

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 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/m2 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-5B9zLoVKgtJlSp9uUPDfGx7ckTQs_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
EX2028	Email authorizing patent owner's motion to submit supplemental information
EX2029	Deposition Transcript of Dr. Youjiang Wang, dated August 20, 2025
EX2030	Supplemental Expert Declaration of Dr. Stephen Spiegelberg
EX2031	Supplemental Expert Declaration of Dr. Jon Rust
EX2032	A Complete Guide to Mesh/Netting Fabric (retrieved from https://www.apexmills.com/media_post/a-complete-guide-to-mesh-netting-fabric/)
EX2033	Declaration of Mr. Gary Schmit
EX2034	Z. Chen, R. Feng & H. Wang, <i>Modeling Friction and Air Effects between Cloth and Deformable Bodies</i> (2013) (retrieved from http://www.zhilichen.com/research/air_friction/2013-MFA.pdf).
EX2035	K.A. Beyene & V.R. Sampath, <i>Modeling Surface Roughness for Prediction and Evaluation of Bed-Sheet Woven Fabric</i> , Int’l Conf. Proc. CTA 2019, Ethiopia.
EX2036	S. Islam, S. Chowdhury & S. Akter, <i>The Experiential Analysis of Woven Fabric for Reproduction</i> , 4 J. Textile Sci. & Tech. 18 (2018).

EX2037	R.K. Upadhyay & A. Kumar, <i>A Novel Approach to Minimize Dry Sliding Friction and Wear Behavior of Epoxy by Infusing Fullerene C70 and Multiwalled Carbon Nanotubes</i> , 120 Tribology Int'l 455 (2018).
EX2038	J. Tian, X. Qi, C. Li & G. Xian, <i>Friction Behaviors and Wear Mechanisms of Multi-Filler Reinforced Epoxy Composites Under Dry and Wet Conditions: Effects of Loads, Sliding Speeds, Temperatures, Water Lubrication</i> , 179 Tribology Int'l 108148 (2023).
EX2039	Slick Slide Coefficient of Friction Test Data
EX2040	Slick Slide Ride Vehicle Mesh Layer Open Area Data
EX2041	Slick Slide Ride Vehicle Mesh Layer Warp and Weft Data
EX2042	Indoor Action Park Coming to Polaris (retrieved from https://columbusunderground.com/indoor-action-park-coming-to-polaris-ak1/)
EX2043	Slick Slide Webpage (retrieved from https://slickslide.com/indoor-slides/)
EX2044	Slick City Action Park About Us Webpage (retrieved from https://slickcity.com/about/)
EX2045	Industry Praise
EX2046	Coextensiveness Claim Chart

I. INTRODUCTION

Patent owner Slick Slide LLC (“Patent Owner” or “Slick Slide”) submits this Patent Owner Response to the Petition for Post Grant Review (“PGR”) filed by UATP IP, LLC (“Petitioner” or “Urban Air”). Petitioner has challenged claims 1-17 and 22-28 of U.S. Patent No. 11,998,854 (“the ‘854 patent”).

II. SUMMARY OF ARGUMENT

As explained in detail herein, Petitioner’s grounds do not demonstrate that the challenged claims are unpatentable, for several independent reasons. In fact, Petitioner’s expert’s admissions on cross-examination demonstrate that Petitioner’s grounds fail and that the cited references do not anticipate or render obvious any of the challenged claims.

First, Phillips does not anticipate or render obvious any of the claims. Phillips does not teach the claimed “mesh layer.” As admitted by Petitioner’s expert, Phillips also does not teach the claimed coefficient of friction (“CoF”) range, being “a range of between about 0.03 to about 0.2.”

Phillips discloses only sheeting, which is the opposite of the claimed mesh layer. A POSITA would not only recognize that Phillips teaches only sheeting, but also understand that it is the sheeting, not a mesh layer, that provides the durable, low-friction surface of the bottom of the Phillips ride vehicle. As admitted by Petitioner’s expert, a POSITA would have no motivation to incur the added

expense and increased manufacturing challenges of modifying Phillips' ride vehicle to incorporate a mesh layer, since doing so would only result in a less durable surface with a higher CoF.

Second, the combination of Phillips and WN0400 does not render any of the claims obvious. As a preliminary matter, a POSITA would not be motivated to incorporate the purported mesh layer of WN0400 as the bottom surface of Phillips' ride vehicle. Once again, Phillips discloses that sheeting, not a mesh layer, results in a durable material with a low CoF. Further, Petitioner offers no data regarding the CoF of WN0400. The limited coefficient of friction (CoF) data for mesh presented by Petitioner is substantially worse than the values Petitioner attributes to Phillips' sheeting material. This result is unsurprising: by its nature, mesh exhibits greater surface waviness and pronounced fiber peaks, which increase asperity contact and, in turn, generate a higher drag force and overall friction.

Petitioner's own expert admits that a POSITA would not consider WN0400 with Phillips, as doing so would yield a significantly higher CoF and therefore markedly worse sliding performance. Moreover, a POSITA would lack motivation to incorporate the mesh layer of WN0400 into Phillips, since such a modification would necessitate extensive additional manufacturing steps, causing adhesive to permeate through the mesh and eliminating any potential benefit from the proposed combination. These facts are left entirely unaddressed by the Petition and

Petitioner's expert. In short, WN0400 does not provide any benefit to Phillips, results in an exponentially worse CoF, and is detrimental to Phillips if combined as proposed by Petitioner.

Even if a POSITA was motivated to combine Phillips and WN0400 (only to achieve exponentially worse results), the combination of Phillips and WN0400 does not teach the claimed CoF range, being "a range of between about 0.03 to about 0.2." Indeed, according to Petitioner and Petitioner's expert, the lowest CoF that could be achieved by the combination is 0.26.

Third, the combination of Phillips and Fallgatter does not render any of the claims obvious. The combination does not teach the claimed "mesh layer," and also does not teach the claimed CoF range.

Fourth, the proposed combination of Phillips, WN0400, and Fallgatter fails to resolve any of the deficiencies identified above. A POSITA would have no motivation to combine WN0400 or Fallgatter with Phillips, and even if such a combination were attempted, the resulting CoF would be worse than what Petitioner alleges Philips already provides.

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 CoF in terms of a specific ASTM

standard. Remarkably, neither Petitioner nor its expert even mentions this standard for determining CoF. And, Petitioner's expert lacks any meaningful experience in determining CoF, but for overseeing a graduate student more than two decades ago in connection with a single study, so he is not in any position to offer any competing insight.

As a result of this oversight, none of the references relied upon by Petitioner to demonstrate the presence of the claimed CoF is reliable, none would be considered reliable by a POSITA, and none would be used to demonstrate this claim limitation. Petitioner's own expert has now admitted on cross-examination that the references relied upon by the Petitioner to demonstrate the presence of the claimed CoF cannot be reasonably relied upon because numerous factors affect reported CoF data, and none are reported in the references.

In view of the foregoing, the Petition fails to demonstrate that the challenged claims, claims 1-17 and 22-28, are unpatentable.

III. TECHNOLOGY BACKGROUND

A. The Problems Solved By The '854 Patent Have Been Long-Felt

Recreational slides have existed for decades, serving as a staple of recreational activities for both children and adults. *See, e.g.*, Pet., 1-5; EX1003, ¶¶34-38. Petitioner and Petitioner's expert note that slides for recreational purposes have been well-known since at least the early 1900s. *Id.*; EX2029, 39:1-15.

For example, Petitioner's expert notes that slide systems that include a slide and a ride vehicle made of a burlap sack have been used since at least 1972. EX1003, ¶¶34-38, citing EX1029. Petitioner's expert relies upon another example of a slide and a ride vehicle made of a burlap sack used since at least 1968. *Id.*, citing EX1030.

However, such prior slide systems suffered from a major drawback – they were slow due to a high CoF between the ride vehicle and the slide surface. According to Petitioner's expert, prior slide systems were slow because burlap sacks were known to have a high CoF. EX2029, 44:2-6. In sum, slides and ride vehicles have been in existence for over 100 years and the problems associated with them have been known for a very long time. EX2029, 41:5-15.

Petitioner and Petitioner's expert emphasize this long-felt drawback associated with prior slides and ride vehicles by repeatedly arguing about the importance of a low CoF. They argue that “faster equals more fun.” EX1003, ¶37. In fact, even according to Petitioner and Petitioner's expert, “the primary objective of any slide construction is to provide speed on a downward incline.” *Id.* Indeed, “[i]n all their variations, the thrill of a slide comes from the speed/acceleration of descent – a fact that has been well known since the earliest slides were used” and “[s]peed is the important aspect of a slide – it's what people want.” *Id.* The critical importance of a low CoF is supported by numerous references relied upon by

Petitioner's expert. *Id.*, citing EX1019, EX1022, EX1020.

Petitioner's expert continues to stress that speed and "faster" is what is important to a POSITA trying to solve the long-felt problems that have been known to be associated with slides for decades:

Q. Why is faster so important to a POSITA in this case?

A. As far as [a] slide, basically that's what the people want; basically more fun. So faster sliding down. So people go to [an] amusement park, and they're looking for excitement. So faster is more fun. So I agree with that general assessment in the reference.

EX2029, 45:10-46:6.

A higher CoF is a significant problem because it produces a slower ride or descent down the slide, which in turn reduces both thrill and fun experienced by the rider. EX2033, ¶15. It can also result in the rider not having enough speed to reach the bottom of the slide, resulting in less fun, potential collision and injury. *Id.*

B. Slick Slide's Products Solve These Long-Felt Problems And Have Transformed The Market

Against this background, it takes a truly innovative advancement to transform a familiar concept – one known for decades to suffer from being slow due to a high CoF – into a product that drives significant market demand. Slick Slide's revolutionary dry slide technology claimed in the '854 patent exemplifies such innovation.

Since the introduction of its slides incorporating the dry slide technology,

Slick Slide has experienced unprecedented growth across its slide offerings.

EX2033, ¶¶18-21, 36-39. Slick Slide's slide sales have rapidly climbed into the multi-million-dollar range within a short period of time. *Id.*, ¶18. According to Gary Schmit, inventor of the '854 patent and co-founder of Slick Slide, installations of Slick Slide's slides at family entertainment centers (FECs) have consistently led to significant increases in attendance and sales at those locations. *Id.*, ¶¶24-26, 32-39. 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. *Id.*, ¶¶33-34. The success of Slick Slide's business is clear evidence of the high demand generated by its innovative slide technology. *Id.*, ¶¶24-26, 32-39.

Slick Slide, through its related company Slick City, operates FECs that showcase its cutting-edge slides. Currently, Slick City operates 18 locations across the United States, with additional franchisee territories awarded and under construction. *Id.*, ¶32. 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. *Id.*, ¶¶24-26, 32-39.

Breakthroughs like this overcome long-standing industry challenges and

introduce a novel experience that captures consumer interest. This type of innovation is far from incremental, particularly in the recreational slide industry, where slides have been commonplace 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

A. The Specification Explains The Importance Of Low Coefficient Of Friction

The '854 patent is titled "Low-Friction Recreational Slide System." EX1001, cover page (emphasis added). As background to the invention, the '854 patent explains that "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.

Petitioner's expert admits that lowering the CoF is the goal of a POSITA. EX2029, 46:17-21. That is because the primary objective is increased speed, "faster equals more fun," and friction opposes that objective. *Id.*, 46:7-21. Thus,

according to Petitioner's expert, in order to achieve the "primary objective" of providing increased speed for a rider sliding down a slide, a POSITA would only seek to make the CoF between the ride vehicle and slide surface lower. *Id.*

Importantly, Petitioner's expert admits that a POSITA would not consider a design that results in a higher CoF. *Id.*, 46:22-47:4.

As a result, a POSITA would only look to materials that would achieve a lower CoF. *Id.*, 47:5-11; 64:2-23. Specifically, a POSITA would only look to materials forming the bottom of the ride vehicle and the top of the slide surface that results in a lower CoF. *Id.*, 47:16-22; 52:21-53:16. In like manner, a POSITA would only look to a morphology that has a demonstrated lower CoF. *Id.*, 49:17-50:1.

Because the goal is to have a faster ride, Petitioner's expert further explained what a POSITA would be motivated to consider, and what a POSITA would not be motivated to consider. A POSITA would only consider materials that are known to have a CoF of lower than 0.2. EX2029, 67:2-14. In like manner, a POSITA would not consider morphologies that are known to have a CoF higher than 0.2. *Id.*

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." EX1001, 2:8-12, 1:48-51.

Patent Owner provided an overview of the '854 patent in its Preliminary Response (Paper 5), §IV. 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.

V. CLAIM CONSTRUCTION

Claims are 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.*, 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. Patent Owner submits that the terms “mesh layer” and “coefficient of friction” require

construction. All remaining claim terms should be construed according to the *Phillips* standard.

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: “[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.” EX1001, 10:19-25. The specification of the ‘854 patent provides that “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.

Passages in the specification and one independent claim (claim 22) refer to the open area of the mesh as certain percentage ranges, *i.e.*, 25% to 65% and 35%

to 50%. See also Ex. 1001, 13:6–8 (“the open area of the mesh layer is within a range of between about 35% to about 50%). The specification provides additional description with regard to the embodiment of Figure 5:

The open area of the mesh material 46 refers to the total percentage of open space or voids in the mesh structure. It represents the portion of the mesh material 46, and the bottom surface 56 of the ride vehicle 14, that is not occupied by solid material such as threads.

Ex. 1001, 10:46–50.

The specification goes on to provide the range of diameters of the warp and weft threads in the mesh material of Figure 5 and their density, measured in threads per centimeter of mesh material. *Id.*, 11:10–14. Finally, claim 25 describes a mesh layer that “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 0.1 mm to 0.6 mm.” *Id.*, 14:19–23; *see also id.*, 2:37–46, 3:25–29.

These portions of the specification and claim language demonstrate to a POSITA that “mesh layer” means a layer of mesh material which is characterized by open spaces between threads. EX2031, ¶¶8; EX2030, ¶¶8. The passages in the specification and independent claim 22 refer to the open area of the mesh as certain percentage ranges, providing examples and demonstrating that a “mesh layer” is characterized by open spaces. EX2031, ¶¶2-5; EX2030, ¶¶2-5. In addition,

portions of the specification and claim language describe the warp and weft threads, having a particular thread diameter. This is consistent with a POSITA's understanding that what those threads comprise, *i.e.*, a "mesh layer," is characterized by open spaces. EX2031, ¶¶6-8; EX2030, ¶¶6-8.

In connection with the Institution Decision wherein the Board requested input regarding a POSITA's understanding of the lower limit below which material would not be considered a mesh material, all experts in this case agree that a POSITA understands this lower limit. A POSITA understands what is a sheeting, which is not characterized by open spaces, and a mesh, which is characterized by open spaces. EX2031, ¶¶9-10. A POSITA also knows the lower bound of the range of open spaces that still is considered a mesh, and the line of demarcation between that and sheeting, which is not characterized by open spaces. *Id.* Petitioner's expert agrees that a POSITA understands when a fabric is characterized by open spaces. EX2029, 85:1-25. Petitioner's expert also agrees that a POSITA understands the difference between a woven fabric that is not characterized by open spaces versus a mesh that is characterized by open spaces. *Id.*

A POSITA understands from the specification and claim language that "mesh layer" means a layer of material which is characterized by open spaces between threads is supported by the accepted definition of "mesh." 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.

Neither Petitioner nor Petitioner’s expert has suggested a claim construction for the term “mesh layer.” Neither have disputed Patent Owner’s suggested claim construction, or offered any evidence relating thereto.

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.

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 (p)=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. While the ‘854 patent provides that the coefficient of friction between surfaces of the mesh material 46 and the slide surface 18 “may” be determined using ASTM D1894, a POSITA would understand that ASTM D1894 is the test method. EX2030, ¶10. In addition, as a POSITA would expect, there is no other accepted test method mentioned in the ‘854 patent. *Id.*

Neither Petitioner nor Petitioner’s expert has suggested a claim construction for the term “coefficient of friction,” disputed Patent Owner’s suggested claim construction, or offered any evidence relating thereto. Further, Petitioner’s expert has little to no experience with coefficient of friction measurements, for at least

two decades. EX2029, 68:16-70:15. Even that limited experience was merely directing a student's study, the name of whom Petitioner's expert could not recall because it was so long ago. *Id.*

VI. PETITIONER'S ASSERTED REFERENCES

A. Petitioner's Expert Concedes That A POSITA Would Only Be Motivated To Consider References That Result In A Lower Coefficient Of Friction Below 0.2

As noted above, Petitioner and Petitioner's expert argue that "faster equals more fun." EX1003, ¶37. In fact, "the primary objective of any slide construction is to provide speed on a downward incline." *Id.*

It follows, and there is no dispute, that "the coefficient of friction between the rider and the slide's surface plays an important role," because "friction... opposes motion between systems in contact." EX1003, ¶40. As admitted by Petitioner's expert, in order to achieve the "primary objective" of providing increase speed, a POSITA would only seek to make the CoF to be lower. EX2029, 46:22-47:11; 64:2-23. A POSITA would not even consider a design that results in a higher CoF. *Id.*, 46:22-47:4.

This is consistent with the background of the invention, which explains that "a fast slide speed (*i.e.*, a fast rate of descent down the slide) is more thrilling...and therefore is more desirable." EX1001, 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.

Therefore, as admitted by Petitioner’s expert, a POSITA would only look to materials that have a demonstrated lower CoF. EX2029, 46:22-47:22; 52:21-53:16. With respect to the bottom surface of a ride vehicle, a POSITA would not consider materials that have a higher CoF. *Id.*

The same is true with respect to the morphology of the materials in contact. A POSITA would only be motivated to consider materials having a morphology that has a demonstrated lower CoF. *Id.*, 49:17-50:1. A POSITA would not consider materials with a morphology that has a higher CoF. *Id.*, 46:22-47:4.

In sum, Petitioner’s expert admits that if a POSITA already has in her possession a ride vehicle with a bottom surface material capable of achieving a low CoF, a POSITA would not change to a bottom surface with a material with a higher CoF. *Id.*, 46:22-47:22. In like manner, if a POSITA already has in her possession a ride vehicle with a bottom surface morphology considered to be low friction, a POSITA would not change to a morphology that has a higher CoF. *Id.*, see also *id.*, 49:17-50:1. Otherwise, the “primary objective” being sought by a POSITA would be destroyed. *Id.*, 46:22-47:11.

Because the goal is to have a faster ride, Petitioner’s expert explained what a POSITA would be motivated to consider in terms of specific CoF data. A POSITA would only consider materials that have a CoF of lower than 0.2. EX2029, 67:2-14.

In like manner, a POSITA would not consider morphologies that have a CoF higher than 0.2. *Id.*

B. Phillips (EX1004)

Patent Owner provided an overview of Phillips in Paper 5, §VI.A.

Fig. 1 of Phillips illustrates one example of the slide (10). 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 sheeting materials. The sheeting is also consistently described as “durable” and “low friction.” *Id.*, see *id.*, 1:22-25; 4:40–41.

Phillips also describes different types of sliding vehicles that are configured to interact with the slide. *Id.*, 2:3-11. 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 (sic) 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 does not use the term “mesh” to describe the low friction, durable sheeting material for use with the sliding vehicles. EX1004. Instead, Phillips

consistently describes the material as membranes or sheeting materials. *Id.*, 1:22-25; 4:40–41. Petitioner’s expert concedes that Phillips discloses that the durable low friction material is described as sheeting. EX2029, 53:24-55:8.

Phillips explicitly distinguishes the low friction, durable sheeting material from “nylon netting.” A POSITA would recognize nylon netting as a type of mesh fabric. EX2031, ¶¶12-13. In this regard, Phillips describes the use of nylon netting for attaching “various sliding elements 1606” which “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 to a POSITA that nylon netting and thus mesh fabric serves a different purpose than, and is not equivalent to, the low friction, durable sheeting material central to Phillips’ slide and sliding vehicle embodiments. EX2031, ¶¶12-15; EX2030, ¶¶12-14.

According to Petitioner’s expert, Phillips’ disclosure of a low friction, durable sheeting material is not understood by a POSITA to disclose a CoF of a particular number or range. EX2029, 55:9-22. Rather, upon reviewing Phillips, “the POSITA would be looking for some lower end for the coefficient of friction.”

Id. That is because no specific numbers or ranges of CoF is disclosed by Phillips.

Id.; see *id.*, 57:20-58:3.

Petitioner's expert concedes that the sheeting disclosed by Phillips is "low friction material." EX2029, 53:24-55:8. Therefore, according to Petitioner's expert, a POSITA would not consider combining Phillips with any material, or material with a morphology, that has a higher CoF. EX2029, 47:16-22; 49:17-50:1; 52:21-53:16. A POSITA would therefore not consider combining Phillips with any material or material with a morphology that has a CoF greater than 0.25. EX2029, 60:11-25. That is because such a higher CoF would destroy the purpose of speed and "faster equals more fun." EX2029, 46:7-21.

As noted above, and again because the goal is to have a faster ride, Petitioner's expert separately explained what a POSITA would be motivated to consider. A POSITA would only consider materials that have a CoF of lower than 0.2. EX2029, 67:2-14. In like manner, A POSITA would only consider morphologies that have a CoF lower than 0.2. *Id.*

C. WN0400 (EX1006)

Patent Owner

provided an overview of
WN0400 in Paper 5, §VI.B.

WN0400 is a SKU
(Stock Keeping Unit)
representing a product
specification for nylon

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

Products

Applications

Materials

Polypropylene

Polyethylene

• **Nylon Netting**

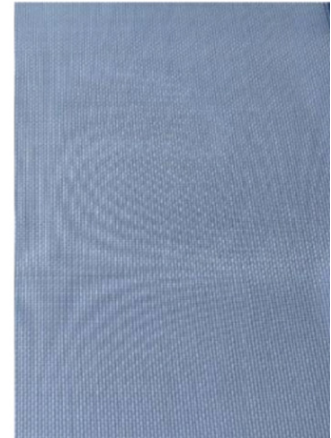
Polyester Netting

PTFE Netting

Temperature Guidelines

Clearance Items

Netting & Mesh Services



netting that is purportedly available from the company Industrial Netting. EX1006. WN0400 is considered by Industrial Netting to be “Nylon Netting,” as can be 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.*

There is no evidence of the CoF for WN0400, the SKU for “400 Micron Nylon Mesh 45% Open Area.” EX1006. Neither Petitioner nor Petitioner’s expert has provided any evidence of the CoF for WN0400, let alone as applied to Phillips’ slide surface. *See generally* Pet.; EX1003.

In an attempt to fill this gap, Petitioner’s expert submitted a single exhibit that discloses CoF data for “mesh nylon.” The data is not for WN0400, but rather

for a mesh in the form of “fine mesh nylon monofilament bolting fabric,” “medium mesh nylon monofilament bolting fabric,” and “coarse mesh nylon monofilament bolting fabric.” EX1003, ¶¶137, 251, referring to EX1009, Tables 1, 2, Fabric Nos. 13-15.

According to Petitioner’s expert, nylon meshes of varying mesh sizes (EX1009, Table 1, Group IV) have slightly different coefficients of friction, with the fine meshes having a higher CoF than the medium and coarse meshes. EX1003, ¶¶137, 251, referring to EX1009, 4. Neither Petitioner nor Petitioner’s expert has provided any indication or evidence suggesting which type of mesh WN0400 is. *See generally* Pet.; EX1003.

In any event, the lowest CoF for any such mesh is 0.26. EX1009, Table 2, Fabric No. 15.¹ And, according to Petitioner’s expert, none of the CoF data can be relied upon because “Fabric-to-Fabric,” “Fabric-to-Leather,” and “Fabric-to-Metal,” do not have comparable friction characteristics to the circumstances presented here. EX2029, 113:1-116:19. Specifically, the interaction of the materials is not “fairly reflected” by EX1009, and the data is not a good comparison. *Id.* Patent Owner’s expert agrees. EX2030, ¶¶22-25. A POSITA

¹ Because Petitioner’s expert claims that EX1009 demonstrates that “the finest meshes hav[e] a higher coefficient of friction than the coarsest meshes,” Petitioner’s expert is referring to the “Fabric-to-Fabric” columns of Table 2. That is because the data for “Fabric-to-Metal” does not demonstrate that “the finest meshes hav[e] a higher coefficient of friction than the coarsest meshes” upon which Petitioner’s expert relies. EX2030, ¶23.

would not consider the data in EX1009, because this situation does not involve “Fabric-to-Fabric,” “Fabric-to-Leather,” or “Fabric-to-Metal.” *Id.*

Petitioner’s expert admits that a POSITA would not consider the data in EX1009 for yet another reason. The data discloses a worse CoF than that disclosed in Phillips. EX2029, 46:22-47:4; 49:17-50:1. Indeed, according to Petitioner’s expert, a POSITA would not consider the data in EX1009 pertaining to a “mesh nylon,” because the associated data is all above 0.2. *Id.*, 67:2-14. Patent Owner’s expert agrees. EX2030, ¶¶23, 26.

If anything was considered by a POSITA in connection with EX1009, it would be Fabric No. 11. *Id.* That is because it demonstrates the lowest CoF. *Id.* Fabric No. 11 is not a mesh. *Id.*

D. Fallgatter (EX1005)

Patent Owner provided an overview of Fallgatter in Paper 5, §VI.C.

VII. PERSON OF ORDINARY SKILL IN THE ART

A. The Education And Experience Of A POSITA

Because the ‘854 patent describes and claims features of a mesh layer in textile and fiber terms (*see e.g.*, Ex. 1001, 10:17–11:14, 12:65–13:8, 14:20–24) and claims a particular range of CoF of these materials (*Id.*, claims 1-17 and 22-28), a person of ordinary skill in the art as of the Critical Date (“POSITA”) would have

had at least (1) experience in fiber science and (2) 5 years of measurement and analysis experience in the field of CoF. EX2026, ¶¶38-45; EX2027, ¶¶33-40.

A POSITA would have experience in fiber science for understanding the distinctions between mesh and sheeting, and how those interact, differently, with other materials when in contact with them, as well as mechanical properties such as wear. EX2026, ¶44; EX2027, ¶40. Petitioner's expert does not disagree.

EX2029, 73:23-74:9. In fact, because the '854 patent describes the claimed mesh layer in terms of fibers (*e.g.*, EX1001, 10:17-30), Petitioner's expert admits it is helpful to have formal education in fiber science in order to understand the '854 patent. EX2029, 20:22-21:3; 25:24-28:22. For example, such formal education is helpful in understanding the layers of materials as they interact with each other. *Id.*, 80:16-21; EX2026, ¶44; EX2027, ¶40.

A person with formal education in fiber science would have a greater depth of understanding regarding the material, chemical structure, and morphology involved in this dispute. EX2029, 80:16-21. Indeed, a person with formal education in fiber science would have additional training relating to fibers and their different applications (*id.*, 29:18-31:10), as well as specialized experience in characterizing the microstructure of fibers (*id.*, 31:21-32:4), and would therefore be better prepared to understand how materials interact when they come in contact with each other (*id.*, 33:17-34:21). Patent Owner's expert agrees. EX2031, ¶¶20-

22. Experience in 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. EX2026, ¶¶44; EX2027, ¶40.

With respect to claims 1-17 and 27-28 of the '854 patent, a POSITA would also have at least 5 years of measurement and analysis experience in the field of CoF. EX2026, ¶45. This is necessary because the morphology of fabrics has a decisive effect on the frictional resistance occurring in 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, CoF data for which the reported results do not detail the protocol, morphology, and other aspects of the analysis. *Id.*

In this regard, Petitioner's expert admits that CoF measurements are dependent upon the condition of the contacting surfaces. EX2029, 67:23-68:1. These measurements are, according to Petitioner's expert, also dependent upon the chemistry of the contacting surfaces (*Id.*, 68:2-4) and testing setup (*Id.*, 68:10-16). Morphology of the contacting surfaces would also affect CoF measurements. *id.*, 68:5-9; 71:23-72:5. Indeed, Petitioner's expert concedes that there are at least ten (10) different factors that influence CoF data. *Id.*, 109:21-110:23, citing EX1027. This is based on literature relied upon by Petitioner's expert, further demonstrating

that a POSITA would have detailed experience with CoF measurements, sufficient to know these complexities and the impact on CoF data. EX2030, ¶¶33-36.

Importantly, Petitioner’s expert concedes that a POSITA understands that CoF data is dependent upon these material, morphology, and testing conditions. *Id.*, 72:6-13. For example, the same fibers made into a different morphology or structure are going to result in different coefficient of data. *Id.*, 72:14-73:1. For these reasons, a POSITA would have at least 5 years of measurement and analysis experience in the field of CoF. EX2030, ¶¶33-36.

B. Petitioner’s Expert’s 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.*, 1377.

For several different independent reasons, the opinions of Petitioner’s expert should be given limited weight. As explained below, Petitioner’s expert has much

less experience in the field of fiber science than Patent Owner's expert, and has almost no experience, and much less experience than that of Patent Owner's expert, in the field of CoF and CoF measurements. Both fiber science and CoF measurements are undeniably important aspects of this dispute.

With regard to fiber science, the disclosure of the '854 patent describes features of a mesh layer in textile and fiber terms. See *e.g.*, Ex. 1001, 10:17–11:14, 12:65–13:8, 14:20–24. Petitioner's expert concedes that the '854 patent describes the mesh layer in terms of fibers. EX2029, 27:6-10.

As a result, and as admitted by Petitioner's expert, it is helpful to have formal education in fiber science in understanding the '854 patent. EX2029, 20:22-21:3; 25:24-28:22. For example, such formal education is helpful in understanding the layers of materials as they interact with each other. *Id.*; EX2026, ¶44; EX2027, ¶40. A person with formal education in fiber science would also have a greater depth of understanding regarding the material, chemical structure, and morphology involved in this dispute. EX2029, 80:16-21.

Patent Owner's expert benefits from both a Masters of Science in fiber science and a PhD in Fiber and Polymer Science. EX1027, Appendix A. Petitioner's expert does not benefit from either a Masters of Science in fiber science or a PhD in Fiber and Polymer Science. EX1003, Appendix A.

This has a practical and detrimental impact on Petitioner's expert's ability to

accurately comment on and provide opinions in this matter. As an example, Petitioner's expert does not even understand the term ploughing in the context of fibers (EX2029, 77:15-78:5), despite the fact that the references he purports to have reviewed and relied upon discuss ploughing and the impact on frictional characteristics and data. EX1009, 4 (discussing ploughing when two materials are in contact, and the resulting impact on frictional data). Petitioner's expert also is not familiar with *The Fairchild Books Dictionary of Textiles*. EX2029, 84:10-13. An individual that does not understand the concept of how fabric surfaces interact, and is not familiar with *The Fairchild Books Dictionary of Textiles*, is not likely to be an expert in this field. EX2031, ¶¶21-23.

As admitted by Petitioner's expert, Patent Owner's expert has additional training relating to fibers and their different applications (EX2029, 29:18-31:10) as well as specialized experience in characterizing the microstructure of fibers (*Id.*, 31:21-32:4; 32:17-33:24), and would therefore be better prepared to understand how materials interact when they come in contact with each other (*Id.*, 33:25-34:21).² Not only does Patent Owner's expert have more training and experience in the fiber science field, Petitioner's expert did not apply such a level of skill in connection with his declaration or opinions. EX1003, ¶29.

² Also undisputed is that experience in fiber science is 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. EX2026, ¶44; EX2027, ¶40.

With respect to CoF and CoF measurements, claims 1-17 and 27-28 of the '854 patent require "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." A POSITA would have at least 5 years of measurement and analysis experience in the field of CoF. EX2026, ¶45. That is because the morphology of fabrics has a decisive effect on the frictional resistance occurring in 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, CoF data for which the reported results do not detail the protocol, morphology, and other aspects of the analysis. *Id.*

Indeed, Petitioner's expert concedes that there are at least ten (10) different factors that influence CoF data, based on a reference he relied upon. *Id.*, 109:21-110:23, citing EX1027. Without at least 5 years of measurement and analysis experience in the field of CoF, a POSITA would not understand, and would likely misuse, reported results of CoF data. EX2026, ¶45. Placing this fact into glaring focus is that Petitioner's own references acknowledge that CoF data cannot be relied upon to demonstrate data under specified conditions, such as those specified by the '854 patent. EX1003, ¶¶77-78, 172; EX1027 ("Readers should be aware of this shortcoming and use the values only as very approximate guides").

Patent Owner's expert has extensive experience in the study, testing, measurements, and analysis of CoF. EX2030, ¶37. Petitioner's expert, on the other hand, has little to no experience with CoF measurements, for at least two decades. EX2029, 68:16-70:15. Even that limited experience was merely directing a student's study, the name of whom Petitioner's expert could not recall because it was so long ago. *Id.*

For these reasons, Patent Owner respectfully submits that the Board should afford EX1003 and the opinions of Petitioner's expert minimal weight in the areas of fiber science and CoF and measurement of CoF.

VIII. PETITIONER FAILED TO DEMONSTRATE THAT ANY CLAIM IS UNPATENTABLE

A. Ground 1A (Anticipation): Challenged Claims 1-4 and 6-7 Are Not 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”). Petitioner has not met this

burden for claims 1-4 and 6-7 because Phillips discloses neither the claimed “mesh layer” nor the claimed CoF range of “between about 0.03 to about 0.2.”

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

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 does not disclose or suggest a “mesh layer that forms a bottom surface configured to contact the slide surface,” and Petitioner’s anticipation argument therefore fails.

Petitioner asserts that Phillips discloses a ride vehicle with a low-friction sheeting bottom. Pet., 23. Phillips states the sheeting 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.” Pet., 24.

The Parties agree that Phillips consistently discloses sheeting for the ride vehicle bottom. EX2026, ¶¶104-107, 111; EX2027, ¶¶89-92, 96. Petitioner’s expert concedes that Phillips identifies the durable low-friction material as

sheeting. EX2029, 53:24-55:8. The Parties also agree that Phillips never uses “mesh” to describe this material. *Id.*, 75:7-11. Instead, Phillips consistently describes the material as sheeting. EX2026, ¶109; EX2027, ¶94.

Relying only on Phillips’ disclosure of durable low-friction sheeting, Petitioner argues that Phillips teaches a mesh layer. Pet., 23-24. This is incorrect. A POSITA would not view the sheeting disclosed for the ride vehicle bottom as the claimed mesh layer. EX2026, ¶¶116-119; EX2027, ¶¶101-104. Petitioner’s position is contrary to accepted resources, such as *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; EX2026, ¶116; EX2027, ¶101. By contrast, “sheeting,” as understood by a POSITA and defined by ASTM standards, neither allows for nor is characterized by 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

because Phillips uniformly discloses sheeting, not a “mesh layer.” EX2026, ¶¶104-107, 111; EX2027, ¶¶89-92, 96. Nothing cited by Petitioner’s expert suggests these materials are mesh. EX2026, ¶75; EX2027, ¶58. Nor would a POSITA conclude otherwise. *Id.*

In one embodiment, Phillips describes the ride vehicle as a “flexible membrane” 90 with a bottom surface 91 “composed of low friction durable sheeting material,” further describing that the membrane “can be a single sheet of such material in the form of a rectangle or any other geometric shape upon which a user would sit or lie.” EX1004, 7:14-20. A POSITA would understand that sheeting material/membrane is not mesh, which is characterized by open spaces rather than a continuous sheet. If the sheeting material/membrane were mesh, riders’ bodies would contact the slide surface through the openings, causing abrasions, burns, drag, and slower rides. These safety and performance concerns confirm that Phillips’s sheeting is not mesh.

Indeed, materials such as “sailcloth” are not a “mesh,” and a POSITA would recognize that “sailcloth” is not mesh. EX2026, ¶¶124-129; EX2027, ¶¶109-115. Petitioner’s expert’s suggestion otherwise is, once again, contrary to accepted resources in this industry. EX2027, ¶112; EX2011. Petitioner’s expert’s suggestion is also directly contrary to his own testimony, wherein he admits that these

materials can be formed into sheeting, not characterized by open spaces. EX2029, 86:18-87:15.

Phillips further underscores the point by explicitly distinguishing its low-friction, durable sheeting material from “nylon netting.” EX1004, 9:50-55.

“[N]etting generally refers to a structure with open spaces,” even according to Petitioner’s expert. EX2029, 89:21-90:24. Notably, the referenced “nylon netting” is not used for forming the bottom surface of the ride vehicle. EX1004, 9:50-55. Rather, it is only disclosed as attaching ride surfaces together. *Id.* In doing so, Phillips demonstrates that sheeting is to be used for forming the bottom of the ride vehicle, and that nylon netting is not to be used for that purpose. EX2031, ¶¶12-15; EX2030, ¶¶12-14.

Petitioner then describes the WN0400 reference as “a nylon mesh.” Pet., 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 the low friction, durable sheeting material central to Phillips’ slide and sliding vehicle embodiments. EX2026, ¶110; EX2027, ¶95.

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 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.

For these reasons, 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 requires "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. Phillips does not disclose or suggest this claim element, and for this independent reason Petitioner's anticipation argument fails.

According to Petitioner's expert, Phillips' disclosure of a low friction, durable sheeting material is not understood by a POSITA to disclose a CoF of a particular number or range. EX2029, 55:9-22; 57:20-58:3. Rather, upon reviewing Phillips, "the POSITA would be looking for some lower end for the coefficient of friction." *Id.* This is not within the claimed range, and Petitioner's ground fails on this basis.

Despite its expert's admission that Phillips' disclosure of a low friction, durable sheeting material is not understood by a POSITA to disclose a CoF of a particular number or range, Petitioner argues that "Phillips expressly advocates for 'low friction' between the slide and ride vehicle and specifies materials that achieve 'low friction.'" Pet., 26. Petitioner then baldly asserts, "[t]hese materials provide 'low friction' within the claimed range." *Id.*

A claim is anticipated only if every element is taught, expressly or inherently. Inherency requires that the missing matter be "necessarily present" in the reference, not merely probable or possible. MPEP §2112(IV). As the Federal Circuit held, "[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." Pet., 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).” Pet., 27. Petitioner’s assertion lacks the required supporting analysis and is deficient for several key reasons.

First, Petitioner offers no analysis showing that the CoF values in its cited tables bear on the claimed range. Petitioner simply concludes that because the materials are the same, the disclosed CoFs anticipate the claimed range.

Petitioner’s conclusion is unsupported and fails to show the claim limitation is present in the prior art. 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). Petitioner’s conclusory statements fail to satisfy Petitioner’s burden.

Second, Petitioner’s conclusion is simply wrong. Petitioner is wrong when it concludes the CoF values presented in the various tables cited by Petitioner bear on the claimed CoF range simply because the materials are identified by the same name, because the CoF is not merely a property of the interaction between the two surface materials. In this regard, Petitioner’s expert identifies zero personal experience or graduate education related to measurement and analysis in the field of CoF. At best, Petitioner’s expert merely directed a student’s study more than twenty years ago. EX2029, 68:16-70:15. Even despite his lack of experience,

Petitioner's expert concedes that Petitioner's conclusion is wrong. EX2029, 109:21-110:23, citing EX1027 (conceding that there are at least ten (10) different factors that influence CoF data).

Dr. Spiegelberg, Slick Slide's coefficient of friction expert, makes clear that Petitioner's conclusion is wrong. EX2026, ¶¶170-173. That is because CoF 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 CoF testing is performed. *Id.*, ¶171. Again, Petitioner's expert's own references acknowledge that CoF data cannot be relied upon to demonstrate data under specified conditions, such as those specified by the '854 patent. *Id.*, ¶¶77-78, 172; EX1027.

With respect to EX1027 in particular, the data is not of a mesh material, but of a flat sliding surface. EX2031, ¶¶24-25; EX2030, ¶¶27-29. Petitioner's expert admitted that mesh is not a flat sliding surface, for which the data in EX1027 is reported. EX2029, 78:22-79:1. And, none of the ten (10) different factors that influence CoF data are disclosed in EX1027. *Id.*, 110:20-24.

Petitioner's expert's admission is a concession that the CoF data referenced in EX1027, and also summarized at ¶109 of his declaration, is not applicable. That data is strictly limited to a flat sliding surface. EX2031, ¶¶24-25; EX2030, ¶¶27-29. A mesh is not such a flat sliding surface, and has a completely different morphology, as conceded by Petitioner's expert. Further, Phillips's slide is

inflatable, and therefore deformable. Petitioner's expert agrees. EX2029, 95:18–20. Thus, Phillips' slide surface is not a flat surface. These different morphologies would result in a much greater CoF than that of a flat sliding surface reported in EX1027. EX2031, ¶¶24-25; EX2030, ¶¶27-29. A deformable sliding surface results in more interaction with the fibers, and a higher CoF. *Id.*

Petitioner's expert admits the cited CoF values do not establish the claimed range because CoF is not merely a property of the materials. CoF depends on the condition of the contacting surfaces (EX2029, 67:23–68:1), their chemistry (*Id.*, 68:2-4), the testing setup (*Id.*, 68:10-16), and surface morphology (*Id.*, 68:5-9; 71:23-72:5). There are at least ten (10) different factors that influence CoF data, based on a reference Petitioner's expert relied upon. *Id.*, 109:21-110:23, citing EX1027.

Importantly, a POSITA understands this. A POSITA understands that CoF data is dependent upon these factors, including material, morphology, and testing conditions. *Id.*, 72:6-13. For example, the same fibers made into a different morphology or structure are going to result in different coefficient of data, a fact understood by a POSITA. *Id.*, 72:6-73:1.

Third, not a single one of the references upon which Petitioner and Petitioner's expert 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 references do not disclose or specify the specified normal force, specified area of materials, morphology, and test conditions. *Id.* For this reason, according to Slick Slide’s CoF expert, a POSITA would not rely upon the reported results. *Id.*

In any event, the lowest CoF for any nylon mesh that Petitioner has presented is, according to Petitioner’s expert, 0.26, as explained *supra* §VI.C.

Indeed, Petitioner has not shown that Phillips discloses a CoF within the claimed range of “between about 0.03 to about 0.2,” and cannot anticipate the challenged claims. At best, Petitioner’s argument rests on an unsupported “probability or possibility,” which the Federal Circuit has consistently held is insufficient for inherency.

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 for the reasons that follow.

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).

As explained *supra* §VIII.A, Phillips does not disclose a “mesh layer that forms a bottom surface configured to contact the slide surface” or a CoF “within a range of between about 0.03 to about 0.2.”

Petitioner and its expert assert alleged motivations to modify Phillips to cure these missing elements, but their assertions are conclusory, lacking explanation or analysis, and unsupported by evidence. There is no basis for concluding that 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.” Pet., 25. In short, just because Petitioner and its expert suggest 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 **why** and **how** 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 the 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.” Pet., 25. Petitioner’s expert contends that from 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 Petitioner’s expert’s declaration, ¶103. Petitioner’s expert’s suggestion is unsupported, and wrong.

Petitioner conflates sheeting with mesh. As set forth above, a woven material is not inherently a mesh. And, Phillips uniformly and repeatedly teaches a “sheeting material,” which is the opposite of a mesh layer. Thus, Petitioner’s suggestion conflates Phillips’ disclosure of “sheeting material,” such as “nylon” and “sailcloth,” with mesh, despite these materials not being mesh. As these

materials are not 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." 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 several reasons why Phillips does not suggest modifying the bottom of the vehicle with a mesh, and those reasons are readily apparent to a POSITA because they are disclosed in the Phillips reference itself. Those reasons start with the fact that Phillips discloses that the bottom surface of the ride vehicle is formed from low friction high durable material. That is, the sheeting that is consistently disclosed in Phillips is both low friction, and durable.

Indeed, sheeting is durable, and more durable than mesh. EX2031, ¶16. Sheeting is more durable than mesh because it incorporates more fibers, and therefore demonstrates more durability, than mesh. *Id.* Petitioner's expert has not studied this and therefore cannot and does not offer any suggestion otherwise. EX2029, 96:6-97:4.

Sheeting also demonstrates a low CoF, and much lower than mesh. EX2030, ¶¶28-29. Indeed, this is a fact well known by a POSITA and is demonstrated by the

same references relied upon by Petitioner and Petitioner's expert. *Id.* For example, EX1027 and the low CoF data reported by Petitioner's expert at ¶109, is for a flat sliding surface which is not, as admitted by Petitioner's expert, a mesh. EX2029, 78:22-79:1; EX2030, ¶¶28-29. This low CoF data demonstrated by sheeting is orders of magnitude better than the best CoF data for mesh offered by Petitioner. *Id.*

Moreover, a POSITA would understand that, with respect to plain-woven fabrics such as sailcloth, as pick density decreases the fabric becomes less compact, which creates greater differences between high and low peaks and thereby increases surface friction. Surface roughness values decrease as the weft yarn get finer and finer. EX2030, ¶30; EX2035, 46; EX2036, 27. By contrast, when pick density increases, the fabric structure becomes tighter and more compact, producing a smoother surface ("the surface smoothness of the fabrics increases as the pick density of the fabrics increases"). *Id.* A denser, compact weave more closely resembles the Phillips sheeting material, which is associated with lower frictional resistance desired by Phillips. *Id.*, ¶31. Thus, a POSITA would not look to looser weaves even within the class of plain-woven fabrics, and certainly would not turn to mesh fabrics characterized by open spaces. EX2030. A POSITA would further recognize that these frictional problems would increase by orders of magnitude if a mesh material were used. *Id.*

For these additional reasons, Phillips discloses to a POSITA that sheeting is a low friction durable material. Not only is a POSITA aware of this, a POSITA is also aware from known references including those relied upon by Petitioner, that mesh is less durable and reported to have a much higher CoF. Given the importance in this industry of durability and low CoF, a POSITA would not be motivated to use mesh, as a POSITA would understand that would result in poorer performance in both areas. 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 adhere a mesh to the bottom of Phillips' ride vehicle in a way that yields predictable results. Petitioner's expert makes this suggestion only in a single paragraph (EX1003, ¶103), and neither the Petition nor Petitioner's expert explains how a POSITA could successfully incorporate a mesh while preserving the vehicle's functionality.

To explain, while Phillips teaches use of low friction durable sheeting and, according to Petitioner's expert, away from use of a higher friction and less durable mesh layer, if Phillips did suggest otherwise (it does not), Petitioner does not explain how a POSITA would successfully implement the purported combination. Entirely unmentioned is the impact of a material with a completely different morphology (sheeting 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, especially in light of the fact that sheeting is more durable than mesh, yet another issue unaddressed by Petitioner. *Id.*

Perhaps 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.* 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 would be exposed and otherwise 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 (e.g., claims 14-17, 23). *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. *Id.* At a minimum, this would require an evaluation of whether such processing is required. *Id.*

Petitioner and Petitioner's expert do not mention any of these factors (*e.g.*, morphology, durability, affixing to the bottom of the ride vehicle, and Phillips' disclosure of adhesive as the mechanism of affixing to the bottom of the ride vehicle). They also do not address any of these factors substantively. As such, the Petition does not demonstrate how to successfully implement the bottom of the Phillips' vehicle with a mesh.

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).

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, being to provide a low-friction interface with the slide surface. 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 used 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 would be exposed or otherwise penetrate the interstices or open spaces in the structure of a mesh layer and interact with the slide surface. *Id.*

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

Petitioner’s purported evidence of a reasonable expectation of success is its expert’s statement that “a POSITA would have had a reasonable expectation of success in implementing the ride vehicle with a nylon mesh bottom 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. Petitioner’s expert presents this in a single, conclusory sentence, without providing any underlying analysis or support. Such testimony is not entitled to evidentiary weight. *See 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).

Petitioner’s expert conclusory sentence is also 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), Petitioner did not demonstrate that use of a material with a completely different morphology (sheeting and membrane versus mesh), and its impact on the interaction between the ride vehicle and the

slide surface, would be expected to be successful. EX2026, ¶¶141-142; EX2027, ¶¶124-125. Additionally, success in the consideration of a large variety of mesh configurations would need to be shown to have been reasonably expected. *Id.* A POSITA would also have to have expected success regarding the modification and its impact on the durability of the ride vehicle. *Id.* No showing has been made here.

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.* That is because 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 the mesh layer is 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 Petitioner’s expert *do not mention* any of these matters. Petitioner and Petitioner’s expert also *do not present any analysis* of these matters. Perhaps more importantly, Petitioner and Petitioner’s expert *do not offer any evidence* of a reasonable expectation of success in light of these matters.

4. *Petitioner Provides Insufficient Evidence Phillips with Mesh Layer Meets Every Limitation of Claim 1*

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.

Such a modification to Phillips still would not operate or read on claim 1. That is because the limitation “wherein a coefficient of friction ... 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.*, Pet., 50-51 (argument for limitations [1b] and [1c]).

The lowest CoF for a mesh is 0.26. EX1009, Table 2, Fabric No. 15. In fact, the only evidence of CoF data for mesh is found in EX1009, Table 2.³ Petitioner’s expert claims that EX1009, Table 2 demonstrates that “the finest meshes hav[e] a higher coefficient of friction than the coarsest meshes,” and in doing so, Petitioner’s expert is referring to the “Fabric-to-Fabric” columns of Table 2. EX1003, ¶137.⁴ Thus, Petitioner’s purported modification to Phillips would result

³ EX1027, including the data cited at ¶109 of Petitioner’s expert’s declaration (EX1003), reports only flat sliding surfaces, not mesh. EX2031, ¶¶24-25; EX2030, ¶¶27-29. Petitioner’s expert admits mesh is not a flat surface of the type tested in EX1027. EX2029, 78:22-79:1.

⁴ The data for “Fabric-to-Metal” does not demonstrate that “the finest meshes hav[e] a higher coefficient of friction than the coarsest meshes.” EX2030. Therefore, Petitioner’s expert is not referring to data found in those columns.

in, at best, a CoF that is outside and worse than the range claimed in the ‘854 patent.

The ‘854 patent also 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 Petitioner’s expert 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 CoF under precise conditions. *Id.*, ¶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.*, ¶¶65-66. Petitioner’s expert’s own references acknowledge

that CoF data cannot be relied upon to demonstrate data under specified conditions, such as those specified by the '854 patent. *Id.*, ¶¶77-78, 172; EX1027.

Petitioner incorrectly assumes that CoF data can be imported wholesale so long as it involves the same material, without accounting for the morphology, including deformability, of the contacting surfaces. That assumption is flawed. Phillips's slide is inflatable, and therefore deformable. Petitioner's expert agrees. EX2029, 95:18–20. A POSITA would understand that friction between deformable surfaces, particularly between cloth fabrics and deformable bodies, is “highly complex,” “nonlinear, anisotropic, and even asymmetric.” EX2030, ¶19. Critically, the more deformable the body, the higher the resulting CoF when sliding against the same cloth material (*see* EX2034, Fig. 9b, showing sponge, which is more deformable and yielding higher friction, compared to cotton, plastic foam, and sheepskin). EX2030, ¶20. Thus, the coefficients of friction reported in Table 2 of EX1009 would necessarily be higher if measured against a deformable body such as Phillips's slide surface. EX2030, ¶21. Petitioner provides no evidence to the contrary, and a POSITA would recognize this outcome as inevitable.

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

As explained below and *supra* §§VIII.B.1-4, a POSITA would not be motivated to add a mesh layer to Phillips' ride vehicle, and claims 1-4, 6-7, 14-17, and 22-28 would not have been obvious in view of Phillips and WN0400. In fact, Petitioner's own expert concedes that a POSITA would not combine WN0400 with Phillips, and he identifies several independent reasons why such a combination would not be pursued.

1. Petitioner's Expert Admits There Are Multiple Reasons a POSITA Would Not Modify Phillips with WN0400's Mesh

First, as explained *supra* §§VIII.B.1-4, Phillips consistently teaches "sheeting material," not mesh, and expressly distinguishes it from "nylon netting." Nylon netting, like WN0400, is absent from Phillips' list of sheeting materials and is never suggested for the vehicle bottom. Phillips discloses sheeting as both low-friction and durable. EX1004, 1:22-25; 4:40-41. Sheeting is also more durable and demonstrates lower CoF than mesh. EX2031, ¶¶16; EX2030, ¶¶15. Thus, Phillips teaches the use of sheeting material for the ride vehicle bottom, while its reference to nylon netting serves an entirely different purpose. Nothing in Phillips would motivate a POSITA to substitute or apply nylon netting to the ride vehicle bottom. EX2026, ¶¶131-138; EX2027, ¶¶116-121.

Second, in light of the undisputed fact that Phillips discloses low friction based on sheeting material, WN0400 does not provide any benefit to Phillips. In

fact, as demonstrated above, a mesh CoF is detrimental to Phillips. Importantly, a POSITA would be aware of this fact.

To explain, Petitioner's expert admits that a POSITA, already having in her possession the Phillips ride vehicle with a bottom surface material having low friction, would not change to a bottom surface with a material that has a higher CoF. EX2029, 46:22-47:22. In like manner, Petitioner's expert admits that a POSITA, already having in her possession a ride vehicle with a bottom surface morphology disclosed to be low friction, would not change to a morphology that has a higher CoF. *Id.*; *see also id.*, 49:17-50:1. Otherwise, the "primary objective" being sought by a POSITA would be destroyed. *Id.*, 46:22-47:11.

For these reasons alone, a POSITA would not be motivated to consider a mesh, a material with a higher CoF and a morphology resulting in a higher CoF. That is because the lowest CoF for any mesh relied upon by Petitioner's expert is 0.26. EX1009, Table 2, Fabric No. 15.

Poignantly, Petitioner's expert admitted that a POSITA would only consider materials that have a CoF of lower than 0.2. EX2029, 67:2-14. In like manner, a POSITA would not consider morphologies that have a CoF higher than 0.2. *Id.* Thus, a POSITA would not be motivated to combine the purported mesh of WN0400 with Phillips, because it would result in worse results and a slower, less

thrilling and fun sliding experience. That would, according to Petitioner's expert, destroy the primary objective here.

Third, a POSITA would know that sheeting is more durable than a mesh. Indeed, Phillips discloses a durable ride vehicle based on sheeting material. Therefore, a POSITA would know that, in terms of durability, WN0400 does not provide any benefit to Phillips, and is in fact detrimental to Phillips if combined as proposed by Petitioner. That is because the durability of any mesh layer is significantly worse than sheeting, primary because sheeting incorporates more fibers. EX2031, ¶16. Sheeting is more durable than mesh because there are more fibers to bear the contact and interaction of the materials. *Id.* Petitioner's expert has not studied this and therefore cannot and does not offer any suggestion otherwise. EX2029, 96:6-97:4.

In any event, Phillips already discloses a durable ride vehicle. As a result, WN0400 does not provide any benefit to Phillips in terms of durability.

Fourth, a POSITA would not be motivated to combine the mesh layer disclosed by WN0400 with Phillips, because doing so would require extensive and additional manufacturing steps, only to achieve worse results as explained above. Again, all of this would have to be undertaken only to achieve worse results in terms of CoF.

Fifth, a POSITA would know from Phillips that adhesive would need to be utilized to adhere WN0400 to the bottom of the ride vehicle. EX2031, ¶¶18-19; EX2030, ¶¶17-18. Even according to Petitioner's expert, a POSITA would know that the adhesive would permeate through WN0400 and destroy any benefits possibly stemming from the combination. EX2029, 16:16-18. Indeed, it is a "fundamental thing" that the adhesive will impregnate the fabric. *Id.* The same result occurs with respect to the use of epoxy – the epoxy permeates through the fibers. *Id.*, 83:21-84:9.

This would cause even worse CoF than already attendant to combining a mesh layer with Phillips. For example, it would result in a tacky substance exposed and otherwise between the bottom of the ride vehicle and the slide surface, causing even worse results. EX2030, ¶¶17-18. Even Petitioner's own expert admits that adhesive impregnates fabrics, and a sticky material that intervenes between the bottom of the ride vehicle and the slide surface would increase the CoF. EX2029, 51:6-52:9. That is because a POSITA would expect at least some adhesive to be present on the surface, and "[t]he adhesive generally would not have the low coefficient of friction." *Id.*, 61:15-64:1. A POSITA would therefore avoid using a mesh with an adhesive, because it is a sticky material. *Id.*; EX2031, ¶¶18-19; EX2030, ¶¶17-18.

As explained below, entirely absent from Petitioner or Petitioner's expert is any argument or evidence regarding the manner in which WN0400 would be adhered to the bottom of the ride vehicle disclosed in Phillips. Thus, Petitioner and Petitioner's expert have no evidence suggesting anything other than the fact that a POSITA would know that the adhesive would permeate through WN0400 and destroy any benefits possibly stemming from the combination, and would therefore not be motivated to do so.

2. *Petitioner Has Not Established That WN0400 Constitutes a "Known Technique" Applicable to Recreational Slide Systems*

Petitioner argues that a POSITA would have applied known techniques (WN0400's nylon mesh) to a known device (Phillips's slide system) to yield predictable results with a reasonable expectation of success, asserting that Phillips already disclosed nylon mesh material was appropriate for such a system. Pet., 42. However, Petitioner's conclusory statements fail to satisfy the basic requirements to establish a *prima facie* case of obviousness in this regard.

Petitioner's reliance on WN0400 as the alleged "known technique" is incorrect. The Supreme Court in *KSR* explained: "if a technique has been used to improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique is obvious

unless its actual application is beyond his or her skill.” *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 417 (2007).

WN0400 nylon mesh does not constitute a known technique. First, WN0400 is marketed and sold for uses in industries other than recreational slide systems - specifically “automotive, biomedical, chemical processing, and water treatment applications.” EX1007 (also stating, “Woven Mesh is commonly used for Filtration”). These uses of WN0400 nylon mesh are wholly unrelated to reducing friction between a ride vehicle and a slide surface of a recreational slide system.

There is no teaching or suggestion in the record that WN0400 nylon mesh has ever been used to improve slide systems or any analogous devices, and therefore a POSITA would not have recognized it as providing an improvement in the claimed context. Further, Petitioner identifies no ride vehicles in the prior art that include mesh as a bottom layer. Instead, Petitioner merely cites WN0400 without any analysis demonstrating that it qualifies as a “known technique.” Without such a showing, Petitioner has not met its burden of demonstrating that WN0400 is a known technique to establish a *prima facie* case of obviousness.

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

As also explained *supra* §VIII.B.2, 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. Even more lacking is an explanation regarding how a POSITA would *successfully* implement the purported combination.

For example, left entirely unaddressed is the impact of using a material with a completely different morphology (sheeting 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 determining 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, because that would dramatically and negatively impact the interaction between the ride vehicle and the slide surface. *Id.* Petitioner and Petitioner's expert 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.

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

As explained *supra* §VIII.B.3, Petitioner and Petitioner's expert do not mention any of the issues that would have to be considered by a POSITA to demonstrate a reasonable expectation of success in combining WN0400 with Phillips. For example, there is no analysis or evidence regarding the impact of a material with a completely different morphology (sheeting versus mesh) on the interaction between the ride vehicle and the slide surface, the large variety of mesh configurations that would need to be considered, and whether such a modification would impact the durability of the ride vehicle. EX2026, ¶¶141-142; EX2027, ¶¶124-125. As is also 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, including the monofilament fibers disclosed by WN0400 and the required processing of the bottom of the ride vehicle before any attempt to adhere those fibers. *Id.*

Petitioner's expert has now admitted that there are a vast number of additional considerations that a POSITA would have to take into account, all of which are completely unmentioned. This includes lowering the CoF by adding a lubricant. EX2029, 50:20-51:5. A wide variety of lubricants would need to be considered by a POSITA (*Id.*, 61:15-62:7; EX1003, ¶44), which would be a much easier alternative for a POSITA (*Id.*, 105:14-108:15). In addition, a POSITA would be aware that there are many options of nylon sheeting, which would have to be

considered. *Id.*, 102:12-18. A POSITA would also have to consider adding a substance between the two surfaces, for example wax coating or a spray. *Id.*, 105:14-108:15. This further demonstrates a failure to demonstrate a reasonable expectation of success in combining WN0400 with Phillips, because a POSITA would consider other options.

It is notable that the references relied upon by Petitioner and Petitioner's expert demonstrate that there would be no reasonable expectation of success. EX1009, relied upon by Petitioner and Petitioner's expert, states "[t]he nature of the contact surfaces during the sliding action affects the frictional resistance considerably. Deformation of leather surfaces 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 Petitioner's expert in connection with his reliance upon EX1010, "[t]he 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, a POSITA would not have understood a monofilament mesh fabric to provide any advantage for sliding over surfaces. EX2026, ¶203. As explained above, EX1009 states that variations in mesh size in monofilament

fabrics affect frictional resistance. *Id.* The results in Table 4 of EX1009 show a non-monotonic trend in CoF versus mesh coarseness (fabric-against-aluminum), leaving a POSITA without guidance as to what mesh coarseness, if any, could achieve low friction. *Id.* Further, a POSITA would understand that for plain-weave fabrics, higher pick density produces a tighter, smoother surface with lower friction, whereas a coarser weft yarn count creates greater waviness and peaks, resulting in increased friction. EX2030, ¶¶30-31. Accordingly, a POSITA would not look to looser weaves even within the class of plain-woven fabrics, and certainly would not turn to mesh fabrics characterized by open spaces. *Id.* POSITA would therefore have had no motivation to use WN0400, since smoother, denser fabrics - not mesh - provide the lower CoF required for sliding applications. *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 consider 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 penetrates through the mesh. *Id.* Moreover, adhesive penetration through the mesh creates additional surface roughness and friction, including at the

underside of the ride vehicle. EX2030. Thus, use of adhesive with nylon monofilament mesh, such as WN0400, would further undermine both durability and low-friction performance - outcomes directly contrary to Phillips's express teachings.

5. *The combination of Phillips and WN0400 does not teach the claimed coefficient of friction range*

As explained above, WN0400 does not provide any benefit to Phillips, and is in fact detrimental to Phillips if combined as proposed by Petitioner. Even if a POSITA was motivated to combine Phillips and WN0400, only to achieve worse results, the combination of Phillips and WN0400 does not teach the claimed CoF range, being "a range of between about 0.03 to about 0.2."

As explained *supra* §VI.C, the lowest CoF for any such mesh is 0.26. EX1009, Table 2, Fabric No. 15. That is because the only evidence of CoF data for mesh is found in EX1009, Table 2. Petitioner's expert claims that EX1009, Table 2 demonstrates that "the finest meshes hav[e] a higher CoF than the coarsest meshes," and in doing so, Petitioner's expert is referring to the "Fabric-to-Fabric" columns of Table 2. EX1003, ¶137. Thus, Petitioner's purported modification to Phillips would result in, at best, a CoF that is outside and worse than the range claimed in the '854 patent.

As mentioned above, Petitioner's expert has now admitted that the CoF

values presented in the various references cited by Petitioner do not bear on the claimed CoF range because CoF is not merely a property of the materials of the surfaces interacting with each other. In this regard, Petitioner's expert admitted that CoF measurements are dependent upon the condition of the contacting surfaces. EX2029, 67:23-68:1. CoF measurements are also dependent upon the chemistry of the contacting surfaces. *Id.*, 68:2-4. Testing setup also has an impact of CoF measurements. *Id.*, 68:10-16. Morphology of the contacting surfaces would also affect CoF measurements. *Id.*, 68:5-9; 71:23-72:5. Indeed, Petitioner's expert concedes that there are at least ten (10) different factors that influence CoF data, based on a reference he relied upon. *Id.*, 109:21-110:23, citing EX1027.

Importantly, a POSITA understands that CoF data is dependent upon these factors, including material, morphology, and testing conditions. *Id.*, 72:6-13. For example, the same fibers made into a different morphology or structure are going to result in different coefficient of data, a fact understood by a POSITA. *Id.*, 72:6-73:1.

As also explained *supra* §VIII.B.4, none of the friction tables cited by Petitioner's expert (e.g., EX1026; EX1027) comply with ASTM D1894, the standard specified in the '854 patent. EX2026 ¶¶61–69. Such results would not be relied upon by a POSITA. *Id.* ¶¶65–66. Even Petitioner's own references caution

that CoF data under non-specified conditions are unreliable. *Id.* ¶¶77–78, 172; EX1027.

Petitioner has failed to demonstrate that the alleged combination provides a CoF within the claimed range of “between about 0.03 to about 0.2” for an additional reason. As explained above, the lowest CoF for any such mesh is 0.26. EX1009, Table 2, Fabric No. 15. This does not fall within the claimed range, even without considering the required use of adhesive, which would penetrate through the mesh. Therefore, the purported combination of Phillips and WN0400 does not teach the claimed CoF range.

In addition, Dr. Spiegelberg demonstrates through an analysis of EX1009, which provides data for polymeric fabrics, that the fabrics do not meet the CoF claim limitation. EX2030, ¶¶22-26; EX2026, ¶¶197-199. 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. *Id.* Instead, a POSITA would use a sheet, as uniformly taught by Phillips. EX2026, ¶198.

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

- 1. The combination of Phillips and Fallgatter does not teach the claimed “mesh layer”***

Fallgatter does not disclose a mesh layer. EX2026, ¶¶229-233; EX2027, ¶¶179-183. Petitioner's expert suggests otherwise, arguing that "Fallgatter describes use of a 'woven textile' such as "nylon, polyester and polyethylene" thereby providing a mesh layer." This is the sole support for Petitioner's expert's suggestion, and it is not correct and unsupported. 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.* Indeed, Fallgatter demonstrates that when an inventor is trying to specify a mesh or fabric, they call it as such. EX2026, ¶¶232; EX2027, ¶¶182; EX1005, [0016]. As such, Fallgatter does not disclose that the low friction surface is a nylon mesh layer, but rather a low CoF material on top of a nylon textile or alternatively, a nonwoven textile. *Id.*

2. The combination of Phillips and Fallgatter does not teach the claimed coefficient of friction range

Petitioner's alleged combination rests on a fundamental misapplication of Fallgatter to Phillips. Petitioner asserts that "[i]n the resulting system, 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." This reasoning is flawed. Petitioner relies on

Fallgatter solely for its disclosed CoF values - values that apply to Fallgatter's silicon-coated slide system, not to Phillips' slide system.

Fallgatter describes a slide apparatus with a low-friction textile coated in silicone. EX1004, [0006]. Phillips, by contrast, discloses a flexible sheeting layer of low-friction material but not a silicone coating. EX1004, 4:21–24. Fallgatter makes clear it is the coating - not the substrate - that produces the reported CoF values (“[t]he friction-reducing coating comprises a silicone compound...having a dry coefficient of friction...less than about 0.25.” *Id.*, [0016])). A system without such a coating - like Phillips' - must therefore exceed 0.25. EX2026, ¶223.

Petitioner's alleged system, based on Phillips' sheeting layer and a fabric bottom vehicle, likewise cannot reach Fallgatter's numerical values because it lacks the silicone coating.

Fallgatter further teaches that enhanced performance requires both the ride vehicle and slide surface to include low-friction coatings. EX1005, [0006]. Phillips discloses neither, and neither does Petitioner's system. Petitioner's attempt to import Fallgatter's CoF values ignores these differences. Fallgatter's lowest CoF values apply only to its silicone-coated system, not Phillips' uncoated inflatable slide. The systems differ in structure (inflatable vs. non-inflatable), conditions (coated vs. uncoated), and resulting frictional properties. “[I]t is impermissible within the framework of Section 103 to pick and choose...to the exclusion of other

parts necessary to the full appreciation of what such reference fairly suggests.” *In re Wesslau*, 353 F.2d 238, 241 (C.C.P.A. 1965).

In short, Petitioner’s proposed system cannot achieve Fallgatter’s CoF values because it’s not Fallgatter’s system. Nor does Petitioner’s alleged motivation hold: it argues the combination would be “economical” (Pet., 63), yet Fallgatter warns PTFE and fluorinated polymers may be unsuitable due to weight and cost. EX1005, [0044]. Petitioner’s reasoning is conclusory and contradicts the very reference it cites.

Furthermore, even if a mesh was incorporated into the Phillips-Fallgatter combination (despite the fact that neither discloses nor suggests to do so), the lowest CoF for any such mesh is 0.26. EX1009, Table 2, Fabric No. 15. (*See supra* §VI.C). This is not a disclosure of the claimed range.

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 §§VIII.A-D. In summary, a POSITA would not be motivated to combine Phillips and WN0400 (§VIII.C), and a POSITA would not

be motivated to combine Phillips and Fallgatter (§VIII.D). In addition, for the reasons described above, a POSITA would not combine a mesh layer (as suggested by Petitioner’s expert in connection with WN0400 and Fallgatter) with Phillips (§§VIII.A-B).

Even if a mesh were incorporated into the Phillips-Fallgatter-WN0400 combination, the lowest CoF for any such mesh is 0.26. *See supra* §VI.C.

1. Ground 2B Relies on Impermissible Hindsight and Fails for Lack of Motivation to Combine WN0400 with Phillips and Fallgatter

Obviousness cannot be proven by “using the patent in suit as a guide through the maze of prior art references,” stitching together disparate teachings with the finished invention in mind. *In re NTP, Inc.*, 654 F.3d 1279, 1299 (Fed. Cir. 2011). Nor can the “suggestion to combine” be pulled from hindsight knowledge of the invention. *Cardiac Pacemakers, Inc. v. St. Jude Med., Inc.*, 381 F.3d 1371, 1376 (Fed. Cir. 2004). Section 103 requires judging obviousness at the relevant time, not through the lens of the inventor’s disclosure. *Grain Processing Corp. v. American Maize-Prods. Co.*, 840 F.2d 902, 907 (Fed. Cir. 1988).

Ground 2B is exactly the type of hindsight reconstruction these precedents forbid. Petitioner begins not with the prior art but with the ’854 patent itself - a mesh-bottom ride vehicle sliding on a non-wet lubricated slide surface. From there, Petitioner reverse-engineers a combination: borrowing Phillips’s low-friction

durable sheeting, conflating Phillips' sheeting with a mesh, importing Fallgatter's friction values from a silicone-coated slide system, and then tacking on WN0400 as a generic "mesh" to paper over the absence of a mesh in Phillips or Fallgatter.

The flaws in this approach are glaring. Phillips teaches sheeting, not mesh. *See supra* §§VIII.A-B. Based on the record evidence, a POSITA would recognize that mesh—particularly WN0400, with 400-micron openings and 45% open area—introduces significant drawbacks, including large openings that expose adhesive and increased surface roughness inherent to the mesh structure. These characteristics make it less, not more, suitable for low-friction sliding. Petitioner's own data confirms this conclusion.

Fallgatter's teachings reinforce the use of surface coatings to achieve low CoF; they do not suggest altering the underlying textile substrate to a mesh. There is no teaching, suggestion, or motivation in the prior art to substitute WN0400 for Phillips's sheeting in light of Fallgatter's coated slide system. The only reason WN0400 appears in Petitioner's proposed combination is because the '854 patent itself claims a mesh layer, and especially in claims 22 and 25, a specific configuration of mesh layer. That is impermissible hindsight.

Manufacturing considerations reinforce these points. Replacing Phillips' sheeting with mesh would allow adhesive to seep through the 400 micron openings, creating a tacky surface and otherwise increasing surface roughness at

the interface between the ride vehicle and slide surface, further degrading sliding performance. Far from offering a reasonable expectation of success, the proposed substitution undermines the very low-friction performance the prior art sought to achieve.

The only way to reach the claimed invention is to start with the '854 patent itself and then cherry-pick isolated portions of prior art to reconstruct it. That is not obviousness; it is hindsight. Because a person of ordinary skill would not have been motivated to include WN0400 based on Phillips-Fallgatter system, the combination fails, and Ground 2B therefore collapses under the weight of its own hindsight.

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

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.” *See In re Wands*, 858 F.2d 731, 737 (Fed. Cir. 1988). Petitioner ignores these factors and simply asserts that the '854 patent does not enable the friction range of “about 0.03 to 0.2” when using a “dry lubricant material includ[ing] a resin, a lubricant, a thermal conductor, and a hardener.” Pet., 87. Petitioner further claims

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.” Pet., 87. These arguments lack merit.

A POSITA would understand CoF values between 0.03 and 0.06 are known and achievable. EX2026, ¶251; EX2027, ¶¶200–201. Slick Slide’s system achieves such values. EX2030, ¶¶43-45. A POSITA would view the ’854 specification as enabling this range, including with resin, thermal conductor, hardener, and lubricant compositions that reduce CoF. EX2026, ¶¶252–254. The patent teaches that “the dry lubricant material is an anti-friction or friction reducing material in the form of a dry lubricant coating 34” (EX1001, 7:10–13), and describes commercial silicone/PTFE epoxies suitable for slide coatings (*Id.*, 7:21–35).

The ’854 patent also states that “[t]he lubricity of the dry coating 34 and the resulting coefficient of friction...is primarily influenced by the lubricant” (EX1001, 7:36–40), and a POSITA could readily adjust the lubricant amount to achieve 0.03–0.06. EX2026, ¶256. Including a thermal conductor such as copper further reduces and stabilizes CoF. EX1001, 7:65–8:2; EX2026, ¶¶257–258. Thus, a POSITA would understand how to achieve the full claimed range, including the low 0.03–0.06, in a dry lubricant coating that “includes a resin, a lubricant, a thermal conductor, and a hardener,” as required by claim 8. EX2026, ¶260.

In a Supplemental Declaration, Petitioner's expert attempts to further bolster Petitioner's lack of enablement arguments. Petitioner's expert's comments fall well short of demonstrating lack of enablement.

For example, Petitioner's expert cites to a study (EX1039) that "friction coefficient value and volume wear rate of the composite decreases with increasing MoS₂ content up to 4% by weight, but above 4% by weight MoS₂, the measured friction coefficient and wear rate begin to increase." EX1043, ¶6. In making this comment, Petitioner's expert concedes that a POSITA knows that adjusting a commonly used dry lubricant can impact, and decrease, the measured CoF. *Id.*; EX2030, ¶39. As already demonstrated, molybdenum disulfide, a commonly used dry lubricant, can achieve CoF levels in the claimed range. EX1026, ¶251.

Petitioner's expert also references an academic paper relating to the effects of curing temperature, curing agent, and particle shape, on tribological properties including dynamic friction and wear. EX1043, ¶7. That does not contradict the fact that a POSITA would understand that CoF values between 0.03 and 0.06 are achievable (EX2026, ¶251) and that 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 CoF (EX2026, ¶¶251-254).

Petitioner's expert also references an academic paper relating to filler materials including graphene and graphite. EX1043, ¶8. This merely demonstrates that low coefficients of friction can be achieved by reliance upon these filler materials. EX2030, ¶¶41-42.

That graphene and graphite are known filler materials only supports the fact that a POSITA would understand that low CoF values are achievable. EX2026, ¶¶253-254. The academic paper also demonstrates that a POSITA knows that filler can be used to achieve a desired CoF, and also demonstrates that determining the amount of filler is a routine matter for a POSITA. EX2030, ¶¶41-42. 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 CoF with a mesh ride vehicle between 0.03-0.06. EX2026, ¶256.

Next, Petitioner's expert acknowledges that the '854 patent describes commercial epoxies containing silicone or PTFE for coating the slide. EX1043, ¶¶13-14; EX1001, 7:21-35. The fact that the '854 patent does so is understood by a POSITA to provide extensive direction from the inventor, and the existence of working examples. EX2030, ¶¶43-44. Contrary to Petitioner's expert's suggestion, this provides support to a POSITA and provides further instruction regarding how to make and use the claimed invention without undue experimentation. *Id.*

Petitioner's expert is also wrong when declaring "[a] POSITA would not have been able to determine how much lubricant to add to an epoxy to achieve a desired friction coefficient." First, Petitioner's expert is wrong to suggest that what is required is to know how to achieve a desired friction coefficient. This is contrary to the law, which expressly contemplates and allows for experimentation. *In re Wands*, 858 F.2d 731, 737 (Fed. Cir. 1988). Second, the references relied upon, *i.e.*, EX1039, EX1040, and EX1041, all demonstrate that a POSITA knows to adjust the CoF by the addition of lubricant. EX2030, ¶44. In light of the guidance provided by the '854 patent, including extensive direction from the inventor and the existence of working examples, doing so is routine for a POSITA. *Id.* Third, Petitioner's expert does not even argue that any resulting experimentation would be "undue." EX1043, ¶21.

Finally, Petitioner's expert suggests that adding lubricant fillers would also involve "adjust[ing] amounts of other components" and "surface modification." As set forth in EX1039, doing so is well documented and known by a POSITA. EX2030, ¶45. In addition, the '854 patent discloses specific working examples that already address these issues and provide direction to a POSITA. *Id.* Regardless, adjusting the amounts of components and ensuring they combine with each other are routine matters for a POSITA (*Id.*), including based on the direction provided by the references relied upon (*Id.*).

Accordingly, Petitioner's assertions under Ground 3A fail.

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

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.” Pet., 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, while the '854 patent need not provide additional details that make clear the intended meaning of this claim term, it 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.

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.” Pet., 90. Petitioner offers the several alleged alternative interpretations of

the claim language to “illustrate the point.” Pet., 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, Petitioner’s assertions under Ground 3B fail.

IX. SECONDARY CONSIDERATIONS OF NON-OBVIOUSNESS

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*). Such evidence “may often be the most probative and cogent evidence in the record.” *Id.*, 1052.

Petitioner did not address objective indicia of nonobviousness. Pet.. As explained below, secondary considerations strongly support a finding of nonobviousness as to each of Petitioner’s §103 challenges.

A. Slick Slide’s Dry Slide Technology Created a New Market and Revolutionized Indoor Family Entertainment

Through the technology claimed in the ‘854 patent, Slick Slide pioneered an entirely new market for dry recreational slide systems, a category that has since seen rapid and sustained growth.

The inventions claimed in the ’854 patent enabled, for the first time, a dry slide capable of delivering the thrill of water slides, earning the industry moniker

“Dry Slide Technology.” Before this innovation, dry slides were slow, inferior, and unsuitable as the centerpiece of an indoor venue. Slick Slide’s breakthrough made viable the “world’s first waterless indoor slide park,” fundamentally altering the family entertainment industry - something obvious products do not do.

This shift is confirmed by recognized indicia of nonobviousness: significant commercial success, rapid expansion, and strong demand; consistent industry praise highlighting the patented technology as its defining feature; widespread copying by competitors; and the failure of others, for decades, to create a viable alternative to water slides.

B. Slick Slide’s Recreational Slide Systems Practice the Claims of the ‘854 Patent

One of Slick Slide’s recreational slide systems, which includes Slick Slide’s flagship Launch slide, is precisely one of the embodiments of the recreational slide system illustrated in the patent figures:

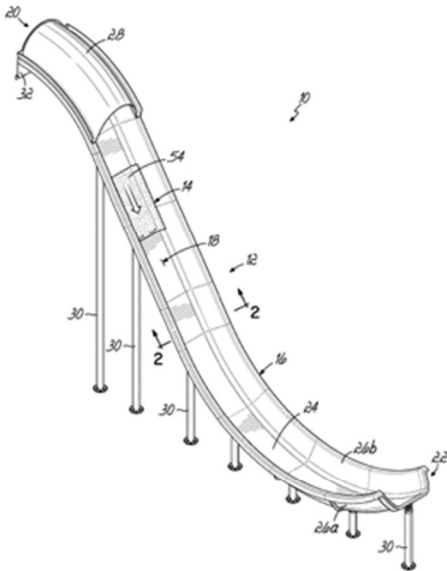


FIG. 1

The '854 Patent



Slick Slide's Launch Slide
Recreational Slide System

Slick Slide's recreational slide systems practice at least claims 1, 22, and 26 of the '854 patent. Each of these claims recites the core features embodied in each recreational slide system sold by Slick Slide and installed and operated by Slick City. Claims 1, 22, and 25 are coextensive with the commercial embodiments of Slick Slide's recreational slide system.

1. Independent Claim 1

a. The Preamble [1pre]

The preamble [1pre] of claim 1 requires "A recreational slide system." Slick Slide's recreational slide system practices this limitation. EX2030, ¶48; EX2046, 1-2.

b. Limitation [1a-i]

Limitation [1a-i] requires “a slide.” Slick Slide’s recreational slide system practices this limitation. Slick Slide’s recreational slide system may include a variety of different slide designs. EX2042. Each recreational slide system includes a slide. EX2030, ¶48.



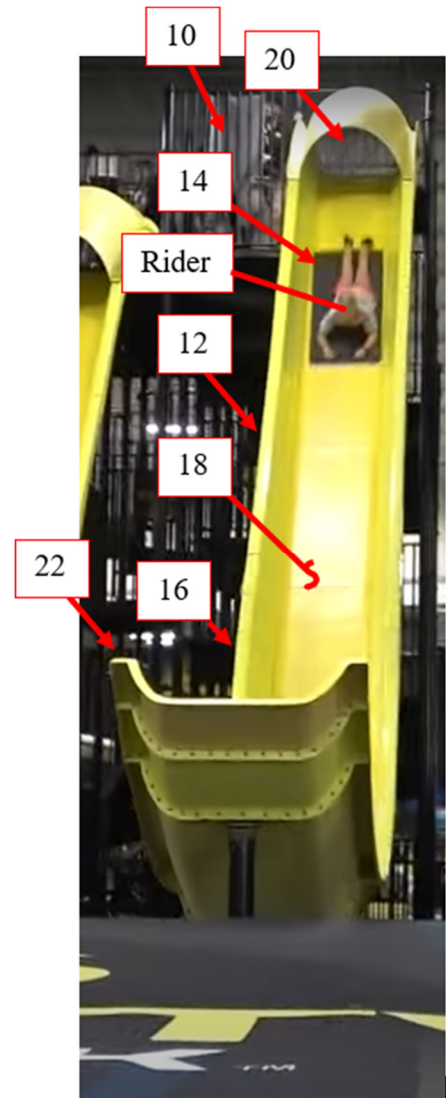
c. Limitation [1a-ii]

Limitation [1a-ii] requires that the slide include “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.” The slide body 16 extends between a top entrance 20 of the slide 12 to an opposite bottom exit 22, and the slide surface 18 is a non-wet lubricated slide surface as the slide surface 18 is free of any fluid or wet lubricant flowing down the slide surface 18 and between a rider or the ride vehicle 14 and the slide surface 18. EX2030, ¶50.

d. Limitation [1b-i]

Limitation [1b-i] requires “a ride vehicle configured to support a rider down the slide.” As an example, the image above depicts Slick Slide’s recreational slide system that includes its flagship Launch slide 12 and the ride vehicle 14 for use with the slide 12. As shown, the rider is positioned atop the ride vehicle 14, and the ride vehicle 14 is configured to support the rider down the slide 12. EX2030, ¶51.

e. Limitation [1b-ii]

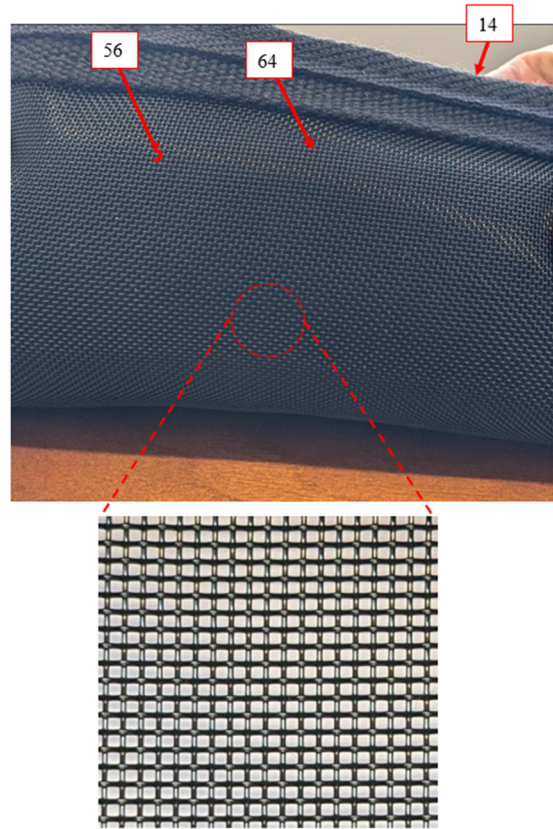


Limitation [1b-ii] requires “the ride vehicle including a top surface configured to contact the rider.” Slick Slide’s ride vehicle 14 is depicted to the right. As shown, ride vehicle 14 includes a top surface 54 configured to contact the rider. As can be seen in the figure above that depicts Slick Slide’s Launch slide 12, the top surface 54 includes handles configured to be gripped by the rider while supported atop the ride vehicle 14 and in contact with the top surface 54. EX2030, ¶52.



f. Limitation [1b-iii]

Limitation [1b-iii] requires “a mesh layer that forms a bottom surface configured to contact the slide surface.” The underside of Slick Slide’s ride vehicle 14 is depicted to the right. As shown, the ride vehicle 14 includes a mesh layer 64 that forms a bottom surface 56 of the ride vehicle 14 that is configured to contact the slide surface 18. The mesh material that forms the mesh layer 64 is formed by warp and weft threads arranged to create open spaces with regular and uniform spacing; the mesh material is characterized by these open spaces and therefore is a mesh layer. EX2030, ¶53.



g. Limitation [1c]

Limitation [1c] requires “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.” The coefficient of friction between the mesh layer of Slick Slide’s ride vehicle and the non-wet, lubricated slide surface of Slick Slide’s slides, as measured in accordance with ASTM D1894, is between 0.047-0.090. EX2030, ¶54.

The Federal Circuit has made clear that a patentee is not required “to prove perfect correspondence to meet the coextensiveness requirement.” *Fox Factory, Inc.*, 944 F.3d 1366, 1374 (Fed. Cir. 2019). Here, Slick Slide’s commercial recreational slide system embodiments are a perfect correspondence to the claimed invention of claim 1 of the ‘854 patent. Accordingly, Patent Owner “is entitled to a rebuttal presumption of nexus between the asserted evidence of secondary considerations and a patent claim,” and specifically claim 1 of the ‘854 patent. *Id.*, 1373 (citation omitted).

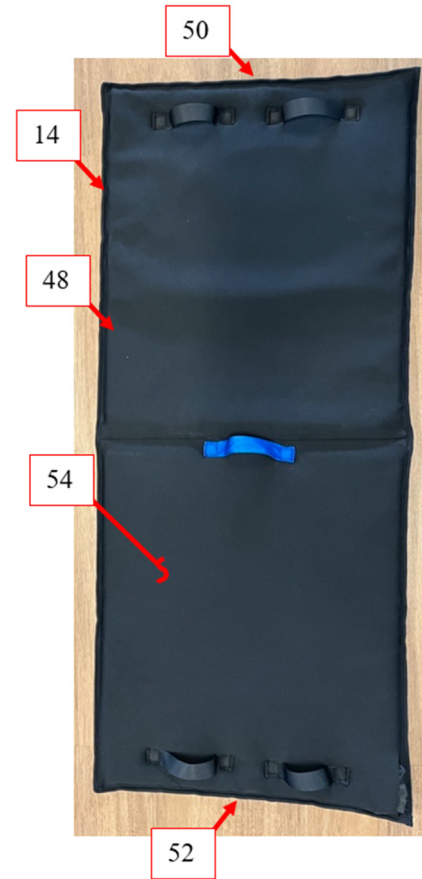
2. *Independent Claim 22*

a. *The Preamble [22pre]*

See supra §IX.B.1.a.

b. Limitation [22a-i]

Limitation [22a-i] requires “an elongate body that extends between a first end and an opposite second end.” Slick Slide’s ride vehicle 14 is depicted to the right. As shown, the ride vehicle 14 includes an elongate body 48 that extends between a first end 50 and an opposite second end 52. EX2030, ¶57.



c. Limitations [22a-ii]-[22a-iv]

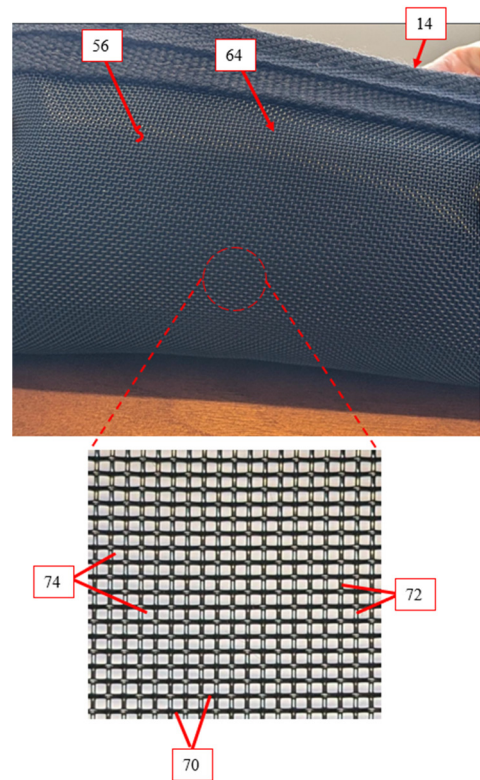
Limitation [22a-ii] requires “the body including a central core positioned between”; limitation [22a-iii] requires “a top surface of the ride vehicle”; and limitation [22a-iv] requires “a woven mesh layer that forms a bottom surface of the ride vehicle that is configured to contact the non-wet lubricated recreational slide.” The construction of Slick Slide’s ride vehicle 14 is depicted to the right. As shown, the body 48 of Slick Slide’s ride vehicle 14 includes a central core 60 in the form of a flexible foam pad positioned between a fabric layer that forms the top surface 54 of the ride vehicle 14 and a woven mesh layer 64 that



forms a bottom surface 56 of the ride vehicle 14. The woven mesh layer 56 is on the underside of the ride vehicle and thus is configured to (and does) contact the non-wet lubricated recreational slide 12 during use. EX2030, ¶58.

d. Limitation [22b]

Limitation [22b] requires “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.” The images to the right depict the woven mesh layer 64 that forms a bottom surface 56 of Slick Slide’s ride vehicle 14, including a close-up image of the woven mesh layer 64 of Slick Slide’s ride vehicle 14. As shown, the woven mesh layer 64 of Slick Slide’s ride vehicle 14 includes a plurality of warp threads 70 and weft threads 72. The open area of the woven mesh layer 64 is 43%. EX2030, ¶59.



3. Independent Claim 25

a. The Preamble [25pre]

See supra §IX.B.1.a.

b. Limitation [25a-i]

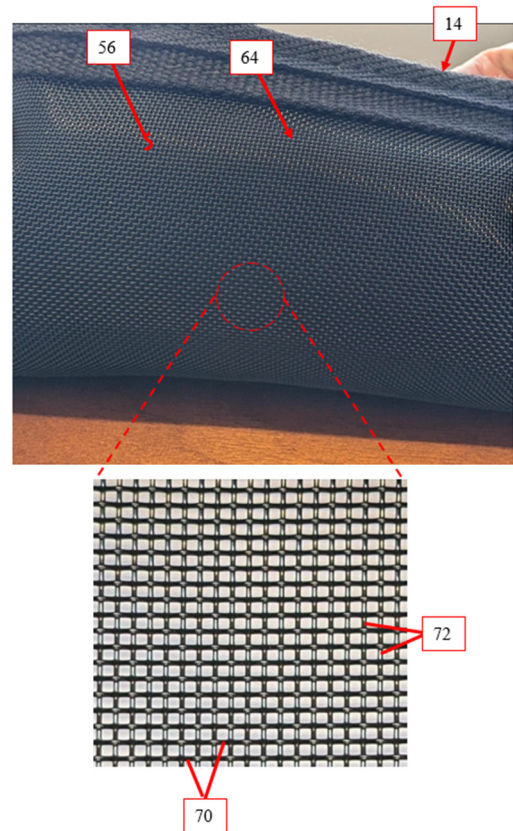
See supra §IX.B.2.b.

c. Limitations [25a-ii]-[25a-iv]

See supra IX.B.2.c.

d. Limitation [25b]

Limitation [25b] requires “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.” The pictures to the right depict the woven mesh layer that forms a bottom surface of the ride vehicle and a close-up view of the woven mesh layer of Slick Slide’s ride vehicle. As shown, The woven mesh layer 64 layer of Slick Slide’s ride vehicle includes a plurality of warp threads 70 and weft threads 72. Each warp thread has a diameter of approximately 0.3mm and each weft thread has a diameter of approximately 0.3mm. EX2030, ¶64.



C. Slick Slide’s Patented Recreational Slide Systems Have Received Industry Praise

Evidence of industry praise and acceptance shows that a patent claim was nonobvious at the time of its invention. *Apple Inc.*, 725 F.3d at 1366; *Institut Pasteur*, 738 F.3d at 1347; *Geo. M. Martin Co. v. Alliance Mach. Sys. Intern. LLC*, 618 F.3d 1294, 1305 (Fed. Cir. 2010).

Slick Slide’s recreational slide systems have experienced enormous commercial success. EX2033, ¶¶18-21, 24-26, 32-39. In light of this success, there has been extensive attendant industry praise. *Id.*, ¶¶50-72. This is due to the fact that Slick Slide’s innovations, claimed in the ‘854 patent, have met and exceeded long-felt but unmet needs. *Id.*, ¶¶84-90. This consistent, feature-specific industry praise would not exist if the claimed innovations were truly obvious—let alone obvious for decades. Petitioner’s arguments are therefore nothing more than hindsight reconstruction.

D. The Claimed Features of the 854 Patent Have Created Commercial Success

Commercial success in the relevant marketplace has been repeatedly recognized as highly relevant objective evidence of nonobviousness. *See, e.g., Rambus Inc. v. Rea*, 731 F.3d 1248, 1257 (Fed. Cir. 2013); *Leo Pharm. Prods., Ltd.*, 726 F.3d at 1358. In particular, evidence of commercial success and “some

causal relation or ‘nexus’ between an invention and commercial success of a product embodying that invention [is] probative of whether an invention was non-obvious.” *Merck & Co. v. Teva Pharm. USA, Inc.*, 395 F.3d 1364, 1376 (Fed. Cir. 2005).

1. Slick Slide’s Recreational Slide Systems Have Been Commercially Successful

Slick Slide’s recreational slide systems have achieved clear and substantial commercial success. As a result of Slick Slide’s innovations, dry recreational slides were transformed from being an insignificant portion of the indoor family entertainment industry, largely dismissed as incapable of providing the speed and thrill necessary to support dedicated venues, into the centerpiece of an entirely new category of family entertainment—indoor slide parks. EX2033, ¶¶22-26, 32-39. As a direct result, Slick Slide has experienced rapid and sustained growth. EX2033, ¶¶18-21, 24-26, 32-39. And, that has translated into incredible sales and market share growth. *Id.* The commercial success of Slick Slide’s recreational slide systems are due to the inventions set forth in independent claims 1, 22, and 25 of the ’854 patent. EX2033, ¶¶40-49; EX2030, ¶¶46-65.

2. There is a Nexus Between the Claims of the ’854 Patent and Slick Slide’s Commercial Success

The success of Slick Slide’s systems flows directly from the claimed features of independent claims 1, 22, and 25. The systems are coextensive with the claims, creating a presumption of nexus. EX2033, ¶¶40-49; EX2030, ¶¶46-65; EX2046. Industry reviewers have specifically praised the slide, ride vehicle, and low-friction performance, while media coverage highlights these patented features as drawing consumers to Slick City parks. *Id.*, ¶¶50-72. Slick Slide and Slick City’s marketing consistently emphasize the technology, and founder Gary Schmit’s testimony confirms that these features drive both product success and venue growth. EX2033, ¶¶32-39.

e. A Nexus is Presumed: Slick Slide’s Recreational Slide Systems Practice the Claims of the ‘854 Patent

“[I]f the marketed product embodies the claimed features, and is coextensive with them, then a nexus is presumed and the burden shifts to the party asserting obviousness to present evidence to rebut the presumed nexus.” *Brown & Williamson Tobacco Corp. v. Philip Morris, Inc.*, 229 F.3d 1120, 1130 (Fed. Cir. 2000).

Slick Slide’s recreational slide systems are coextensive with at least independent claims 1, 22, and 25 of the ‘854 Patent. EX2033, ¶¶40-49; EX2030, ¶¶46-65. Indeed, Slick Slide’s commercial recreational slide system and ride vehicle are a near perfect correspondence to the claimed invention of at least

claims 1, 22, and 25 of the ‘854 patent. *Id.* There are no components to the Slick Slide recreational slide system, including the ride vehicle, that fall outside of claims 1, 22 and 25, including claims dependent therefrom. Accordingly, Patent Owner “is entitled to a rebuttal presumption of nexus between the asserted evidence of secondary considerations and a patent claim,” and specifically at least claims 1, 22, and 25 of the ‘854 patent. *Fox Factory, Inc.*, 944 F.3d 1366, 1373 (citation omitted).

f. The Evidence Undeniably Shows a Nexus

However, even if the nexus is not presumed, the evidence clearly establishes a *prima facie* case of nexus between Slick Slide’s commercial success and the patented invention. First, Slick Slide’s claimed features of its recreational slide system, including the slide, ride vehicle, and low CoF achieved by the combination, have been the subject of extraordinary industry praise, which strongly indicates that the products, which embody the claimed features, are the driver of Slick City’s rapid growth and popularity. EX2033, ¶¶32-39.

At the same time, the evidence also shows that the sales of Slick Slide’s recreational slide systems, and by extension the success of Slick City, are driven by the patented features of the products rather than advertising. EX2033, ¶17.

A nexus to commercial success can also be established by testimony that a product was successful due to the patented features. *See Power Integrations, Inc. v. Fairchild Semiconductor Int'l, Inc.*, 711 F.3d 1348, 1368 (Fed. Cir. 2013). Mr. Gary Schmit, Slick Slide's Founder and CEO, has testified that Slick City's success stems directly from Slick Slide's patented dry slide technology.

For each of these reasons, it is clear that there is a nexus between the commercial success of Slick Slide's recreational slide systems, Slick City's success, and the features of claims 1, 22, and 25. For this additional reason, claims 1, 22, and 25 and the claims that depend therefrom are objectively non-obvious in addition to being clearly non-obvious in view of the prior art cited by Petitioner.

E. Copying by Others

Success invites copy-cats. In evaluating whether a product has been commercially successful, another indicator can be the decisions and behaviors of other participants in the marketplace that are consistent with a belief that the product will be, or has been, a marketplace success. *See Windsurfing Int'l, Inc. v. AMF Inc.*, 782 F.2d 995, 1000 (Fed. Cir. 1986); *see also Power-One, Inc. v. Artesyn Tech., Inc.*, 599 F.3d 1343, 1352 (Fed. Cir. 2010).

UATP IP, LLC, d/b/a Urban Air Adventure Park, is an operator of "adventure parks." EX2033, ¶¶73-83. Urban Air's parks feature trampolines, ziplines, ropes

courses, and climbing walls. Urban Air and Slick City compete directly in the FEC market. *Id.*

Urban Air, eager to capitalize on the growing demand for indoor slides created by Slick Slide's innovations, announced in 2024 the launch of "new indoor slides." EX2001, 1. Yet many of these designs closely mirror Slick Slide's flagship products, even adopting nearly identical names—"Max Launch Slide," "Launch Slide," "Racer Slide," and "Scoop Slide." *Id.*, 3. Urban Air's promotional video (EX2001) further shows ride vehicles strikingly similar to Slick Slide's.

Although Urban Air's development costs are undisclosed, it is reasonable to assume significant investment in creating, installing, and marketing these slides. Such investment reflects recognition that Slick Slide's patented dry-slide systems drive market demand. The commercial success of Slick Slide's technology strongly rebuts any claim of obviousness.

F. Long Felt but Unsolved Need and the Passage of Time

The length of the intervening time between the publication dates of the cited references and the patent at issue "speaks volumes to the nonobviousness" of the invention. *See Leo Pharm.*, 726 F.3d at 1359.

§III.A establishes that the need for faster, more thrilling dry slides was long-felt. Dry slide systems have existed for over a century, yet dry slides never provided the excitement needed to anchor FECs. The '854 patent's mesh-bottom

ride vehicle, combined with a non-wet lubricated slide surface, achieves low friction and the thrill of water slides without water. This innovation made dry slides commercially viable, as shown by the success of Slick City Action Parks, which demonstrate that the patented technology finally satisfied this unmet need.

G. Unexpected Results

The record confirms that Slick Slide's results were unexpected. Petitioner's own cited mesh data shows expected coefficients of friction for mesh of 0.26 or higher. A person of ordinary skill would not have expected that a ride vehicle with a mesh layer that forms the bottom surface could achieve lower coefficients of friction. Yet Slick Slide's patented combination of a ride vehicle with a mesh layer that forms the bottom surface and a non-wet lubricated slide surface did precisely that - achieving CoF and ride performance no one would have reasonably predicted from the prior art.

X. CONCLUSION

For each of the reasons set forth above, Petitioner has failed to establish that any claim of the '854 patent is unpatentable.

Respectfully submitted,

Dated: September 15, 2025

/Brett A. Schatz/

Brett A. Schatz, Reg. No. 59,764

Louis H. Sitler, Reg. No. 81,818

Wood, Herron & Evans LLP

600 Vine Street

Suite 2800

Cincinnati, OH 45202

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 Response totals 20,650 which is less than the 20,700 allowed per Paper 19. 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,

Dated: September 15, 2025

/Brett A. Schatz/
Brett A. Schatz, Reg. No. 59,764
Louis H. Sitler, Reg. No. 81,818
Wood, Herron & Evans LLP
600 Vine Street
Suite 2800
Cincinnati, OH 45202

CERTIFICATE OF SERVICE

Pursuant to 37 C.F.R. § 42.6(e)(4), the undersigned certifies that on September 15, 2025, a complete and entire copy of this Patent Owner's Response and its supporting exhibits were provided via email, to the Petitioner by serving the email correspondence addresses of record as follows:

W. Karl Renner, Reg. No. 41,265
Thomas A Rozylowicz, Reg. No. 50,620
Craig A. Deutsch, Reg. No. 69,264
Kiersten M. Batzli, Reg. No. 75,476

Fish & Richardson P.C.
60 South Sixth Street, Suite 3200
Minneapolis, MN 55402
Tel.: 202-783-5070 Fax: 877-769-7945
PGR58544-0002PS1@fr.com

/Louis H. Sitler/
Louis H. Sitler
Wood, Herron & Evans LLP
600 Vine Street
Suite 2800
Cincinnati, OH 45202