en banc). Urban Air’s burden as the petitioner was to prove unpatentability “more likely than not” at the petition stage, so a wholesale failure to address known evidence of one of the four *Graham* factors—factor (4) regarding objective indicia of nonobviousness—amounts to a failure to carry that burden, because “[o]bjective indicia of nonobviousness must be considered in every case where present.” *Id.*

Petitioner, Urban Air, is a direct competitor of Slick City and is fully aware that Slick City uses Slick Slide’s patented dry slide technology in its slide offerings. Urban Air is acutely aware of Slick City’s disruptive market presence and Slick City and Slick Slide’s exponential growth—growth that has been directly attributable to the innovative dry slide technology claimed in the ’854 patent. Notably, many of Urban Air’s purportedly “new” slide designs closely resemble—both in design and name—Slick Slide’s flagship slide designs. *Supra* II.B; EX2001.

This knowledge is directly relevant to the fourth *Graham* factor—secondary considerations such as commercial success, copying, and industry acclaim. These objective indicia of non-obviousness provides important insight into the novelty of the ’854 patent’s claims. Petitioner, however, fails to address these known secondary considerations or accounts for the significant evidence of commercial success and market adoption tied to Slick Slide’s dry slide technology.

The Board has seen this scenario before and has “cautioned petitioners ... that petitions may be denied if they do not address known evidence of secondary considerations.” *Stryker*

Corp. v. KFx Medical, LLC, No. IPR2019-00817, Paper 10 at 28–29 (PTAB Sept. 16, 2019) (citing *Robert Bosch Tool Corp. v. SD3 LLC*, IPR2016-01751, Paper 15 at 23 (PTAB Mar. 22, 2017) (denying institution in view of objective indicia presented during an ITC proceeding but not addressed in petition)); *Coalition for Affordable Drugs V LLC v. Hoffman–LaRoche, Inc.*, IPR2015–01792, Paper 14 at 18 (PTAB Mar. 11, 2016) (denying institution, in part for failure to address objective indicia considered by Examiner during original prosecution).

Petitioner cannot meet its burden to show that any claim of the ‘854 patent is “more likely than not” unpatentable, where it fails to even address the fourth *Graham* factor against known objective indicia of non-obviousness. For at least this reason, the Petition is defective and the Board should deny the Petition.

XI. PETITIONER FAILED TO DEMONSTRATE THAT ANY CLAIM “MORE LIKELY THAN NOT” IS UNPATENTABLE

In a PGR, the Petitioner bears the burden to show that the information in the Petition, if not rebutted, “would demonstrate that it is more likely than not that at least 1 of the claims challenged in the petition is unpatentable.” 35 U.S.C. §324(a). For the reasons set forth below, the Board should deny institution because Petitioner has not met its burden of showing that any claim of the ‘854 Patent is unpatentable.

A. Ground 1A (Anticipation): Challenged Claims 1-4 and 6-7 Are Not Anticipated by Phillips

Petitioner has failed to satisfy its burden of showing that claim 1 and dependent claims 2-4 and 6-7 are anticipated by Phillips because (i) Phillips does not teach the claimed “mesh layer”; and (ii) Phillips does not teach the claimed coefficient of friction range, being “a range of between about 0.03 to about 0.2.” In view of these deficiencies, Petitioner has failed to present a legally sound argument that the challenged claims are anticipated by Phillips.

“Anticipation requires that all of the claim elements and their limitations are shown in a single prior art reference.” *In re Skvorecz*, 580 F.3d 1262, 1266 (Fed. Cir. 2009); *see also Advanced Display Sys., Inc. v. Kent State Univ.*, 212 F.3d 1272, 1282 (Fed. Cir. 2000) (explaining that “invalidity by anticipation requires that the four corners of a single, prior art document describe every element of the claimed invention, either expressly or inherently”).

1. Phillips does not teach the claimed “mesh layer”

As indicated above, challenged claim 1 recites a “mesh layer that forms a bottom surface configured to contact the slide surface.” EX1001, 12:17-20. The mesh layer forms a bottom surface of the claimed “ride vehicle.” *Id.* As discussed below, Phillips fails to disclose or suggest a “mesh layer that forms a bottom surface configured to contact the slide surface” as claimed. For this reason, Petitioner’s anticipation argument is unlikely to prevail.

In formulating the rejection of this claim element, Petitioner begins by asserting that Phillips includes a bottom surface for sliding on a slide and that the bottom surface of the ride vehicle is formed from a low-friction sheeting material. Petition, 23. Petitioner further identifies that Phillips discloses the sheeting material (alternatively referred to in Phillips as a membrane) may be “composed of low friction high durable material such as a member selected from the group consisting of nylon, Teflon, sailcloth, Dacron, vinyl, artificial turf, synthetic carpet and polyester resins.” EX1004, 4:43-46. Petitioner also notes that the “durable low friction sheeting material 114 can be applied to bottom surface [of the sports board 100] by applying adhesive 115 to sheeting material 114 and adhering it to board 111.” Petition, 24.

The Parties therefore agree that Phillips uniformly and repeatedly discloses sheeting or membrane for the bottom of the surface of the ride vehicle. EX2026, ¶¶104-107, 111; EX2027, ¶¶89-92, 96. The Parties also agree that Phillips does not use the term “mesh” to describe the

low friction, durable sheeting material for use with the sliding vehicles. Instead, Phillips consistently describes the material as membranes or sheeting materials. EX2026, ¶¶109; EX2027, ¶¶94.

Solely based on Phillips' disclosure of a durable low-friction sheeting material, Petitioner argues that Phillips provides a mesh layer. *Id.* This is incorrect. A POSITA would not consider the sheeting material disclosed as forming the bottom surface of the ride vehicle as a mesh layer claimed in Claim 1 of the '854 patent. EX2026, ¶¶116-119; EX2027, ¶¶101-104. Petitioner's suggestion otherwise is directly contrary to accepted resources in this industry, for example The Fairchild Books Dictionary of Textiles. EX2026, ¶116; EX2027, ¶101; EX2006. The Fairchild Books Dictionary of Textiles defines mesh as "Any fabric (woven, knit, crochet, lace, or knotted), which is characterized by open spaces...". *Id.* "Sheeting," as known by a POSITA and as defined by ASTM standards, does not allow for open spaces that is required of the mesh layer claimed in Claim 1. EX2026, ¶¶117-119; EX2027, ¶¶102-104; EX2017.

Without even mentioning these issues attendant to Phillips, Petitioner asserts that the sheeting material in Phillips is a mesh layer primarily, if not exclusively, based on the argument that Phillips' inclusion of "sailcloth," "nylon," and "Dacron" as the disclosed sheeting material, among a variety of other materials listed, would lead a POSITA to understand any one of those materials to be "a woven fabric material that provides a mesh." *Id.*, 24-25. This argument fails for numerous reasons, including because it ignores that fact that Phillips uniformly and repeatedly discloses sheeting or membrane for the bottom of the surface of the ride vehicle, which are not a "mesh layer." EX2026, ¶¶104-107, 111; EX2027, ¶¶89-92, 96. There is nothing relied upon by Dr. Wang that suggests these materials are "mesh." EX2026, ¶75; EX2027, ¶58. And, nothing would lead a POSITA to conclude otherwise. *Id.* In fact, these materials, including

“sailcloth,” are not a “mesh” and a POSITA would understand that “sailcloth” is not a “mesh.” EX2026, ¶¶124-129; EX2027, ¶¶109-115. Dr. Wang’s suggestion otherwise is, once again, contrary to accepted resources in this industry. EX2027, ¶112; EX2011.

Phillips is, in fact, entirely silent on the term “mesh.” However, Phillips explicitly distinguishes the low-friction, durable sheeting material from “nylon netting.” EX1004, 9:50-55. Notably, the referenced “nylon netting” is not used for forming the bottom surface of the ride vehicle. *Id.* Petitioner then describes WN0400 reference as “a nylon mesh.” Petition, 36. And, Industrial Netting identifies WN0400 as “Nylon Netting.” EX1006. This distinction underscores that Petitioner’s interpretation of Phillips’ sheeting material lacks support in Phillips and instead conflates terms that Phillips clearly differentiates. This distinction highlights that nylon netting serves a different purpose and is not equivalent to the low friction, durable sheeting material central to Phillips’ slide and sliding vehicle embodiments. EX2026, ¶110; EX2027, ¶95.

As discussed *supra* in Section V.A., the term “mesh layer” must be construed consistent with its usage in the intrinsic evidence as being a layer of mesh material which is characterized by open spaces. A POSITA, reading the Phillips disclosure would understand that neither “sailcloth,” “nylon,” “Dacron,” nor any other material listed for sheeting material would constitute a mesh. Indeed, a POSITA would understand that Phillips uniform and repeated disclosure of sheeting, which is not a mesh layer and is not characterized by open spaces, and would be motivated away from a mesh layer. EX2026, ¶111; EX2027, ¶96.

Phillips fails to disclose a “mesh layer that forms a bottom surface configured to contact the slide surface” and cannot anticipate the challenged claims.

2. *Phillips does not teach the claimed coefficient of friction range*

Challenged claim 1 recites that “a coefficient of friction between the mesh layer of the ride vehicle and the non-wet lubricated slide surface is within a range of between about 0.03 to about 0.2.” EX1001, 12:21-23. As discussed below, Phillips fails to disclose or suggest this claim element. For this additional reason, Petitioner’s anticipation argument is unlikely to succeed.

Petitioner argues that “Phillips expressly advocates for ‘low friction’ between the slide and ride vehicle and specifies materials that achieve ‘low friction.’” Petition, 26. Petitioner further asserts, “[t]hese materials provide ‘low friction’ within the claimed range.” *Id.*

A claim is anticipated only if a disclosure teaches every element of the claim, either expressly or inherently. The case law is abundantly clear: to establish inherency, evidence must make clear that the missing descriptive matter is “necessarily present” in the thing described in the reference. Inherency, however, may not be established by probabilities or possibilities. MPEP §2112(IV). The Federal Circuit has held that, “[t]he mere fact that a certain thing may result from a given set of circumstances is not sufficient.” *In re Robertson*, 169 F.3d 743, 745 (Fed. Cir. 1999).

Petitioner concedes that “Phillips does not expressly define a numeric value for coefficient of friction to achieve its ‘low friction’ objective.” Petition, 61. Instead, Petitioner contends that “[t]he frictional coefficient between a vehicle having a woven nylon bottom and a slide coated in Teflon (or indeed coated in nylon or various other materials disclosed by Phillips) would *necessarily* have a frictional coefficient within the claimed range—the coefficient of friction is a *property* of the interaction between the two surface materials (e.g., the ride vehicle

bottom and the slide surface coating).” Petition, 27. Petitioner’s assertion is not supported by the requisite analysis to substantiate it and is deficient for several key reasons.

First, Petitioner has not provided any analysis to demonstrate that the CoF values presented in the various tables cited by Petitioner have any bearing on the claimed CoF range. Petitioner simply concludes that because the materials are the same that the disclosed CoFs anticipate the claimed range. This assumption is deficient in demonstrating that a claim limitation is present. Rather, a petitioner seeking post-grant review must, in the petition, “identify ‘with particularity’ the ‘evidence that supports the grounds for the challenge to each claim.’” *Intelligent Bio-Sys., Inc. v. Illumina Cambridge, Ltd.*, 821 F.3d 1359, 1369 (Fed. Cir. 2006) (quoting 35 U.S.C. §312(a)(3)); see also 35 U.S.C. §322(a)(3) (establishing requirements for a petition for post grant review).

Second, Petitioner’s assumption is simply wrong. Petitioner is wrong when it assumes the CoF values presented in the various tables cited by Petitioner bear on the claimed CoF range because the coefficient of friction is not merely a property of the interaction between the two surface materials. In this regard, Slick Slide once again notes that Dr. Wang identifies zero personal experience or graduate education related to measurement and analysis in the field of coefficient of friction. Dr. Spiegelberg, Slick Slide’s coefficient of friction expert, makes clear that Petitioner’s and Dr. Wang’s assumption is wrong. EX2026, ¶¶170-173. That is because coefficient of friction is a property that depends on more than just the chemistry of the two surfaces, and further depends upon the morphology of the surfaces and how the coefficient or friction testing is performed. *Id.* at ¶171. Placing this fact into glaring focus is that Dr. Wang’s own references acknowledge that coefficient of friction data cannot be relied upon to demonstrate data under specified conditions, such as those specified by the ‘854 patent. *Id.* at

¶¶77-78, 172; EX1027 (“Readers should be aware of this shortcoming and use the values only as very approximate guides”).

Third, not a single one of the references upon which Petitioner and Dr. Wang rely to demonstrate frictional coefficients between various materials comply with ASTM D1894, despite the fact that the ‘854 specifies that standard. EX2026, ¶¶69; EX1026; EX1027. The tables do not disclose and specify the specified normal force, specified area of materials, morphology, and test conditions are not specified. *Id.* For this reason, according to Slick Slide’s coefficient of friction expert, a POSITA would not rely upon the reported results. *Id.* This is confirmed by the fact that Dr. Wang has zero personal experience or graduate education related to measurement and analysis in the field of coefficient of friction, and his own references provide that the data cannot be relied upon to demonstrate data under specified conditions, such as those specified by the ‘854 patent. EX2026, ¶¶77-78, 172; EX1027.

As discussed *supra* in Section V.B., the term “coefficient of friction” must be construed consistent with its usage in the intrinsic evidence. In that regard, a POSITA would understand from the specification that “coefficient of friction” means the frictional force between two surfaces to the normal force pressing the surfaces together, as determined using the ASTM D1894 test method.

For the reasons set forth above, Petitioner has failed to demonstrate how the materials in Phillips provide a coefficient of friction within the claimed range of “between about 0.03 to about 0.2.” Petitioner’s argument amounts to, best, an unsupported “probability or possibility,” which, as the Federal Circuit has consistently held, does not meet the threshold for inherent disclosure. But this fails to show that Phillips expressly or inherently discloses the claim element

“a coefficient of friction between the mesh layer of the ride vehicle and the non-wet lubricated slide surface is within a range of between about 0.03 to about 0.2.”

Petitioner has failed to demonstrate that it is more likely than not to prevail on its position that Phillips anticipates Claims 1-4 and 6-7 because Phillips fails to teach, expressly or inherently, several claim features.

B. Ground 1A (Obviousness): Challenged Claims 1-4 and 6-7 Would Not Have Been Obvious to a POSITA in View of Phillips

Petitioner has failed to satisfy its burden of showing that claim 1 and dependent claims 2-4 and 6-7 are obvious in view of Phillips. In addition to arguments in *supra* Section XI.A., (i) Petitioner has failed to demonstrate motivation to implement a mesh layer with Phillips’ ride vehicle, including because Phillips teaches away from such a modification, (ii) Petitioner presents insufficient evidence of a reasonable expectation of success in making the alleged modification, and (iii) Petitioner fails to establish how Phillips, modified to include a mesh bottom, would render claim 1 obvious. In view of these deficiencies, Petitioner has failed to present a legally sound argument that the challenged claims are obvious in view of Phillips.

As explained above, *supra* Section XI.A., Petitioner failed to demonstrate all of the limitations of the challenged claims, including a “mesh layer that forms a bottom surface configured to contact the slide surface” and “a coefficient of friction between the mesh layer of the ride vehicle and the non-wet lubricated slide surface is within a range of between about 0.03 to about 0.2.” This is fatal to Petitioner’s obviousness grounds based on Phillips. For at least this reason, Petitioner has failed to demonstrate that it is more likely than not to prevail on its position that Claims 1-4 and 6-7 are obvious in view of Phillips.

In addition to establishing that the applied references or the knowledge generally available to one of ordinary skill in the art disclose or suggest all of the recited claim elements, an obviousness analysis under §103 is based on an underlying factual determination of “whether a [POSITA] would have been **motivated** to combine the prior art to achieve the claimed invention and whether there would have been a **reasonable expectation of success** in doing so.” *TQ Delta, LLC v. Cisco Sys.*, 942 F.3d 1352, 1357 (Fed. Cir. 2019) (emphasis). A finding of obviousness “cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.” *KSR*, 550 U.S. at 418 (2007). “This requirement is as much rooted in the Administrative Procedure Act, which ensures due process and non-arbitrary decision making, as it is in § 103.” *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006). Accordingly, “a conclusory assertion with no explanation is inadequate to support a finding that there would have been a motivation to combine” because “[t]his type of finding, without more, tracks the ex post reasoning *KSR* warned of and fails to identify any actual reason why a skilled artisan would have combined the elements in the manner claimed.” *In re Van Os*, 844 F.3d 1359, 1361–62 (Fed. Cir. 2017).

Here, Petitioner and its expert assert alleged motivations to modify the prior art that are based on conclusory statements without further explanation or analysis and, therefore, are unsupported by evidence. There is no basis for concluding that, more likely than not, a POSITA would have “predictably implemented the bottom of the vehicle with a mesh in accordance with Phillips’ suggestions to form the bottom surface of the ride vehicle from a ‘low friction high durable material,’” based on Phillips’ disclosure of materials such as “nylon” and “sailcloth.” Petition, 25. In short, just because Petitioner and its expert suggests this could be done does not

address all of the issues that would be involved in doing so, and is insufficient. Indeed, these issues, as explained below, are not even mentioned.

In particular, an obviousness argument starting with Phillips must explain **how** and **why** a POSITA would modify the Phillips ride vehicle in at least two respects: (1) modifying the bottom from a sheeting material to a mesh layer, and (2) attaching the mesh layer onto underside of the ride vehicle. Petitioner's alleged grounds under this section fail in both respects. A POSITA would not have been motivated to implement the bottom of the Phillips vehicle with a mesh as alleged by the Petitioner for the reasons that follow.

1. A POSITA would not have been motivated to implement the bottom of the Phillips' vehicle with a mesh

Petitioner argues that it would have been obvious to have “predictably implemented the bottom of the vehicle with a mesh in accordance with Phillips’ suggestions to form the bottom surface of the ride vehicle from a ‘low friction high durable material,’” based on Phillips’ disclosure of materials such as “nylon” and “sailcloth.” Petition, 25. Petitioner’s expert contends that, “Phillips description of sailcloth, a POSITA would have been prompted to utilize a woven material, such as a woven material made from “nylon.” The purported motivation is described in a single paragraph in Dr. Wang’s declaration, Paragraph 103.

As set forth above, a woven material is not inherently a mesh. Phillips uniformly and repeatedly teaches a “sheeting material,” which is the opposite of a mesh layer. Petitioner’s reasoning conflates Phillips’ disclosure of materials “sheeting material,” such as “nylon” and “sailcloth,” with mesh, despite these materials not being mesh. As these materials would not be considered a mesh by a POSITA, **why** would a POSITA be motivated to implement the bottom of the Phillips’ vehicle with a mesh? Petitioner does not say.

In fact, as explained above, Phillips explicitly distinguishes the sheeting material from “nylon netting,” which is a mesh. Nylon netting is notably absent from the list of materials identified as “sheeting material,” and Phillips does not use or suggest implementing nylon netting as the bottom of Phillips’ vehicle. There are clear and valid reasons—readily apparent to a POSITA—for why Phillips does not suggest to do this.

As such, Phillips’ disclosures, which do not mention mesh and teach away from it, would not motivate a POSITA to use a mesh. EX2026, ¶¶131-138; EX2027, ¶¶116-121.

2. *Petitioner failed to demonstrate how to implement the bottom of the Phillips’ vehicle with a mesh*

Petitioner has not explained how a POSITA would, according to known methods, adhere a mesh to the bottom of Phillips’ ride vehicle in a manner that would yield predictable results. As background, Dr. Wang makes this suggestion in a single paragraph in his declaration, Paragraph 103. Neither the Petition nor Dr. Wang explain how a POSITA would successfully incorporate a mesh into any of the ride vehicles of Phillips while maintaining the functionality of the ride vehicle.

To explain, while Phillips teaches away from use of a mesh layer as claimed in the ‘854 patent, if Phillips did suggest otherwise (it does not), Petitioner does not explain how a POSITA would successfully implement the purported combination, due to the impact of a material with a completely different morphology (sheeting and membrane versus mesh) on the interaction between the ride vehicle and the slide surface. EX2026, ¶¶141-142; EX2027, ¶¶124-125. Additionally, Petitioner does not explain how a POSITA would go about evaluating the large variety of mesh configurations, and optimizing. *Id.* A POSITA would also have to determine

whether such a modification would impact the durability of the ride vehicle, yet another issue unaddressed by Petitioner. *Id.*

Perhaps even more importantly, a POSITA would also have to evaluate the mechanism by which the different material is affixed to the bottom of the ride vehicle. *Id.* For example, Phillips discloses the use of adhesive for this purpose. However, use of an adhesive with the mesh layer required by claims of the '854 will dramatically and negatively impact the interaction between the ride vehicle and the slide surface. *Id.* This negative effect would intensify as the size of the mesh interstices or open spaces increases. *Id.* That is because adhesive could penetrate the interstices or open spaces in the structure of a mesh layer and interact with the slide surface. *Id.*

A POSITA would also have to consider that the '854 patent claims that the mesh layer be formed of monofilament fibers. *Id.* To properly adhere monofilament fibers with an adhesive would require processing of the bottom of the ride vehicle (and monofilament fibers) before an attempt to adhere those fibers, or at a minimum would require an evaluation of whether such processing is required. *Id.*

Petitioner and Dr. Wang do not mention any of these factors (e.g., morphology, durability, affixing to the bottom of the ride vehicle, Phillips disclosure of adhesive as the mechanism of affixing to the bottom of the ride vehicle). They also do not address them substantively. As such, the Petition does not demonstrate how to successfully implement the bottom of the Phillips' vehicle with a mesh. A POSITA would not have had a reasonable expectation of success in doing so.

As a result, Petitioner has failed to establish that implementing mesh for the bottom of Phillips' vehicle is "according to known methods" that would "yield predictable results." *KSR*,

550 U.S. at 398, 405, 127 S. Ct. 1727, 1734 (2007) (citing *United States v. Adams*, 383 U.S. 39, 50-52, 86 S. Ct. 708, 15 L. Ed. 2d 572, 174 Ct. Cl. 1293).

Further, and contrary to Petitioner’s assertions, implementing mesh for the bottom of Phillips’ ride vehicle would render the ride vehicle unsatisfactory for its intended purpose. It is well established that if a “proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification.” *In re Gordon*, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984)). This is particularly applicable here because adhesive use in combination with the mesh layer required by claims of the ‘854 will dramatically and negatively impact the interaction between the ride vehicle and the slide surface. EX2026, ¶¶141-142; EX2027, ¶¶124-125. That is because adhesive could penetrate the interstices or open spaces in the structure of a mesh layer and interact with the slide surface. *Id.*

Under *In re Gordon*, if a proposed modification causes a prior art apparatus “to be rendered inoperable for its intended purpose,” then the reference “teaches away from the [] proposed modification.” *Id.* at 902. Thus, “[i]f references taken in combination would produce a ‘seemingly inoperative device,’ we have held that such references teach away from the combination and thus cannot serve as predicates for a *prima facie* case of obviousness.” That is precisely the situation here, as explained above.

3. *Insufficient evidence of a reasonable expectation of success*

Petitioner’s purported evidence of a reasonable chance of success is its expert’s statement that there is “a POSITA would have had a reasonable expectation of success in implementing the ride vehicle with a nylon mesh bottom for all the reasons explained above, because implementing Phillips’ ride vehicle in accordance with Phillips’ suggestions would have

required, at most, trivial modification, and because ride vehicles with fabric surfaces for sliding on slides were well-known by the Critical Date.” EX1003, 64-65. Dr. Wang presents this is a single, conclusory sentence. It is not entitled to evidentiary weight. *TQ Delta, LLC v. Cisco Sys.*, 942 F.3d 1352, 1358 (Fed. Cir. 2019) (“Conclusory expert testimony does not qualify as substantial evidence”) (collecting cases).

Dr. Wang’s conclusory sentence is wrong. To explain, while Phillips teaches away from use of a mesh layer as claimed in the ‘854 patent, if Phillips did suggest otherwise (it does not), a POSITA would have to evaluate the impact of a material with a completely different morphology (sheeting and membrane versus mesh) on the interaction between the ride vehicle and the slide surface. EX2026, ¶¶141-142; EX2027, ¶¶124-125. Additionally, the large variety of mesh configurations would need to be optimized. *Id.* A POSITA would also have to evaluate whether such a modification would impact the durability of the ride vehicle. *Id.*

As explained above, a POSITA would also have to evaluate the mechanism by which the different material is affixed to the bottom of the ride vehicle. *Id.* The adhesive disclosed by Phillips will dramatically and negatively impact the interaction between the ride vehicle and the slide surface. *Id.* A POSITA would also have to consider that the ‘854 patent claims that the mesh layer be formed of monofilament fibers. To properly adhere monofilament fibers with an adhesive would require processing of the bottom of the ride vehicle (and monofilament fibers) before an attempt to adhere those fibers, or at a minimum would require an evaluation of whether such processing is required. *Id.*

Petitioner and Dr. Wang do not mention any of these matters. Petitioner and Dr. Wang do not present any analysis of these matters. Perhaps more importantly, Petitioner and Dr. Wang do not offer *any evidence* of a reasonable expectation of success in light of these matters.

For these additional reasons, Petitioner has failed to carry its burden to demonstrate that it is more likely than not that at least 1 of challenged claims under alleged Ground 1A is unpatentable.

4. *Insufficient evidence to show how Phillips with a mesh bottom would disclose claim 1 or render all limitations obvious*

To demonstrate obviousness, the Petition must articulate how any specific combination would operate or read on the asserted claims. *ActiveVideo Networks, Inc. v. Verizon Commc'ns, Inc.*, 694 F.3d 1312, 1327–28 (Fed. Cir. 2012). As explained above, Phillips would not be modified by a POSITA to add a mesh layer, as required by claim 1.

In addition, such a modification still would not operate or read on claim 1. That is because the limitation “wherein a coefficient of friction between the mesh layer of the ride vehicle and the non-wet lubricated slide surface is within a range of between about 0.03 to about 0.2” would not be met. The Petition fails to suggest or demonstrate otherwise. *See e.g.*, Petition at 50-51 (argument for limitations [1b] and [1c]).

The ‘854 patent specifies that this limitation is to be “determined using the American Society for Testing and Materials International (ASTM) Coefficient of Friction ASTM D1894 standard test method (July, 2023).” EX1001, 11:31-44. The ‘854 patent goes on to specify that “[f]or the ASTM D1894 test, the material specimen is attached to a sled of defined weight. This sled is pulled across another surface at a speed of 150 mm/minute.” *Id.*

None of the example tables purportedly showing frictional coefficients between various materials relied upon by Dr. Wang comply with ASTM D1894 (e.g., EX1026; EX1027). EX2026, ¶¶61-69. The ASTM Coefficient of Friction ASTM D1894 standard test method specified in the ‘854 patent requires demonstration of coefficient of friction under precise

conditions. *Id.* at ¶¶65. And, those conditions must be disclosed and specified. *Id.* For example, there is a standard normal force that must be disclosed and utilized, there is a standard specified area of materials that must be disclosed and utilized, and the morphology of the materials must be disclosed and utilized. *Id.*

None of the reported results can be relied upon and would not be relied upon by a POSITA, because they do not comply with the ASTM standards set forth in the ‘854 patent. *Id.* at ¶¶65-66. Dr. Wang’s own references acknowledge that coefficient of friction data cannot be relied upon to demonstrate data under specified conditions, such as those specified by the ‘854 patent. *Id.* at ¶¶77-78, 172; EX1027 (“Readers should be aware of this shortcoming and use the values only as very approximate guides”).

For at least this additional reason, Petitioner has failed to carry its burden to demonstrate that it is more likely than not that at least 1 of challenged claims under alleged Ground 1A is unpatentable, which applies equally to dependent claims 2-4 and 6-7.

C. Ground 1B: Challenged Claims 1-4, 6-7, 14-17 and 22-28 Would Not Have Been Obvious to a POSITA in View of Phillips and WN0400

Petitioner has failed to satisfy its burden of showing that claim 1 and dependent claims 2-4, 6-7, and 14-17, independent claim 22 and dependent claims 23-24, and 26-28, and independent claim 25 are obvious in view of Phillips and WN0400.

In like manner as the four independent reasons explained above that Phillips would not be modified to incorporate a mesh layer, challenged claims 1-4, 6-7, 14-17 and 22-28 would not have been obvious to a POSITA in view of Phillips and the purported mesh layer of WN0400. (See Sections XI.A-B). In addition, Petitioner has failed to demonstrate that a POSITA would have had a reasonable expectation of success of utilizing WN0400, Monofilament Nylon, with

the bottom of Phillips' ride vehicle. In view of these deficiencies, Petitioner has failed to present a legally sound argument that the challenged claims are obvious in view of Phillips and WN0400.

1. Summary of the reasons why a POSITA would not modify Phillips to incorporate a mesh layer purportedly disclosed in WN0400

A POSITA would not have been motivated to implement the bottom of Phillips' ride vehicle with a mesh. As explained above (Sections XI.A-B), Phillips uniformly and repeatedly teaches a "sheeting material," which is the opposite of a mesh layer. In fact, as explained above, Phillips explicitly distinguishes the sheeting material from "nylon netting," which is a mesh. Nylon netting, such as relied upon by Petitioner through WN0400, is notably absent from the list of materials identified as "sheeting material," and Phillips does not use or suggest implementing nylon netting as the bottom of Phillips' vehicle. There are clear and valid reasons—readily apparent to a POSITA—for why Phillips does not suggest to do this. As such, Phillips' disclosures, which do not mention mesh and teach away from it, would not motivate a POSITA to use a mesh. *EX2026*, ¶¶131-138; *EX2027*, ¶¶116-121.

Petitioner failed to demonstrate how to implement the bottom of Phillips' ride vehicle with a mesh. As also explained above (Sections XI.A-B), Petitioner has not explained how a POSITA would, according to known methods, adhere a mesh to the bottom of Phillips' ride vehicle in a manner that would yield predictable results. Petitioner does not explain how a POSITA would *successfully* implement the purported combination, due to the impact of a material with a completely different morphology (sheeting and membrane versus mesh) on the interaction between the ride vehicle and the slide surface. *EX2026*, ¶¶141-142; *EX2027*, ¶¶124-125. Additionally, Petitioner does not explain how a POSITA would go about evaluating the

large variety of mesh configurations, or determine whether such a modification would impact the durability of the ride vehicle, yet another issue unaddressed by Petitioner. Id. A POSITA would also have to evaluate the mechanism by which the different material is affixed to the bottom of the ride vehicle, such as the adhesive disclosed in Phillips, but that would dramatically and negatively impact the interaction between the ride vehicle and the slide surface. Id. Petitioner and Dr. Wang do not mention any of these factors (e.g., morphology, durability, affixing to the bottom of the ride vehicle, Phillips disclosure of adhesive as the mechanism of affixing to the bottom of the ride vehicle). They also do not address them substantively.

Insufficient evidence of a reasonable expectation of success. As also explained above (Sections XI.A-B), while Phillips teaches away from use of a mesh layer as claimed in the '854 patent, if Phillips did suggest otherwise (*it does not*), a POSITA would have to evaluate the impact of a material with a completely different morphology (sheeting and membrane versus mesh) on the interaction between the ride vehicle and the slide surface. EX2026, ¶¶141-142; EX2027, ¶¶124-125. Additionally, the large variety of mesh configurations would need to be optimized. Id. A POSITA would also have to evaluate whether such a modification would impact the durability of the ride vehicle. Id. A POSITA would also have to evaluate the mechanism by which the different material is affixed to the bottom of the ride vehicle. Id.

Petitioner and Dr. Wang do not *address* any of these matters.

Insufficient evidence to show how Phillips with a mesh bottom would disclose claim 1 or render all limitations obvious. As also explained above (Sections XI.A-B), none of the example tables purportedly showing frictional coefficients between various materials relied upon by Dr. Wang comply with ASTM D1894 (e.g., EX1026; EX1027), despite the fact that is specified in the '854 patent. EX2026, ¶¶61-69. None of the reported results can be relied upon and would not

be relied upon by a POSITA, because they do not comply with the ASTM standards set forth in the '854 patent. Id. at ¶¶65-66. Dr. Wang's own references acknowledge that coefficient of friction data cannot be relied upon to demonstrate data under specified conditions, such as those specified by the '854 patent. Id. at ¶¶77-78, 172; EX1027 (*"Readers should be aware of this shortcoming and use the values only as very approximate guides"*).

2. *Insufficient evidence of a reasonable expectation of success adhering WN0400, Monofilament Nylon, to the bottom of Phillips' ride vehicle*

Petitioner has failed to demonstrate that a POSITA would have had a reasonable expectation of success of adhering WN0400, Monofilament Nylon, to the bottom of Phillips' ride vehicle. To properly adhere monofilament fibers with an adhesive would require processing of the bottom of the ride vehicle (and monofilament fibers) before an attempt to adhere those fibers, or at a minimum would require an evaluation of whether such processing is required. *Id.*

It is notable that the references relied upon by Petitioner and Dr. Wang decisively demonstrate that there would be no reasonable expectation of success. EX1009, relied upon by Petitioner and Dr. Wang, states "The nature of the contact surfaces during the sliding action affects the frictional resistance considerable. Deformation of leather surface over the contact point has significant effect on kinetic frictional resistance. Fabric-to-metal friction is less sensitive to the morphology and type of fabric. Variation of mesh size in monofilament fabrics affects the frictional resistance of these fabrics." EX2026, ¶198; EX1009. In addition, and as acknowledged by Dr. Wang in connection with his reliance upon EX1010, "The differences in frictional forces acting between fabrics woven from filament yarns are dependent on the morphology of the fabrics and the rubbing direction." EX2026, ¶202; EX1010, 1.

In addition, Dr. Spiegelberg demonstrates through an analysis of EX1009, which provides data for polymeric fabrics, that the fabrics do not meet the coefficient of friction claim limitation. As a result, a POSITA would not be inclined to use a nylon fabric, or either Dacron or sailcloth fabric since they do not meet the claims of the '854 patent. EX2026, ¶¶198-199. Instead, a POSITA would use a film or sheet, as uniformly taught by Phillips. *Id.* at ¶198. A POSITA, understanding this and the Phillips disclosure, would not seek to implement WN0400 in the Phillips ride vehicle.

In addition, a POSITA would not have understood that a monofilament mesh fabric may also provide an advantage in sliding over surfaces. EX2026, ¶203. As explained above, Kothari (EX1009) states that variation in mesh size in monofilament fabrics affects the frictional resistance of these fabrics. *Id.* The results in Figure 6 show a non-monotonic trend in coefficient of friction vs mesh coarseness of fabric-against-aluminum based on the mesh description, so a POSITA would not have guidance about what is the appropriate mesh coarseness to achieve a low coefficient of friction. *Id.* A POSITA would therefore not have been motivated to use the WN0400 which is formed from monofilament threads to achieve these advantages of a smoother thread surface leading to a lower frictional coefficient between the fabric and surfaces that the fabric slides over. *Id.*

Petitioner also fails to address the fact that a POSITA would have recognized that WN0400 is not a low friction option for forming the bottom surface of Phillips ride vehicle based on Phillips' uniform and repeated description of appropriate materials and characteristics, i.e., sheeting. EX2026, ¶204; EX1004, 4:43-46, 5:12-16, 7:9-27, 7:53-55. A POSITA would have additionally been aware of general characteristics of monofilament-based fabrics and the

relationship of aperture sizes to frictional effects and would have understood that WN0400 was not an appropriate choice in view of this knowledge. *Id.*

Even if prompted to rely upon WN0400, a POSITA would not have known to make the combination. Ex 2026, ¶208. In order to adhere a woven fabric, monofilament, or mesh to the bottom of a ride vehicle, processing of the bottom of the ride vehicle would be required. *Id.* To explain, while the sheeting disclosed in Phillips may adhere to the bottom of a ride vehicle, a woven fabric, monofilament, and mesh would have reduced material to affix to the bottom of the ride vehicle. In order to do so, the bottom of the ride vehicle would need to be etched or scored, or put through a carefully designed adhesion process, to ensure proper affixing without compromising the low friction surface, assuming that would be even possible. *Id.*

This is notable, albeit not mentioned or considered by Petitioner, because it is more difficult to soundly adhere mesh fabrics with open spaces as in the '854 patent than it is a sheeting material which has a much greater surface area for bonding due to the lack of the interstices or voids in the mesh structure. *Id.* Bonding the mesh requires that the adhesive penetrate through the mesh, thereby surrounding the filaments or yarns to ensure a strong bond. *Id.* Surely, in the case of the modified Phillips ride vehicle, the WN0400 nylon mesh must be firmly attached to the ride vehicle so as not to separate during use, but at the same time the adhesive penetrate through the mesh. *Id.*

For at least these reasons, Petitioner has failed to carry its burden to demonstrate that it is more likely than not that at least 1 of challenged claims under alleged Ground 1B is unpatentable.

3. *Petitioner fails to demonstrate how Phillips and WN0400 teach the claimed coefficient of friction range*

Petitioner has failed to demonstrate that the alleged combination provides a coefficient of friction within the claimed range of “between about 0.03 to about 0.2.” Phillips and WN0400 would not achieve the claimed CoF range in view of the adhesive use, which would penetrate through the mesh. Furthermore, for the same reasons described above, none of the example tables purportedly showing frictional coefficients between various materials relied upon by Dr. Wang comply with ASTM D1894 (e.g., EX1026; EX1027). EX2026, ¶¶61-69. Therefore, the purported combination of Phillips and WN0400 does not teach the claimed coefficient of friction range.

For at least this additional reason, Petitioner has not demonstrated that claim 1 and dependent claims 2-4, 6-7, 14-17, and 27-28 are more likely than not unpatentable as challenged claims under alleged Ground 1B.

D. *Ground 2A: Challenged Claims 1-7 Would Not Have Been Obvious to a POSITA in View of Phillips and Fallgatter*

Petitioner has failed to satisfy its burden of showing that claim 1 and dependent claims 2-7 are obvious in view of Phillips and Fallgatter because (i) Fallgatter does not teach or suggest a mesh, (ii) Petitioner fails to identify with sufficient particularity, the particular features of each reference in the modified Phillips recreational system of this asserted ground, and (iii) Petitioner fails to demonstrate that the alleged combination provides a coefficient of friction within the claimed range of “between about 0.03 to about 0.2.” Even if Fallgatter taught a mesh (it does not), Petitioner’s arguments fail in like manner as the four independent reasons explained above that Phillips would not be modified to incorporate a mesh layer, and in like manner that the challenged claims 1-4, 6-7, 14-17 and 22-28 would not have been obvious to a POSITA in view of

Phillips and the purported mesh layer of WN0400. (See Sections XI.A-B). In view of these deficiencies, Petitioner has failed to present a legally sound argument that the challenged claims are obvious in view of Phillips and Fallgatter.

1. Fallgatter does not teach the claimed “mesh layer”

As set forth above, *supra* Section XI.A, Phillips does not teach or suggest a mesh layer for the bottom of the Phillips ride vehicle. Similarly, Fallgatter fails to disclose or suggest “a mesh layer that forms a bottom surface [of the ride vehicle that is] configured to contact the slide surface,” as recited in claim 1. EX1001, 12:17-20. Consequently, Fallgatter does not address or remedy this deficiency in Phillips.

Fallgatter does not disclose a mesh layer. EX2026, ¶¶229-233; EX2027, ¶¶179-183. Dr. Wang suggests otherwise, suggesting that “Fallgatter describes use of a ‘woven textile’ such as “nylon, polyester and polyethylene” thereby providing a mesh layer.” Dr. Wang is not correct. EX2026, ¶¶230-231; EX2027, ¶¶180-181. Even if a POSITA would have been prompted to utilize a woven material, such as a woven material made from “nylon,” this does not suggest that a POSITA would assume that the nylon is to be a mesh, as explained above. *Id.* In addition, a POSITA would assume that the material needs to be coated with a low friction material. Indeed, Fallgatter also demonstrates that when an inventor is trying to specify a mesh or fabric, they call it as such, rather than requiring a POSITA to interpret what is meant by a “sheet.” EX2026, ¶¶232; EX2027, ¶¶182; EX1005, [16]). As such, Fallgatter does not disclose that the low friction surface is a nylon mesh layer, but rather a low coefficient of friction material on top of a nylon textile or alternatively, a nonwoven textile. *Id.* For at least this reason, Petitioner has failed to carry its burden to demonstrate that it is more likely than not at least 1 of challenged claims under alleged Ground 2A is unpatentable.

2. *Insufficient evidence to show how Phillips with a mesh bottom would disclose claim 1 or render all limitations obvious*

Petitioner does not identify with sufficient particularity, the particular features of each reference in the modified device of this asserted ground. *See ActiveVideo*, 694 F.3d at 1327. (discussing how an accused infringer, via its expert, “failed to explain how specific references could be combined, which combination(s) of elements in specific references would yield a predictable result, or how any specific combination would operate or read on the asserted claims”).

In formulating the combination under Ground 2A (*see* Petition, Section VI.C.2), Petitioner alleges that the Phillips-Fallgatter resulting system includes:

a “low friction” coating (e.g., “Teflon”/PTFE) and a fabric bottom vehicle, based on Phillips’ teachings, to achieve a numerical coefficient of friction suggested by Fallgatter. In Phillips-Fallgatter, the slide would have been implemented using materials selected to achieve a friction coefficient between the coated slide and the bottom of the ride vehicle of less than 0.21, as Fallgatter teaches is an appropriate frictional coefficient to strive for in the relationship between a recreational slide and slide vehicle. Petition, 59.

Petitioner’s statement above fails to clarify how Phillips is being modified with Fallgatter, which combination(s) of elements from Phillips and Fallgatter would yield a predictable result, or how any specific combination would operate or correspond to the asserted claims. Petitioner’s proposed Phillips-Fallgatter “resulting system” does not explicitly specify which materials from which reference are being relied upon for which surfaces. Petitioner’s vague assertions leave open the possibility of numerous combinations for the Phillips-Fallgatter system, as the slide and ride vehicle could incorporate materials from either Phillips or Fallgatter, with or without coatings, etc. The various potential configurations depending on the materials selected and the application of coatings to the respective surfaces are extensive and largely undefined by Petitioner.

A speculative interpretation of Petitioner's alleged "resultant system" could be the Phillips slide including the Phillips sheeting material, coated with Fallgatter's low-friction coating, and the Phillips ride vehicle includes the Phillips sheeting material ("the slide surface includes a "low friction" coating (e.g., "Teflon"/PTFE) and a fabric bottom vehicle, based on Phillips' teachings, to achieve a numerical coefficient of friction suggested by Fallgatter"). Petition, 59. However, this configuration results in a coefficient of friction outside of the claimed range, being "a range of between about 0.03 to about 0.2." EX2026, ¶238.

Overlooked by Petitioner is that Fallgatter uses a textile that has a low friction coating (silicone) on top of the nylon, PET or PE woven textile to achieve a $COF < 0.25$. EX2026, ¶226. In paragraph 227, Dr. Wang opines that "there is nothing in Fallgatter requiring that the coefficient of friction between the coated surface and an uncoated textile bottom must be higher than 0.25." *Id.* Rather than requiring this situation, Fallgatter is acknowledging that a friction-reducing coating is required to be deposited on the textile in order to achieve a $COF < 0.25$, and that the textile on its own will not achieve the $COF < 0.25$. *Id.* Therefore, the uncoated textile in Fallgatter's examples must have a $COF > 0.25$, otherwise the friction-reducing coating would be unnecessary. *Id.* Fallgatter hence teaches that the textile material on its own will not achieve the necessary COF, and that friction-reducing coating needs to be applied. *Id.*

To conclude, Petitioner does not identify with sufficient particularity, the particular features of each reference in the modified "resulting system" of this asserted ground. Petitioner's description of the "resulting system" is without any explanation for how the elements of the two references are to be combined, and leaves available many numerous configurations—Patent Owner can only guess as to the resultant structural and functional features of the "resulting system" allegedly taught by Petitioner's proposed combination of Phillips and Fallgatter, as set

forth above. The Petition fails to properly notify Patent Owner of what the Petitioner argues renders the claims obvious over Phillips in view of Fallgatter. *See* 35 U.S.C. §322(a)(3) (PGR petition must identify challenges to claims “with particularity”); 37 CFR §42.402(b)(4) (requiring “precise” statement on how the claim is unpatentable).

For at least this additional reason, Petitioner has failed to carry its burden to demonstrate that it is more likely than not that at least 1 of challenged claims under alleged Ground 2A is unpatentable, which applies equally to dependent claims 2-7.

E. Ground 2B: Challenged Claims 1-7, 14-17 and 22-28 Would Not Have Been Obvious to a POSITA in View of Phillips, Fallgatter and WN0400

Petitioner has failed to satisfy its burden of showing that claim 1 and dependent claims 2-7, 14-17, independent claim 22 and dependent claims 23-24 and 26-28, and independent claim 25 are obvious in view of Phillips, Fallgatter and WN0400 as explained in Sections XI.A-D. In summary, a POSITA would not be motivated to combine Phillips and WN0400 (XI.C), and a POSITA would not be motivated to combine Phillips and Fallgatter (XI.D.). In addition, for the reasons described above, a POSITA would not combine a mesh layer (as suggested by Dr. Wang in connection with WN0400 and Fallgatter) with Phillips (Section XI.B.). The purported combination of Phillips-Fallgatter-WN0400 is contrary to both of these, and therefore a POSITA would not be motivated to make such a combination.

F. Ground 3A: Challenged Claims 8-13 are Enabled

Petitioner fails to establish that claims 8-13 are not enabled according to 35 U.S.C. §112(a). There are many factors to be considered when determining whether there is sufficient evidence to support a determination that a disclosure does not satisfy the enablement requirement and whether any necessary experimentation is “undue.” These factors include, but are not limited

to: (A) the breadth of the claims; (B) the nature of the invention; (C) the state of the prior art; (D) the level of one of ordinary skill; (E) the level of predictability in the art; (F) the amount of direction provided by the inventor; (G) the existence of working examples; and (H) the quantity of experimentation needed to make or use the invention based on the content of the disclosure. *In re Wands*, 858 F.2d 731, 737 (Fed. Cir. 1988). Petitioner has not addressed any of these issues.

Petitioner argues that the claimed range of frictional coefficients from “about 0.03 to 0.2” is not enabled by the ‘854 patent in systems that include a “dry lubricant material includ[ing] a resin, a lubricant, a thermal conductor, and a hardener.” Petition, 87. Specifically, Petitioner argues that “a coefficient of friction between about 0.03 to 0.06, is not enabled by the ‘854 patent in the context of claims 8-13.” Petition, 87. Petitioner’s arguments lack merit for the following reasons.

As an initial matter, A POSITA would understand that coefficient of friction values between 0.03 and 0.06 are well-known and achievable. EX2026, ¶251 (“Such a claimed range can and is achievable by a POSITA, including with respect to air pockets formed between the interacting materials.”); EX2027, ¶¶200-201. A POSITA would understand frictional coefficient values on the lowest end of the claimed range to be enabled by the specification of the ‘854 patent. EX2026, ¶252. A POSITA would understand that these low frictional CoF values are achievable with a composition combining a resin, thermal conductor, hardener, and lubricant material, as the lubricant coating reduces the coefficient of friction. EX2026, ¶¶253-254.

The ‘854 patent describes that “the dry lubricant material is an anti-friction or friction reducing material in the form of a dry lubricant coating 34 on the surface 18 of the slide 12.” EX1001, 7:10-13. The ‘854 patent describes commercial epoxies containing silicone or PTFE for coating the slide. *Id.*, 7:21-35. A POSITA would understand these commercial epoxies suggested

by the '854 patent for use in the slide coating would provide the lowest claimed range of frictional coefficients. EX2026, ¶255.

The '854 patent states “[t]he lubricity of the dry coating 34 and the resulting coefficient of friction between the slide surface 18 and the ride vehicle 14 is primarily influenced by the lubricant present in the dry lubricant material.” EX1001, 7:36-40. It would be a simple and routine matter for a POSITA to determine how much additional lubricant should be added to obtain a mixture that would have a coefficient of friction with a mesh ride vehicle between 0.03-0.06. EX2026, ¶256.

The '854 patent's describes that the inclusion of a thermal conductor (e.g., copper) in the dry lubricant coating may “improve[] heat absorption and heat transfer away from the sliding surface 18 or the slide” resulting in an “improved (i.e., reduced) and consistent coefficient of friction between the sliding surface 18 and the ride vehicle 14.” EX1001, 7:65-8:2. A POSITA would have recognized that heat effects from the short time that the ride vehicle slides over the slide surface are likely to be an important factor and would explain how to achieve a frictional coefficient between 0.03 and 0.06. EX2026, ¶¶257-258.

A POSITA would not only have been enabled to practice the invention within the low end of the claimed range but would understand that it was indeed possible to practice the invention of claims 8-13 which require the dry lubricant to include additional and high-friction materials such as epoxy. EX2026, ¶259; EX1028, 1.

The '854 patent provides a detailed roadmap for how to achieve the full scope of the range including the low 0.03-0.06 coefficient of friction in a system in which the slide is coated in a dry lubricant coating that “includes a resin, a lubricant, a thermal conductor, and a hardener,” as claim 8 requires. EX2026, ¶260. These instructions fully enable details that would

allow a POSITA to prepare a “dry lubricant material includ[ing] a resin, a lubricant, a thermal conductor, and a hardener” that achieves a coefficient of friction between the coating and a ride vehicle in “a range of between about 0.03 to about 0.2” as claim 8 requires. *Id.*

Petitioner does not independently challenge enablement of claims 9-13. Thus, because a POSITA would have been enabled to practice the full scope of the claimed range in claim 8, and as claims 9-13 depend from claim 8, a POSITA would be enabled to practice the claimed scope of these claims as well. Accordingly, Ground 3A should be denied.

G. Ground 3B: Challenged Claims 5 and 26 are not Indefinite

“Definiteness is a matter of claim construction.” *ClearOne Inc. v. Shure Acquisition Holdings, Inc.*, 35 F.4th 1345, 1348 (Fed. Cir. 2022). Claim terms are given their “ordinary and customary meaning,” absent compelling reason to deviate. *See Weber, Inc. v. Provisur Techs., Inc.*, 92 F.4th 1059, 1070 (Fed. Cir. 2024) (citing *Phillips*, 415 F.3d at 1312-13).

The test for indefiniteness is whether the claims, “viewed in light of the specification and prosecution history, inform those skilled in the art about the scope of the invention with reasonable certainty.” *Nautilus, Inc. v. Biosig Instr., Inc.*, 572 U.S. 898, 910 (2014). This standard “recogniz[es] that absolute precision is unattainable.” *Id.* A claim is not indefinite merely because it may be “susceptible to differing interpretations.” *Nevro Corp. v. Boston Sci. Corp.*, 955 F.3d 35, 41 (Fed. Cir. 2020); *see also ClearOne*, 35 F.4th at 1351.

1. Claim 5 is not indefinite

Contrary to the Petition, a POSITA would understand the scope of claim 5 with reasonable certainty. *See, e.g.*, EX2026, ¶¶263-271; EX2027, ¶¶212-220.

Claim 5 recites “wherein the dry lubricant coating includes a thickness that is within a range of between about 1 micron to about 5 micron.” EX1001, 12:31-33. Petitioner argues that

claim 5 is indefinite because the recitation that the coating “*includes* a thickness” within a particular range has “multiple possible meanings.” Petition, 89-90.

Petitioner’s arguments are unfounded and not reasonable, and a POSITA would understand Petitioner’s purported “multiple possible meanings” of claim 5 as not appropriate. EX2026, ¶¶266-269; EX2027, ¶¶215-218. Indeed, Petitioner’s argument ignores the claim language itself, i.e., “the dry lubricant coating includes a thickness that is within a range of between about 1 micron to about 5 micron.” *Id.* The claim language does not suggest in any manner that a coating of 1-5 microns or greater would fall within its scope, and this ignores the fact that the claim language requires that the thickness is “within” the range. *Id.*

Moreover, the ‘854 patent need not provide additional details that make clear the intended meaning of “wherein the dry lubricant coating includes a thickness that is within a range of between about 1 micron to about 5 micron” as claim 5 recites, because a POSITA has that understanding. EX2026, ¶270; EX2027, ¶219. Still, the ‘854 patent describes that “the dry lubricant coating 34 includes a thickness T which may be substantially constant over at least the sliding surface 38 of the base wall 14” and that “[t]he thickness T of the dry lubricant coating 34 may be within a range of between about 1 micron to about 5 micron...” EX1001, 6:22-26, 6:46-47. This description does not simply mirror the claim language, and does provide guidance as to the singular reasonable interpretation of the claim. EX2026, ¶270; EX2027, ¶219.

It is settled law that a claim is not indefinite merely because it may be “susceptible to differing interpretations.” *Nevro Corp.*, 955 F.3d at 41; see also *ClearOne*, 35 F.4th at 1351. A POSITA would easily understand the scope of claim 5, and there is only one reasonable meaning. EX2026, 264.

2. Claim 26 is not indefinite

Contrary to the Petition, a POSITA would understand the scope of claim 26 with reasonable certainty. *See* EX2026, ¶¶272-280; EX2027, ¶¶221-229.

Claim 26 recites “[t]he ride vehicle of claim 22, wherein the central core is surrounded by a fabric liner that is positioned between the central core and the fabric layer and the woven mesh layer.” EX1001, 14:24-26.

Petitioner argues that claim 26 is indefinite because “[t]here is no antecedent basis for ‘the fabric layer’ and, moreover, the meaning and scope of the claim is unclear.” Petition, 90. Petitioner offers the several alleged alternative interpretations of the claim language to “illustrate the point.” Petition, 90. However, a claim is not indefinite merely because it may be “susceptible to differing interpretations.” *Nevro Corp.*, 955 F.3d at 41; *see also ClearOne*, 35 F.4th at 1351. Moreover, while this may be the first mention of “the fabric layer” in the claims, this claim element is described in the specification and shown in the figures. *See* EX2026, ¶¶273-274; EX2027, ¶¶222-223. The ’854 specification provides details or guidance that would allow a POSITA to confidently discern the meaning of the claim language. EX2026, ¶272; EX2027, ¶221. A POSITA would understand the claim language clearly describes that the fabric liner is positioned between the central core, and the fabric liner, and the woven mesh layer. EX2026, ¶275; EX2027, ¶224.

A POSITA would understand Petitioner’s alleged alternative interpretations of claim 26 incorrect and unfounded. EX2026, ¶277 (the first potential meaning of the claim “ignores key language of the claim” and “also ignores the disclosures of Figures 3 and 4, and the description in the ’854 patent of them”); EX2026, ¶278 (the second potential meaning “ignores the claim language, including that the ‘fabric liner is positioned between the central core.’”); EX2026,

¶279 (the third potential meaning “ignores key language of the claim, which does not discuss a “belt that surrounds a perimeter outer edge of the core” and does not discuss a span between the fabric layer and the woven mesh layer at the edges of the ride vehicle.”). Petitioner’s arguments also ignore what is shown in Figs. 3 and 4 of the ‘854 patent.

Therefore, Petitioner’s argument that claims 5 and 26 are unpatentable under §112 lacks merit. Accordingly, Ground 3B should be denied.

XII. CONCLUSION

For the foregoing reasons, Petitioner is unlikely to prevail on any ground with respect to any of the challenged claims. Patent Owner respectfully requests that the Board exercise its discretion and deny institution.

Respectfully submitted,

Dated: January 9, 2025

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CERTIFICATION UNDER 37 CFR § 42.24(d)

Under the provisions of 37 CFR § 42.24(d), the undersigned hereby certifies that the word count for the foregoing Patent Owner's Preliminary Response totals 18,676 which is less than the 18,700 allowed under 37 CFR § 42.24(b)(1). This word count does not include the items excluded by 37 C.F.R § 42.24 as not counting towards the word limit.

Respectfully submitted,

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CERTIFICATE OF SERVICE

Pursuant to 37 C.F.R. § 42.6(e)(4), the undersigned certifies that on January 9, 2025, a complete and entire copy of this Patent Owner's Preliminary Response and its supporting exhibits were provided via email, to the Petitioner by serving the email correspondence addresses of record as follows:

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