UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

PRIME TIME TOYS LLC, PRIME TIME TOYS LTD. and EASEBON SERVICES LTD.
Petitioner,

v.

SPIN MASTER, INC.,
Patent Owner.

Case IPR2023-01339
Patent 8,640,683

PATENT OWNER'S RESPONSE

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EX2002 Respondents' Notice of Prior Art, *Certain Soft Projectile Launching Devices, Components Thereof, Ammunition, and Products Containing Same,* Inv. No. 337-TA-1325 (ITC)

EX2003 Respondents' Opposition to Complainants' Summary Determination Motion (Public Version), *Certain Soft Projectile Launching Devices, Components Thereof, Ammunition, and Products Containing Same,* Inv. No. 337-TA-1325 (ITC)

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EX2092	CPX-0047 Xploderz 45112
EX2093	CPX-0069 Xploderz X4 Savage Shield 45235

EX2094 CPX-0040 Xploderz 46000 Loose

EX2095 CPX-0052 Xploderz X2 Invader 700 46001

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EX2097 CPX-0034 Xploderz 46005 Loose

EX2098 CPX-0048 Xploderz 46010

EX2099 CPX-0059 Xploderz Blaster Pro Pump Action 49103

EX2100 CPX-0060 Xploderz Blaster Pro Auto

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EX2108 CPX-0066 Xploderz X4 Savage Shield 45235

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EX2110 CPX-0057 Xploderz Cobra Shield 45240

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EX2112 CX-1853 Happiness Is a Toy Gun; From the backyard to the cubicle, nothing offers a quick hit of fun like these weapons of leisure; Hsu Michael; Wall Street Journal (Online); 8/27/2011

EX2113–EX2114 RESERVED

EX2115 CONFIDENTIAL_RX-0120C 12/8/2022 Deposition Transcript of Dan Bairos

EX2116 Video Measurement of the Muzzle Velocity of a Potato Gun, Physics Department, United States Naval Academy

EX2117 ASTM F1979–10 "Standard Specification for Paintballs Used in the Sport of Paintball" (Approved: July 2010; Published: Aug. 2010)

EX2118 Nonpowder Firearm Injuries to Children Treated in Emergency Departments, American Academy of Pediatrics (2019)

EX2119 ASTM F963–07 "Standard Consumer Safety Specification for Toy Safety" (Approved: March 2007; Published: May 2007)

EX2120 Materials Science and Engineering, An Introduction, John Wiley & Sons, Inc. (8th Ed.)

EX2121–EX2199 RESERVED

EX2200 Proposed Protective Order

EX2201 Redline of Proposed Protective Order vs. Default Protective Order

I. INTRODUCTION

This case asks whether Petitioner proved that a skilled artisan would have combined teachings from Peev, a Bulgarian patent about high-powered airsoft guns, and Spitballs, an obscure product listing for toy polymer spheres. The answer is no.

Despite claiming to follow *KSR*'s problem-solution approach, Petitioner nevertheless failed to prove a necessary factual predicate of its alleged obviousness case—that a skilled artisan would have expected Spitballs to be safer than conventional plastic airsoft rounds because Spitballs are softer. Petitioner assumed the reductive softer-means-safer logic must apply to Spitballs; but it does not. What Petitioner overlooked is that Spitballs are massive compared to airsoft rounds; and increased mass increases a projectile's capacity to injure. Petitioner also assumed a skilled artisan would have expected the soft polymer toys described by Spitballs to make suitable ammunition for the kind of high-powered airsoft gun taught by Peev, and that a skilled artisan looking to make airsoft safer would have done so by attempting to concoct softer ammunition. These additional assumptions are unsupported in the Petition and now debunked by the evidence presented below. Petitioner's failures of proof mean all of the Challenged Claims should be upheld.

More, specific to claims 5, 8, and 9, the record now also includes extensive evidence of objective indicia that combining the as-claimed super absorbent polymer ammunition with the as-claimed projectile launcher was far from obvious. If it were

so obvious, the first patent-practicing product would not have been lauded by the industry or been immensely successful in the marketplace; but it was. If it were so obvious, the '683 Patent would not have spawned an entire new product segment with multiple licensees; but it did. And if it were so obvious, a toy company like Petitioner would have done it first; but they did not. As detailed below, Petitioner's attempt to shoot a different form of polymer-based ammunition using a different mechanism years before the '683 Patent failed, and Petitioner later obtained the patent-practicing product [redacted] before releasing its own infringing product. Petitioner's hindsight-laden attempt to prove obviousness fails.

II. THE COMMERCIALLY SUCCESSFUL AND INDUSTRY PRAISED INVENTION OF THE '683 PATENT

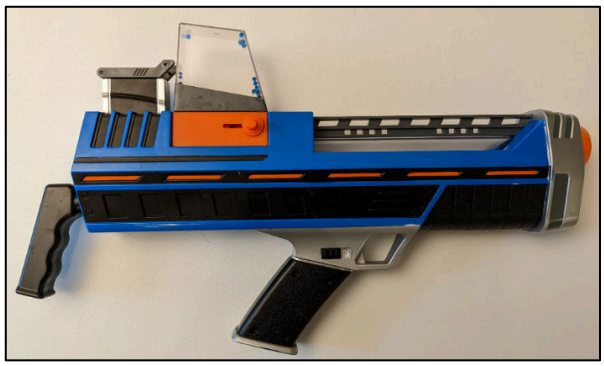
At the time of the '683 Patent in 2010, the recreational projectile launcher market was dominated by foam-ammunition launchers, paintball guns, and airsoft guns. *See*, *e.g.*, EX1001, 1:20–67. Each of these launcher types presented a distinct feature set that appealed to certain groups of enthusiasts and casual customers. *Id*. But despite their widespread commercial adoption, foam, paintball, and airsoft designs also had significant tradeoffs and drawbacks. *Id*.

For example, "[o]ne reason [Hasbro's] NERF® foam and other foam based projectile toys have become so popular has been due to the soft and light properties of the foam material," which "can be formed into balls and darts and fired from toy

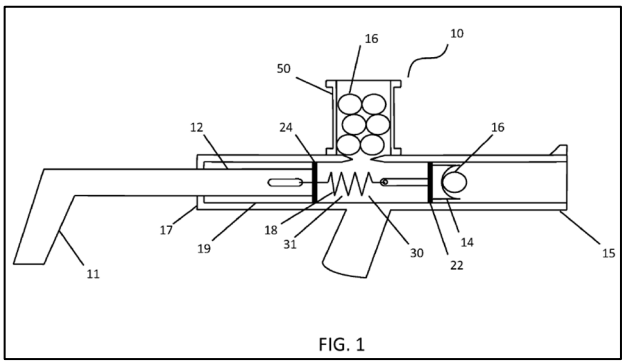
weaponry with little risk of injury." EX1001, 1:37–48. But "[b]ecause foam based materials…are light, they are highly susceptible to air forces when trying to project them through the air in free flight as occurs when fired from toy weaponry." *Id.* 1:53–56, 1:58–61. As for paintball and airsoft guns, while less susceptible to air forces, many of "these systems are for adult use only due to the energy imparted to the projectile and the ability of the projectile to do serious harm." *Id.* 1:63–67.

The '683 Patent's inventors sought "to provide an alternative soft-projectile launching system to those presently on the market," one that "increase[d] the user experience as compared to foam-based projectile toys, yet [also] remain[ed] safe for children to use." EX1001, 2:3–5, 3:10–13. The inventors achieved this feat by creating a new type of projectile launcher that leverages the unique properties of super absorbent polymers ("SAPs"). SAPs are polymers that can absorb an extremely large amount of water relative to their own mass. *Id*. 3:46–53. SAPs have been known since the 1960s and were primarily used in household items like diapers, protective underwear, and sanitary napkins. *Id.* But SAPs had never before been formed as ammunition comprising a plurality of soft projectiles configured for use with a projectile launcher having the specific properties claimed by the '683 Patent.

The original patentee, Maya Group, implemented the '683 Patent's innovations in a line of blaster products called Xploderz (e.g., pictured below, left).



Xploderz XStormer 1000



'683 Patent at Figure 1

These patent-practicing Xploderz products enjoyed immense commercial success, and they were the recipient of widespread industry praise, all due to the unique combination of features in the '683 Patent's claim 5. *See* EX2007 pp.82–96. The Xploderz received "best toy" awards, sparked "an entirely new product segment" and became the "number one selling boy toy product for Target" when it launched, and enjoyed "sales over the life of the products [of] approximately $50 million" with "multiple line extensions" placed at large retailers like Kmart, Target, Toys "R" Us, and Walmart. *Id.* As discussed at Section VII, the extensive success and praise of Xploderz are strong objective indicia of nonobviousness over Petitioner's strained prior art combination of Peev and Spitballs.

III. PEEV & SPITBALLS, A MISMATCH BETWEEN GUNS & TOYS

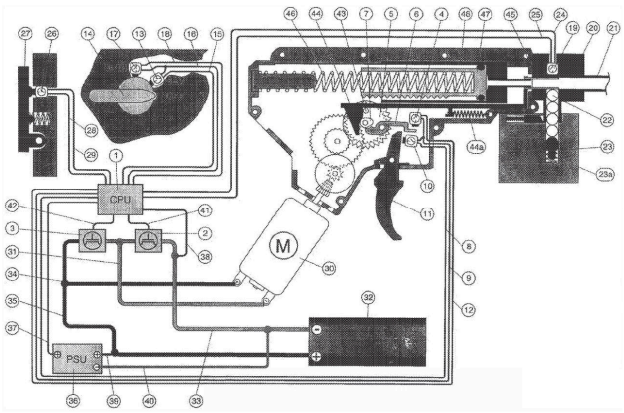
Peev and Spitballs do not go together. A sophisticated, high-powered airsoft gun like the one Peev describes is not a toy, and no reasonable person looking to improve such a gun would have thought to combine Peev's teachings with teachings from Spitballs, a reference about polymer-based science toys.

A. Peev: A More Realistic Automatic Electric Airsoft Gun

Peev is about airsoft guns. More specifically, Peev is about electric airsoft guns, which are often called "Automatic Electric Guns" or "AEGs." EX1003 p.23, p.26; EX2015 ¶27 (citing EX2016 p.15). "Electric airsoft guns [1] externally represent a copy of real firearms," and Peev's "task" was to make them even more gun-like, both operationally and functionally. EX1003 p.23, p.26 ("as close as possible to…the real firearm"). The inventor, Vladimir Peev, exhibiting his improved lifelike AEG is pictured below, and the following sections discuss Peev's patent and airsoft further. *See* EX2015 ¶¶27–28 (citing EX2017; EX2018; EX2019).



***See* EX2015 ¶27 (citing YouTube)**



EX1003 p.38 (Figure 1)

1. Key Concepts About Airsoft Guns

<u>Airsoft guns</u> are replica firearms "that shoot 'soft' plastic BBs." EX2015 ¶29 (quoting EX2016 p.6). Real firearms with corresponding airsoft replicas include the M1 carbine, a "light-weight, semi-automatic rifle," the AK-47, a "popular assault

rifle" introduced in the 1940s, and the Beretta M9, "the standard U.S. Sidearm in 1985." *Id*. (quoting EX2016 pp.55–60).



EX2020 p.1



EX2021 p.1



EX2022 p.1



EX2023 p.1

Airsoft guns are used in a variety of settings. Some people "buy them because airsoft guns provide a safe, low cost way to practice shooting skills." EX2015 ¶30 (quoting EX2016 p.3). Others buy airsoft guns "in order to take part in airsoft game[s]," which "are generally military simulations played by two teams either in indoor facilities or outdoors in a woodland setting." *Id*. (quoting EX2016 p.3). "[A]irsoft replica guns are also used by both the police and military for training purposes, providing an easy and inexpensive alternative to other training methods." *Id*. (quoting EX2016 p.6).

Airsoft ammunition comes in the form of spherical plastic objects called "pellets" or "BBs." EX2015 ¶31 (quoting EX2016 p.7). "Almost all airsoft guns use 6 millimeter plastic BBs, but there are different weights of airsoft BBs (.12 gram, .20 gram, .23 gram, .25 gram, etc.)." *Id*. (quoting EX2016 p.11). "Most airsoft guns shoot 0.2 gram BBs at speeds from about 100 fps (feet per second) for a low-powered spring pistol up to around 500 fps or more for customized sniper rifles." *Id*. (quoting EX2016 p.11).

Automatic Electric Guns (AEGs) "are powered by batteries and use an electric motor to drive a gear-piston system that actually fires the BBs. AEGs are the main weapon of choice for airsoft players due to a combination of range, rate of fire, number of rounds per battery charge, BB capacity and faithful duplication of actual firearms." EX2015 ¶32 (quoting EX2016 p.15). "AEG muzzle velocities average somewhere in the neighborhood of 300–350 fps and fire at around 500–700 rounds per minute." *Id*. (quoting EX2016 p.15).

Airsoft games are typically simulated military skirmishes, patterned after prisoner rescues, capture the flag scenarios, or famous historic battles; thus, the shorthand term "milsim" or "MilSim." *See* EX2015 ¶33 (citing EX2016 p.6, pp.30–32, p.42). Unlike paintball games, where players are marked with colored paint when hit, "[a]irsoft games operate on the honor system and depend on players acknowledging on their own when they've been hit." *Id*. (quoting EX2016 p.38).

As one might expect, problems and conflicts arise in "instances when a player may not feel a BB hit." *Id*. (quoting EX2016 p.40).

Police and military training is effective with airsoft guns for a variety of reasons. "The ammunition is inexpensive, and minimal protective gear is required to safely participate." EX2015 ¶34 (quoting EX2024 p.1). Moreover, between the precise replication of actual firearms and the impact force of the high-speed plastic ammunition, airsoft guns facilitate realistic "live-fire training with force-on-force scenarios." *Id*. (quoting EX2025 p.11). As one author put it: "It's amazing how the stress of being hit by a plastic pellet motivates you to shoot on the move as opposed to standing in place." *Id*. (quoting EX2025 p.11). By design, airsoft "feels real," so that trainees "still get the adrenaline dump" of live combat. *Id*. (quoting EX2024 p.2). The point is to put them "under stress," so that they make their mistakes in training, not in the field. *Id*. (quoting EX2024 p.2).

Airsoft standards were promulgated by ASTM International in the mid-late 2000s, years before the '683 Patent. Initially handled by a smaller task group, in 2008, ASTM formed a formal subcommittee dedicated to developing industry standards for airsoft guns. EX2015 ¶35 (citing EX2027). Two of the early ASTM airsoft standards were ASTM F2679–07 "Standard Specification for 6 mm Projectiles Used with Low Energy Air Guns" and ASTM F2748–08 "Standard Specification for Low Energy Air Guns (Less Than 1 Joule)." *Id*. (citing EX2028;

EX2029). Both of these standards expressly address the type of "air guns…used in the sport commonly called airsoft." *Id*. (quoting EX2029 p.1; EX2028 p.1). Under F2679–07, the standard definition of "suitable" airsoft ammunition is simple: "spherical, of 6 mm (.24 cal) diameter, non-metallic and non-liquid filled." *Id*. (quoting EX2028 p.1).

2. **Peev's Improvements to Conventional Electric Airsoft Guns**

In many ways, Peev's gun functions like a conventional electric airsoft gun. *See* EX2015 ¶¶36–38 (detailing Peev's firing sequence). However, what is unique about Peev's disclosure is that it remedies several problems with conventional electric airsoft guns that Vladamir Peev and his co-inventor identified. EX2015 ¶39 (citing EX1003 pp.23–25). Most notably in this proceeding, Peev identifies a "major disadvantage" in that the conventional design of an electric airsoft gun "does not provide an indication that the magazine has run out of rounds," causing the gun to dry fire until the user "visually detect[s]" that no ammunition is flying out of the barrel. *Id*. (quoting EX1003 p.25). Peev solves this problem by configuring the gun to cut power to the motorized gear set in response to a sensor detecting that the magazine is empty. *Id*. (quoting EX1003 p.34).

What matters in this proceeding is that the plastic ammunition in the electric airsoft gun Peev teaches is subject to multiple mechanical and pneumatic forces, stemming both from the conventional aspects of the firing sequence and the unique

magazine-empty detection mechanism that Peev and his co-inventor discovered. EX2015 ¶40 (Dr. Kudrowitz detailing applied forces); *see infra* §IV.A.2.ii.

B. Spitballs: Slimy, Squishy Absorbent Polymer Toys

The Spitballs reference includes what is purportedly a listing for a novelty polymer product in the "Science Toys" department of an online store called ThinkGeek.com. EX1002 p.15; *see also* EX2015 ¶41. According to the Spitballs reference, once grown in water, the hydrated polymer balls "are slimy and squishy." *Id*. p.15. "If you throw them gently, they will bounce. If you throw them hard enough, they will explode into mushy pieces." Thus, the slogan: "grow 'em and throw 'em." *Id*.





EX1002 p.21, p.18.

IV. PETITIONER'S FLAWED SAFER AIRSOFT MOTIVATION THEORY UNDERCUTS THE PEEV-SPITBALLS COMBINATION

Petitioner's obviousness case hinges on the idea that a skilled artisan would have been motivated to employ Spitballs' "softer" hydrated polymers as replacement ammunition to make Peev's airsoft gun "safer." Pet. 41–42. Although Petitioner claims to have arrived at this combination by following *KSR*'s problem-solution approach, the record shows otherwise.

To start, Petitioner has not proven that a skilled artisan would have recognized the kind of spherical polymer balls described in Spitballs as a known, suitable, and safer alternative to the conventional plastic ammunition used in Peev's electric airsoft gun. In *KSR*, the evidence showed that mounting an electronic sensor on a pedal assembly support bracket was well known. 550 U.S. 398, 408–09 (2007). Not so here. The record Petitioner made lacks any hint that soft, squishy, and highly absorbent spherical polymer balls like those in Spitballs had ever been used or contemplated in the prior art as a viable, much less "safer," kind of airsoft ammunition. *See* Pet. 35–42. What's more, Patent Owner has now adduced substantial contrary evidence further undercutting Petitioner's unproven presumptions. *Infra* §IV.A. Without the hindsight benefit of the '683 Patent, Spitballs would not have appeared intrinsically "safer" to a skilled artisan, §IV.A.1, nor would the skilled artisan have reasonably expected that Spitballs could work as

airsoft ammunition, §IV.A.2. For these reasons alone, Petitioner's burden of proof is unmet; but there's more.

Petitioner also fails to establish with credible evidence that the kind of absorbent polymers disclosed in Spitballs were among a limited number of known alternatives to conventional plastic airsoft ammunition. *See* Pet. 35–42. In *KSR*, contemporaneous literature showed that there were just a handful of possible sensor mounting locations on an automobile pedal assembly. *See* 550 U.S. at 408–09. Here, though, Petitioner relies on a single *ipse dixit* sentence from its expert. *See* Pet. 39 (citing EX1016 ¶86). Had Petitioner investigated the matter, it would have found that, to the extent a skilled artisan felt the need to look beyond hard plastics for a "softer" kind of airsoft ammunition, the design space was vast: The applicable industry standards for airsoft at the time of the '683 Patent only excluded two kinds of potential ammunition—metallic objects and liquid-filled objects like Spitballs. *Infra* §IV.A.2.i & §IV.B.

Finally, the balance of the evidence does not show the kind of "design need or market pressure" at issue in *KSR*. In *KSR,* the automobile industry was trending toward computer-controlled throttle valves and electronic pedal-assembly sensors were "necessary." *See* 550 U.S. at 407–08. Here, in contrast, Petitioner has adduced no evidence at all that the airsoft industry was pining for "softer" ammunition. *See* Pet. 35–42. In fact, the opposite is true: Airsoft became popular in part because

its ammunition is hard enough to sting but light enough to avoid serious injuries during competitive war games and armed-forces training. *Infra* §IV.C. To be sure, it was known that airsoft guns could cause injuries. *Id.* Yet this fact alone does not mean a skilled artisan would have been motivated to concoct "softer" airsoft ammunition from Spitballs. *Id.*

For all these reasons and more, Petitioner fails to make its *KSR* case on motivation-to-combine.

A. Petitioner Lacks Proof That the Polymer Balls Taught by Spitballs Were a Known, Suitable, and Safer Ammunition Solution for the Airsoft Gun That Peev Taught

Petitioner's attempt to mimic *KSR* requires proof that the Spitballs polymers were among the field of "identified" prior art solutions to the alleged injury risk problem with airsoft. *See KSR*, 550 U.S. at 421 ("a finite number of identified predictable solutions"). There is no such proof. The record does not show that any soft, absorbent polymer balls like those described in Spitballs had ever been used as ammunition for any type of gun that even remotely resembles the electric airsoft gun Peev teaches. Although Petitioner suggests "soft plastics, such as SAPs," were known ammunition options for airsoft, that conclusory statement does not address the specific teachings of Spitballs and has no credible evidentiary support. Pet. 39.

To be sure, Petitioner need not show that the toy polymer balls taught by Spitballs were categorically the "best option" for softer, safer airsoft ammunition;

the law does not set the bar that high. *See Intel Corp. v. PACT XPP Schweiz AG*, 61 F.4th 1373, 1380 (Fed. Cir. 2023); Paper 12 (Director Review Decision) p.12. What the law does require, however, is for Petitioner to establish that the Spitballs polymers were at least an art-recognized "suitable option." *Id*. Tellingly, Petitioner stumbles on even this minimal threshold.

1. Petitioner Conflates Softness and Safety

The crux of Petitioner's case is that softer ammunition equates to safer ammunition. Not so. This reasoning is reductive and easily disproven.

Consider paintballs, for example. *See generally* EX2015 ¶¶42–58 (Dr. Kudrowitz detailing paintball gun and potato gun examples). Paintballs are hollow gelatin spheres filled with liquid paint that break apart on impact. EX2015 ¶47 (citing EX2117 pp.1–3). Although the gelatin-based paintballs are plainly softer than hard plastic airsoft ammunition, paintball guns were not considered safer than airsoft guns at the time of the '683 Patent. *See* EX2015 ¶¶49–53. Petitioner's own evidence suggests as much, particularly the 2005 report from the California Senate Office of Research (EX1019). *See id*. ¶¶51–53. In its brief discussion of paintball and airsoft guns, the report expressly notes that "paintball guns…have sent a rising number of targeted victims to hospital emergency rooms." EX1019 p.9. The report does not make the same claim about airsoft; it mentions only the requirement to "display identifying color markings" because "[a]irsoft guns closely resemble their

firearm counterparts." EX1019 p.8. More, one study shows quantitatively that paintball gun injuries have been both more common and more likely to result in hospitalization than airsoft gun injuries. EX2015 ¶50 (citing EX2118 p.1, p.5).

In a nutshell, paintballs "hit harder in almost all cases" because they are "so much more massive":

> **Do paintballs hit harder than airsoft BBs?**
> A typical paintball weighing about 3 grams and traveling at 300 feet per second will transfer about 12 joules of energy on impact, while most airsoft BBs transfer about 1 joule of energy - considerably less than a paintball. Of course if you're hit at close range by an airsoft BB traveling at higher speed (say 450 - 500 fps) there will be more energy transferred, but paintballs are so much more massive that they're going to hit harder in almost all cases.

EX2016 p.9. Because paintballs are larger and have more mass, they carry more kinetic energy than smaller, albeit harder, plastic airsoft rounds when fired at an equivalent speed. EX2015 ¶¶54–58. Kinetic energy (or "muzzle energy") is determined using the formula $KE = 0.5 * m * V^2$, where "m" is projectile mass and "V" is projectile velocity (or "muzzle velocity" if measured at a point near the muzzle of the gun). *Id*. ¶55. When a projectile impacts human tissue, kinetic energy is transferred from the projectile to the tissue. *Id*. Given that this energy transfer mechanism is what causes injuries, muzzle energy is often deemed representative of the capacity to injure. *Id*. It was therefore a conventional tool for evaluating safety of projectile launchers and ammunition at the time of the '683 Patent. *Id*. ¶¶56–58 (citing EX1019 pp.9–10; EX2016 p.9; EX2029 p.6).

Like paintballs, everyone agrees the polymers described in Spitballs are softer than plastic airsoft ammunition. But also like paintballs, the Spitballs polymers are much larger and heavier than airsoft ammunition. EX2015 ¶59. According to Petitioner's Dr. Reitman, Spitballs, which "grow to about 0.6" in diameter," (EX1002 p.21), absorb a mass of water totaling about 1.84 g, (EX1017 ¶66). Compared to airsoft ammunition, which could be obtained at weights as low as 0.12 g, the softer Spitballs polymers are more than 14 times heavier and, thus, carry that much more kinetic energy and injury capacity. EX2015 ¶59.

Petitioner and its two experts, Dr. Reitman and Mr. Delman, make absolutely no attempt to explain why a POSITA would expect such a large and kinetic-energy rich type of projectile like the Spitballs polymers to somehow carry less injury risk than the lightweight plastic airsoft ammunition already on the market. Dr. Reitman's testimony was confined to addressing whether Spitballs describes SAPs and whether a chemist could modify the material properties of SAPs. EX1017 ¶12; EX2030 at 16:13–21. She gave no testimony at all regarding airsoft safety or injury risk, nor did she opine on motivation-to-combine. Although Mr. Delman at least alleges an "injury problem" with airsoft, his testimony fares no better on the merits because it is utterly conclusory. Instead of providing a technical analysis that proves using the Spitballs polymers as ammunition would reduce injuries from airsoft guns, Mr. Delman merely states this unproven theory as if it is a self-evident fact:

> Prior to 2010, Spitballs were softer projectiles ("Will bounce and/or explode into mushy parts on impact" Ex. 1002, 21) that could be used in place of the hard spherical plastic ammunition to address the injury problem.

EX1016 ¶85.

But it is not self-evident that Spitballs would reduce the number or severity of airsoft gun injuries compared to lightweight plastic airsoft ammunition. As Petitioner and its experts well know, Spitballs are explicitly designed and marketed to "grow[] 200x their size" to "about 0.6" in diameter," a hydration process that, according to Dr. Reitman, involves absorbing approximately "1.844 g" of water. Pet. 25-26; EX1017 ¶53, ¶66 (quoting EX1002 p.21); EX1016 ¶¶66–67, ¶73 (Mr. Delman acknowledging discussions with Dr. Reitman regarding Spitballs absorbency). Again, measured against lightweight plastic airsoft ammunition, the hydrated polymer balls taught by Spitballs are massive, capable of carrying far more potentially injurious kinetic energy toward the target. EX2015 ¶59. If a skilled artisan believed airsoft guns posed an "injury problem"—which remains unproven (*see* §IV.C, *infra*)—they would not have considered Spitballs a likely solution. EX2015 ¶59, ¶62. Like paintballs, from a kinetic energy perspective, Spitballs would have only made matters worse. *Id*. ¶62 (explaining that "Spitballs more closely resemble 55 caliber paintballs…than airsoft ammunition").

With no help from its own experts, Petitioner turns to Patent Owner's Dr. Kudrowitz, who agreed in the parallel ITC investigation that one way to make a projectile less likely to cause injury would be "to make it softer." EX1004 pp.531:25–532:9; Pet. 38–39. True as far as it goes, Dr. Kudrowitz's indication that making "it"—a given projectile with all other parameters being equal—softer may reduce injuries does not mean that substituting much larger and heavier projectiles like paintballs or Spitballs would have any safety benefit compared to lightweight plastic airsoft ammunition. EX2015 ¶¶60–61 (explaining how "Petitioner has taken my quote out of context…"). That's not what Dr. Kudrowitz was asked, and that's not what he said. *Id*.

If it were actually true that a skilled artisan would have seen Spitballs as a suitable and safer kind of airsoft ammunition, Petitioner had every opportunity to prove it so. That Petitioner made no attempt to establish this factual predicate to its motivation theory with probative and credible evidence is telling, particularly now that the record contains persuasive countervailing evidence from Patent Owner.

2. Unsuitable for Peev's Airsoft Gun, Spitballs Are Squishy, Liquid-Filled Projectiles That Easily Break Apart

i. Liquid-Filled Spitballs Defy the Standard Definition of Airsoft Ammunition

A skilled artisan, which Petitioner says would include "a toy designer with at least five years' experience designing toys,"[1] (Pet. 19–20), would have consulted and followed the applicable ASTM standards when considering adaptions to a consumer product like airsoft guns, particularly in the context of promoting safety. EX2015 ¶¶63–64. For a toy designer, following ASTM standards was more than just engrained as a best practice; it was the law for consumer toy products. *Id*. ¶64; 15 U.S.C. § 2056b(a) (incorporating "ASTM International Standard F963–07 Consumer Safety Specifications for Toy Safety (ASTM F963)").

Accordingly, a skilled toy designer undertaking Petitioner's hypothetical quest to make Peev's airsoft gun safer via softer ammunition, would have naturally conducted their material-selection search using the design space defined by ASTM's applicable standards on airsoft ammunition—ASTM F2679–07. EX2015 ¶64. Under F2679–07, the standard definition of "suitable" airsoft ammunition is simple: "spherical, of 6 mm (.24 cal) diameter, non-metallic and non-liquid filled." EX2028

[1] The ALJ deemed Petitioner's proposal (and others) "appropriate for the level of ordinary skill" in the parallel ITC investigation. EX2007 p.29.

p.1. The hydrated Spitballs polymers are, of course, filled with water and, thus, do not fit the bill. *See* EX2015 ¶¶65–66; EX1002 p.21 ("Spitballs…will absorb water and grow up to 200 times their original size."); EX1017 ¶61 (Dr. Reitman stating that "Spitballs were swelled with water").

Not only does Petitioner's evidence fail to show that replacing plastic airsoft ammunition with the Spitballs polymers would have made Peev's airsoft gun any safer (*see* §IV.A.1, *supra*), the record is now clear that using Spitballs would have fundamentally undermined Peev's stated "task." EX2015 ¶67 (quoting EX1003 p.26). Peev wanted to create an improved electric airsoft gun, but the result of Petitioner's Peev-Spitballs combination is something the industry would not have considered to be an airsoft gun at all. *Id*. (citing EX2029 p.2). This approach would have made little sense, even if the skilled artisan were resolute on improving safety with softer ammunition. *Id*. ¶66, ¶68. After all, the ASTM airsoft standards leave open countless different materials and constructions that are softer than hard plastics—e.g., foam materials, sponge materials, pulp materials, soft plastics, soft rubbers, etc. *Id*. (citing EX2028).

Flouting the applicable industry standards when so many other compliant materials were readily available is simply not plausible. It is the polar opposite of the *KSR* fact pattern Petitioner attempts to emulate. In *KSR*, the industry was trending toward the purported combination, so much so that the addition of an

"electronic sensor" was deemed "necessary." 550 U.S. at 407–08. Here, though, the ASTM standards show that the airsoft industry had turned away from liquid-filled projectiles like the Spitballs polymers. Just as the facts here diverge from *KSR*, so too should the ultimate conclusion on obviousness.

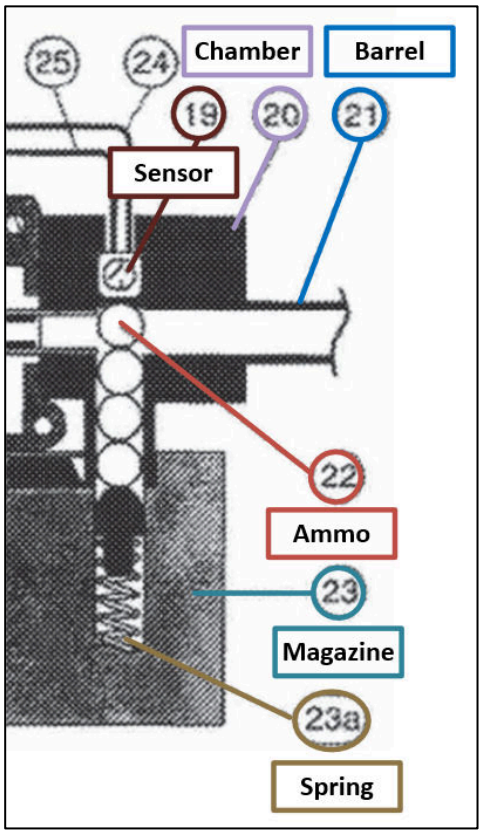
ii. A Skilled Artisan Would Not Reasonably Foresee Spitballs as Suitable Ammunition for an Electronic Airsoft Gun Like Peev's

Even setting aside the ASTM airsoft standards, it would have been clear to anyone, especially a skilled artisan, that the kind of polymers described in Spitballs would not have produced suitable ammunition for an electric airsoft gun like Peev's.

For one, the skilled artisan would have recognized that the toy polymer balls taught by Spitballs are designed and marketed to break apart—"explode"—under modest pressure, such as the force of impact when thrown by someone "3 and up." EX2015 ¶70 (quoting EX1002 p.21). The idea that such a "soft" and "squishy" projectile could withstand the firing forces applied by a high-powered electric airsoft gun, which typically expels ammunition at more than 300 feet per second, is unrealistic on its face. EX2015 ¶¶69–71 (citing EX2016 p.15).

In addition to the pneumatic and mechanical firing forces of a conventional electric airsoft gun, Peev's improved design stresses the ammunition even more. EX2015 ¶¶72–73. As mentioned at Section III.A.2, Peev sought a cure to the "major disadvantage" of prior electric airsoft guns that lacked an empty magazine indicator.

EX1003 p.25-26. Peev's solution to this problem involves a mechanism that presses an airsoft round between a magazine spring 23a and a contact sensor 19. *See* EX2015 ¶72 (citing EX1003 p.34).



EX1003 p.39 (Figure 2 (annotated)).

For Peev's teachings to work, the ammunition must transfer the spring force to the sensor without breaking apart. *See* EX2015 ¶72 (citing EX1003 p.34). But breaking apart and exploding is exactly what Spitballs teaches. EX1002 p.21 ("[T]hey will explode into mushy pieces."). No skilled artisan—not even Petitioner's toy designer looking to further improve Peev from a safety

perspective—would have reasonably considered the soft, squishy Spitballs polymer teachings suitable for combination with Peev's airsoft gun teachings. EX2015 ¶73.

Petitioner's experts do not deny that Spitballs would break apart under the firing forces of an electric airsoft gun like Peev's. In fact, Mr. Delman expressly acknowledges this "premature breakage" dilemma with the combination. EX1016 ¶87. Nevertheless, in Mr. Delman's view, a skilled artisan could adjust the material properties of the Spitballs polymers to withstand the necessary forces or change the design of Peev's airsoft gun to reduces those forces. *Id*. Neither theory holds water. *See* EX2015 ¶¶74–75.

For one, no one knows whether the Spitballs polymers could somehow be modified to sufficiently improve their strength and stiffness without sacrificing their characteristic softness, the keystone of both Petitioner's claim element mapping and motivation-to-combine theory. Pet. 29–31, 35–43. Mr. Delman relies entirely on Dr. Reitman for his understanding of polymer material properties, and Dr. Reitman's testimony is silent on this critical question. *See infra*, §VI. If anything, Dr. Reitman suggests a negative correlation between stiffness and strength on the one hand and softness on the other. *See infra*, *id*.

As for Mr. Delman's proposal to modify Peev's gun to apply less force against the ammunition, (EX1016 ¶87), it merely speaks to what a skilled artisan purportedly "could have made," not to the critical question of what the artisan "would have been

motivated to make." *Belden Inc. v. Berk-Tek LLC*, 805 F.3d 1064, 1073 (Fed. Cir. 2015); *see also* EX2015 ¶74. The posture of Petitioner's motivation theory is that of a someone searching for a suitable and safer type of ammunition for Peev's airsoft gun. Pet. 35–42. But Mr. Delman turns that theory on its head. Revealing "the prejudice of hindsight," he presumes an artisan would have selected Spitballs and then proposes retrospectively to change Peev in a manner that suits his "preordained" selection. *Polaris Indus. v. Arctic Cat, Inc*., 882 F.3d 1056, 1068 (Fed. Cir. 2018). "[S]imply retrac[ing] the path of the inventor" is not how obviousness works. *Ortho-McNeil Pharm., Inc. v. Mylan Labs., Inc*., 520 F.3d 1358, 1364 (Fed. Cir. 2008).

B. Even If Spitballs Were a Safer Airsoft Ammunition Option, Petitioner Does Not Establish That There Were a Finite Number of Alternatives Easily Traversed by a Skilled Artisan

Petitioner acknowledges that its attempt to parallel the *KSR* design-need theory requires a showing that the Spitballs polymers were one of "a finite number of ammunition options that a POSITA could have considered." Pet. 39; *see also id*. 4, 35, 38. Petitioner states without explanation that:

> There was a finite number of ammunition options that a POSITA could have considered that would have a reasonable expectation of success, including rubber, cork, foam, and soft plastics, such as SAPs.

Pet. 39 (citing EX1016 ¶86, where Mr. Delman makes the same conclusory statement). There are multiple flaws with Petitioner's approach, any one of which is fatal to the Peev-Spitballs combination.

First, it does not follow that merely identifying what the universe of softer ammunition materials "includ[es]" can define the extent, scope, or breadth of the known options. The root word "include" is an open-ended term indicating that one or more listed items are part of a larger group; it does not limit or constrain the group. That Petitioner lists "rubber, cork, foam, and soft plastics, such as SAPs" in a non-limiting fashion does not exclude all of the other types of materials Petitioner failed to address—e.g., the gelatin materials used to make paintballs. EX2117 p.1.

Second, Petitioner's open-ended statement has no meaningful evidentiary support. Petitioner cites only to its experts, and the experts come up short. The cited paragraphs of Dr. Reitman's declaration make no reference at all to potential airsoft ammunition. *See* Pet. 39 (citing EX1017 ¶¶36–39, 46–48). This comes as no surprise, seeing as Dr. Reitman acknowledged that airsoft considerations are beyond the scope of her testimony. *See* EX2030 at 117:17–118:20. Mr. Delman's declaration is likewise no help because he simply parrots back the same conclusory sentence in the Petition. *Compare* Pet. 39, *with* EX1016 ¶86. Conclusory expert testimony is entitled little to no weight before the Board and cannot provide substantial evidence of obviousness before the Federal Circuit. *See Xerox Corp. v.*

Bytemark, Inc., IPR2022-00624, Paper 9 at 15 (PTAB Aug. 24, 2022) (precedential) ("[T]he cited declaration testimony is conclusory and unsupported, adds little to the conclusory assertion for which it is offered to support, and is entitled to little weight."); *TQ Delta, LLC v. Cisco Sys*., 942 F.3d 1352, 1359–60 (Fed. Cir. 2019) ("This court's opinions have repeatedly recognized that conclusory expert testimony is inadequate to support an obviousness determination[.]").

Third, even in a hypothetical where the record adequately established that "rubber, cork, foam, and soft plastics" define the entire universe of ammunition choices, this still would not be enough to make Petitioner's case. These four categories represent countless distinct polymers—e.g., natural or synthetic, organic or inorganic, thermosetting, thermoplastic, elastomer, just to name a few. EX2120 pp.27–28 (discussing "Thermoplastic and Thermosetting Polymers), pp.73–84 (discussing "Polymer Types"); EX1017 ¶8 (Dr. Reitman noting the "wide range of natural and synthetic polymers"). "[The Federal Circuit] and obviousness law in general recognizes an important distinction between combining known options into a finite number of identified, predictable solutions…and merely throwing metaphorical darts at a board in hopes of arriving at a successful result." *Leo Pharm.*

Prods. v. Rea, 726 F.3d 1346, 1357 (Fed. Cir. 2013) (quotes omitted)[2]. This case is the latter.

C. Petitioner Confuses the Existence of Airsoft Injuries with a *KSR*-Like "Design Need" to Make Safer Ammunition for Peev's Gun

1. If Peev's Gun Is a Children's Toy, as Petitioner Contends, Petitioner Fails to Prove It Would Cause Injuries

If Petitioner has its way, the Board will make a factual finding that Peev's electric airsoft gun is a "toy." Pet. 41–42 (citing EX1016 ¶90). Setting aside for the moment that this contention is demonstrably wrong, examining the logical conclusion it compels shows why the Petition is fundamentally flawed and must fail.

At the time of the '683 Patent, the United States code required adherence to "ASTM International Standard F963–07 Consumer Safety Specifications for Toy Safety (ASTM F963), as it exists on August 14, 2008." *See* 15 U.S.C. § 2056b(a); According to ASTM F963–07, launchers used with "rigid projectile[s]" can have a kinetic energy no greater than "0.08 J," an exceptionally low limit. EX2015 ¶¶76–77 (quoting EX2119 p.17). At a kinetic energy limit of 0.08 J, the maximum

[2] *See also Ortho-McNeil Pharm.*, 520 F.3d at 1364 ("The passage above in *KSR* posits a situation with a finite, and in the context of the art, small or easily traversed, number of options that would convince an ordinarily skilled artisan of obviousness).

allowable speed for a 0.20 g plastic airsoft round is only about 91 feet per second (fps) or about 117 fps for a 0.12 g round. EX2015 ¶77.

There is no record evidence of any airsoft injuries at muzzle velocities in the 90–120 fps range. EX2015 ¶¶78–80. At best, Petitioner identifies a report of "damage to the human eye…from a gun discharging a pellet or BB at a muzzle velocity of 130 fps." Pet 34 (quoting EX1019 p.9). And besides, this report distinguishes "pellet and BB guns" from "two other kinds of [guns that] have wide appeal but are less powerful and therefore do less harm—'airsoft' guns and paint ball guns." EX1019 p.8; EX2015 ¶79; *see also id*. ¶53.

That Petitioner was unable to adduce any evidence at all showing significant injuries from a "toy" projectile launcher is hardly a surprise. That is why the toy safety standards of ASTM F963–07 were made mandatory by law: to prevent injuries. A skilled artisan like Petitioner's ordinary "toy designer" would not have thought a standards-compliant toy launcher was unsafe and, thus, would have no reason to embark on a journey to invent a novel kind of ammunition. EX2015 ¶80.

2. If Peev's Gun Is a Military-Grade Projectile Device, as Peev Says, Petitioner Fails to Show a Need for Safer Ammunition

The truth of the matter is this: Peev did not teach a "toy." In fact, Peev's stated "task" was to create an electric airsoft gun that functions "as close as possible" to a "real firearm," up to and including an "automatic" firing mode. EX1003 p.22, p.26.

The kind of gun Peev taught is one that "finds application in the sporting gun industry and is used for military simulations or training, or for entertainment in airsoft games." EX1003 p.22. It is a high-powered, military-grade projectile device designed for "faster shot repeatability" and to avoid any potential "defect" that might otherwise cause a "decrease" in muzzle velocity. EX2015 ¶81 (quoting EX1003 p.25, p.28).

Everyone can agree that military-grade electric airsoft guns like Peev's can cause injuries. That fact alone, however, does not resolve the inquiry at hand. What matters is whether the potential for injury would have motivated a skilled artisan to pursue the specific combination Petitioner proposed—using polymers spheres like Spitballs as ammunition for Peev's gun. Petitioner has no legitimate evidence on this necessary and critical point. To wit, Petitioner has not proven:

- That the toy polymer balls taught by Spitballs—or any SAP—had ever been used as ammunition for an airsoft gun before the '683 Patent[3];

[3] *See*, *e.g.*, EX1004 p.293:15–18 (Mr. Delman admitting that he was "not aware of any prior art device that launched soft projectiles made [of] super absorbent polymers using an airsoft mechanism" before his engagement to invalidate the 683 Patent.); EX1017 ¶¶40–45 (Dr. Reitman detailing the known applications and

- That a skilled artisan would have even considered the liquid-filled polymer balls taught by Spitballs to be within the design space of suitable airsoft ammunition (*see supra*, §IV.A.2.i);

- That a skilled artisan would have reasonably expected the polymer balls taught by Spitballs to withstand the pneumatic and mechanical forces applied by Peev's electric airsoft gun (*see supra*, §IV.A.2.ii); or

- That a skilled artisan considering the polymer balls taught by Spitballs would have thought they could meaningfully reduce the potential for injury (*see supra*, §IV.A.1).

Peev's gun, like virtually all other high-powered airsoft guns, is meant to mimic "real firearm[s]." EX1003 p.26; *see also* §III.A.1, *supra*; EX2015 ¶¶27–34, ¶82. Part of mimicking a real firearm is mimicking—to a lesser degree—the impact of an ammunition round, which is necessary for cooperative airsoft games and military/armed-forces training. EX2015 ¶82. To be sure, the goal is not to "mimic the [exact degree of potential] injury caused by real firearms," but there is a need with airsoft to maintain the speed and force of impact. Paper 12 (Director Review Decision) p.11. For example, in airsoft games, where players self-report hits, the force of impact is how someone knows they have been shot. EX2015 ¶82 (citing

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application-specific property profiles of SAPs, none of which include projectiles, much less airsoft ammunition).

EX2016 p.38, p.40). Likewise, in military and armed-forces training, the potential to suffer pain from a hit is critical to simulate a live-fire environment and boost adrenaline levels. EX2015 ¶83 (citing EX2024 p.2; EX2025 p.11). With airsoft, the speed and the force of impact are a feature, not a bug. A skilled artisan would have known so and appreciated that the natural consequence of this feature is "preserv[ing] an airsoft gun's ability to cause [at least minimal] injury." Paper 12 (Director Review Decision) p.11.[4]

So, yes, high-powered airsoft guns like Peev's are inherently dangerous to a limited extent. They are not toys and misusing them can cause injuries. Yet, that does not mean a skilled artisan would have perceived a *KSR*-like design need or market pressure in the art to invent a never-before-seen kind of airsoft ammunition based on the squishy absorbent Spitballs polymers simply because they are softer. EX2015 ¶84. Again, there were numerous known alternatives for softer ammunition that would have readily commended themselves to the skilled artisan's attention. *See supra*, §IV.A.2.i. The hydrated spherical polymers described by Spitballs are not one of them. Besides, the record does not establish, or even suggest, that softer ammunition equates to safer ammunition. *See supra*, §IV.A.1; *see also* EX2015 ¶85.

[4] The record reviewed by the Director contained only limited indirect evidence on this point. Now, though, Patent Owner has adduced conclusive direct evidence.

Instead, the record makes clear that adjusting muzzle velocity and adjusting ammunition weight were the predominant ballistic techniques for reducing the risk of airsoft injuries, and Spitballs' teachings offer no relief on those fronts. *Id*.

V. PETITIONER'S ALTERNATIVE MOTIVATION THEORIES ALSO FAIL

Petitioner posits two alternative theories at the tail end of its motivation discussion; each are easily dispelled.

First, Petitioner suggests that the Peev-Spitballs combination can be sustained merely because the two references "are in the same field of endeavor." Pet. 41. But this argument is unsound both legally and factually. The mere existence of two references in one field does not explain why a skilled artisan would have combined them. *See TriVascular, Inc. v. Samuels*, 812 F.3d 1056, 1066 (Fed. Cir. 2016) (it is necessary to explain "why the references would be combined"). The *Tyco* decision Petitioner cites does not relieve its burden to answer the why question at the heart of any motivation-to-combine inquiry. *See* Pet. 41. In *Tyco*, the Court simply observed that the art references in question shared "a common field of endeavor" as part of its rationale for rejecting the patent owner's rebuttal argument about the combination being unworkable. *See Tyco Healthcare Grp. LP v. Ethicon Endo-Surgery, Inc*., 774 F.3d 968, 978 (Fed. Cir. 2014). This case does not lower the bar on obviousness.

Petitioner is likewise wrong on the facts. Spitballs is directed to a science toy and Peev describes an airsoft gun that mimics a real firearm. *See* EX1002 p.21 ("Geek Toys" and "Science Toys"); EX1003 p.26 ("The task of the invention is to create an electric airsoft gun[.]"). These references are not in the same field, as confirmed by Dr. Kudrowitz's testimony that the ALJ credited.

> From how I understand this, Mr. Delman says that these claims are not valid and it would be obvious based on combining two patents related to Airsoft ***guns***, Peev and Nagayoshi, with two science ***toys*** [Spit Balls and Clear Spheres]. And I don't agree with that obviousness assessment. Peev and Nagayoshi are both about taking Airsoft guns and trying to make them ***more*** like real firearms. And if you put SAP in Airsoft guns, it makes them ***less*** like Airsoft guns.
>
> (Tr. (Kudrowitz) at 455:22-456:5 (emphases added).).

EX2007 (Initial Determination) p.71.

Second, Petitioner provides a one-sentence allegation that the Peev-Spitballs combination is merely "a simple substitution" of known elements. Pet. 41–42. But here, too, Petitioner relies on a distorted view of the law. *KSR*'s discussion of a "simple substitution" is in the context of repurposing "prior art elements according to their established functions." *KSR*, 550 U.S. at 417. As discussed (*supra*, §IV), Petitioner has not presented any credible evidence that ammunition for an airsoft gun was an "established function" of a polymer product like the one taught by Spitballs.

VI. PETITIONER FAILS TO ESTABLISH A REASONABLE EXPECTATION OF SUCCESS IN REACHING THE CLAIMED INVENTION VIA THE PEEV-SPITBALLS COMBINATION

To the extent Petitioner and its experts propose modifying the Spitballs polymers in an effort to rehabilitate their now-debunked motivation-to-combine theory, doing so only creates another case-dispositive flaw—the absence of any reasonable expectation of success. *See*, *e.g.*, EX1016 ¶86 (Dr. Delman stating, "Based on my discussions with Dr. Reitman I understand that SAPs were known to be easily adjustable as to size, shape and softness."). Either way, the Petition fails.

According to Dr. Reitman, "[p]olymers that are referred to as superabsorbent polymers (SAPs) are a large class developed to provide the ability to absorb and hold liquids." EX1017 ¶21. Dr. Reitman further notes that "the properties of hydrated SAP particles, such as size, shape, gel strength and absorbency, are the result of structure-property relationships." EX1017 ¶12. The structure of a SAP, Dr. Reitman explains, is the product of at least four different kinds of variables:

1. The "SAP chemistries," which "can be categorized generally as non-ionic…, ionic…, amphoteric…, or zwitterionic" (EX1017 ¶¶26–27);

2. The "wide variety of crosslink types and a wide range of crosslink densities" (EX1017 ¶¶28–30);

3. Other "factors" regarding the "network topology" (EX1017 ¶¶31–35); and

4. The "engineering choices" regarding manufacturing processes (EX1017 ¶¶36–39).

Dr. Reitman's direct testimony concedes that the "overall genus of SAP chemistries" includes a "large number of different base polymer compositions," each of which can be processed to include "a wide variety of crosslink types and…crosslink densities." EX1017 ¶26, ¶28. When asked on cross-examination to quantify the number of available options, Dr. Reitman could not do so. EX2030 at 84:19–85:4 ("I haven't performed such an analysis in the scope of this work."), 86:10–16. There is no record evidence that the breadth of potential SAP structures and material property profiles achievable is anything but unknown and unknowable.

Worse, the Spitballs reference gives no clue as to what kind of chemistry, crosslinking, network topology, or manufacturing techniques were used to make the described polymers. *See generally* EX1002. With innumerable possibilities and no place to start, there is no record evidence that someone with "a bachelor's in materials science chemistry, or [the] equivalent," (Pet. 19), would have reasonably expected to succeed at achieving the '683 Patent's claimed invention by adjusting the polymer structures and properties of Spitballs to somehow make suitable and

softer ammunition for a high-powered airsoft gun.[5] Dr. Reitman leaves this critical issue unanswered.

At best, Dr. Reitman simply assumes that any and all adjustments that might be necessary could somehow be done. But she did not do the work to confirm such a hindsight-biased assumption. Despite confirming that "the intended application for an SAP impacts the bulk characteristics that the material must exhibit," (EX1017 ¶40), Dr. Reitman's declaration makes no mention at all of the characteristics needed to successfully deploy the Spitballs polymers as airsoft ammunition, nor could she even recall having any conversations with Mr. Delman about airsoft guns, (EX2030 at 117:17–118:20). By her own admission, Dr. Reitman's generic conclusion that the properties of SAPs can be varied does not address whether such properties could be varied successfully to carry out "the intended application" Petitioner proposes in

[5] Here, as before, Petitioner fails in its attempt to fill the gap with an alleged admission by Dr. Kudrowitz in the parallel ITC investigation. *See* Pet. 40 (quoting 529:21–530:12). There, Dr. Kudrowitz only agreed that someone could make a soft SAP projectile "that would fit inside of an airsoft gun." *Id*. He was not asked whether such a SAP projectile would make suitable airsoft ammunition for a high-powered electric gun like Peev's.

the Peev-Spitballs combination, which everyone agrees had never been done at the time of the '683 Patent.

"[T]o have a reasonable expectation of success, one must be motivated to do more than merely to vary all parameters or try each of numerous possible choices until one possibly arrived at a successful result." *Pfizer, Inc. v. Apotex, Inc*., 480 F.3d 1348, 1365 (Fed. Cir. 2007) (quoting *Medichem, S.A. v. Rolabo*, S.L., 437 F.3d 1157, 1165 (Fed. Cir. 2006)). But rote trial and error amidst endless possibilities is the best one could possibly glean from Dr. Reitman's testimony. It's not enough.

If this clear deficiency were not conclusive, there is more: The material properties that hold the key to Petitioner's obviousness case have an inverse relationship in the context of SAPs. To succeed at achieving the '683 Patent's claimed invention via the Peev-Spitballs combination, the Spitballs polymers must somehow be made to possess sufficient strength to withstand the pneumatic and mechanical forces applied by Peev's high-powered electric airsoft gun, while at the same time retaining the softness characteristic that Petitioner relies on for its mapping to the '683 Patent's claim elements and its softer, safer airsoft theory. *See*, *supra* §IV.A.2.ii. The problem for Petitioner is that Dr. Reitman's testimony reveals an inverse relationship between strength and softness.

For example, Dr. Reitman testified during cross-examination that a chemist would "make Spitballs stronger" by "increasing crosslink density." EX2030 at

110:3–21. And increasing crosslink density not only results in higher strength, it also yields higher stiffness—i.e., lower softness[6]—per Dr. Reitman:

> The higher the density of anchor points or crosslinks between polymer chains, the higher the material stiffness, tensile strength, and resistance to plastic deformation, as well as the lower the ability to absorb compatible fluids.

EX1017 ¶19. In short, you cannot have it both ways. As Dr. Reitman explained to Petitioner's counsel on re-direct: A chemist could either "us[e] crosslink density to make them softer by reducing the density or stronger and harder by increasing the crosslink density." EX2030 at 126:11–15; *see also* 112:4–12 (explaining that a chemist would "make Spitballs softer" by "reduc[ing] the crosslink density").

As another example, Dr. Reitman also opined that "you could make Spitballs stronger" by "changing the degree of hydration"—i.e., "the amount of time that the [SAP] resides in a liquid." EX2030 at 110:12–111:13. But this, too, would sacrifice softness. Mr. Delman demonstrated as much in a live experiment before the ALJ in the parallel ITC investigation. There, while handling an alleged SAP called "Clear Spheres" that was only partially hydrated because it sat in water for just 30 seconds,

[6] EX2030 at 72:13–73:3 (Dr. Reitman explaining that "stiffness…can also be qualitatively described as softness").

Mr. Delman characterized the object as "firm." EX1004 p.263:4–5; *see also generally* 259:3–263:4. Not soft, "firm." *Id*.

Suffice it to say, any suggestion by Petitioner and its experts that Spitballs could be easily or routinely modified to achieve the '683 Patent's claimed invention via their asserted Peev-Spitballs combination is not credible. The prior art references themselves are insufficient, and Dr. Reitman's above-discussed testimony only underscores the problem. The record does not show that an ordinary toy designer aided by a relatively low-level chemist would have reasonably expected to make Petitioner's Peev-Spitballs combination to achieve a "safer" version of airsoft.

VII. OBJECTIVE INDICIA OF NONOBVIOUSNESS OUTWEIGHS PETITIONER'S STRAINED PEEV-SPITBALLS COMBINATION

A conclusion of nonobviousness is further compelled by extensive objective evidence of commercial success and industry praise, all with nexus to the inventions of claims 5, 8, and 9.[7] Notably, an administrative law judge in the ITC found that claim 5 of the '683 Patent was not invalid in view of objective indicia factors. EX2007 pp.82–102. While claims 8 and 9 were not tried, the near-verbatim claims

[7] As the Petition observes, the '683 Patent contains extraneous language erroneously printed at the end of claim 9. Pet. 51–52 (citing EX1018). The parties agree that the Board should consider claim 9 without reference to the extraneous language.

19 and 20 of the related '282 Patent were also found not invalid in view of objective indicia factors. *Id.*; *see also* EX2015 ¶127 (comparing '683 Patent claims 8 and 9 to '282 Patent claims 19 and 20).

A. The Xploderz: Multiple Lines of Patent-Practicing Products

The '683 Patent was originally assigned to the Maya Group, whose founders invented the first claimed SAP blasters called "Xploderz" in late 2010. EX1004 pp.608:25–609:4, 609:16–21; EX2032(CX-1634C) pp.280:2–21; EX2033(CPX-0035); EX2034(RX-0417). The Maya Group's sales of the Xploderz and Blaster Pro products (collectively "Xploderz"), as well as industry praise of the Xploderz, provide objective evidence that it was not obvious to a POSITA in 2010 to combine elements of the prior art to arrive at the inventions of claims 5, 8, and 9. *See* EX1004 pp.440:13–441:2, 564:6–566:6; EX2015 ¶¶128–239.

As background, in late 2010/early 2011, the Maya Group launched a new "blaster" product line called the Xploderz that fired "Xploderz Ammo," also described as ammo with "H2GROW" technology. EX1004 pp.564:6–566:6, 609:16–21; EX2042(CX-518); EX2032(CX-1634C) pp.280:2–21; EX2033(CPX-0035); EX2034(RX-0417); EX2015 ¶95. The Xploderz ammo were spherical beads of super-absorbent polymer, as claimed in the '683 Patent. EX2053(RX-0415); EX2032(CX-1634C) pp.280:2–21; EX1004 pp.445:1–9; EX2007 pp.83–84. The Xploderz spawned multiple line extensions including an original generation, X2

series, Blaster Pro series, X3 series, and a Firestorm series. EX1004 p.450:1–8, 566:7–568:9; EX2036(RX-3312.0003); EX2037(RX-3313.0001); EX2038(RX-3314.0002-3); EX2039(RX-3315.0003-4); EX2040(RX-3316.0001); EX2032(CX-1634C) pp.152:12–155:12; EX2015 ¶¶94–126.



(red line showing Xploderz lines extensions)

These Xploderz products each met all limitations of the ’683 Patent’s claims 5, 8, and 9. *See* EX2007 pp.83–84; *see generally* EX2015, Appx. 1; EX2015 ¶127. Petitioner does not dispute in its Petition that the Xploderz practiced these claims.

Moreover, Dr. Kudrowitz testified that the Xploderz practiced ’683 Patent claims 5, 8, and 9. EX2015 ¶127; *see also* EX1004 pp.441:14–442:8. It is undisputed that the Xploderz launched hydrated spherical SAP beads. EX1004

pp.609:16–21; EX2032(CX-1634C) pp.280:2–21; EX2067 pp.80:12–81:4; EX2015 ¶127. The Xploderz also include a feed chamber for loading the ammunition into a firing position, and each of the related elements of claim 5 (and claim 7). EX1004 pp.441:14–442:8; EX2015 ¶127. The firing mechanism of the Xploderz also had a piston, air compression chamber, and a spring to bias the piston from a cocked position to rest position, and each of the related elements of claim 8. EX1004 pp.441:14–442:8; *see generally* EX2015, ¶127 & Appx. 1. There was also a smaller diameter tube in communication with the air compression chamber, and each of the related elements of claim 9. *Id*. In this way, the Xploderz used air pressure to project the ammunition in free flight. *Id*. An excerpt of Dr. Kudrowitz's expert report in the ITC investigation, attached as EX2015 Appx. 1, and discussed in EX2015 ¶127 illustrates how the claimed inventions are embodied in the Xploderz products.

B. The Patent-Practicing Xploderz Products Were Commercially Successful Because of the Patented Technology

1. The Xploderz Were Commercially Successful

Petitioner does not dispute that the Xploderz were commercially successful. Pet. 60. Nor could they. Despite lacking major brand recognition before selling Xploderz, the Maya Group sold over $35 million and over 3.7 million units of Xploderz to retailers in 2011–12, an extraordinary amount for a new toy in this industry. EX2068(CX-0165C); EX1004 pp.564:6–566:6; EX2032(CX-1634C)

pp.147:1–148:2, 266:18–268:3; EX2015 ¶148, ¶¶149–154. Overall sales over the life of the products were approximately $50 million; again, a remarkable success in the toy industry for a new entrant. EX2032(CX-1634C) pp.275:11–14, 285:8–19.

The Xploderz were sold at Amazon, Kmart, Target, Toys R Us, and Walmart and other retailers. EX2068(CX-0165C); EX1004 p.564:18–21; EX2015 ¶148. Even Petitioner's Founder and CEO testified that when the Xploderz launched, you couldn't miss it in stores. EX2069(CX-1639C) pp.83:18–84:7 ("[W]hen the [Xploderz] product came out, and you walked the stores, you cannot not see the product."). Xploderz was the "number one selling boy toy product for Target" when launched. EX1004 p.448:2–8; EX2067 pp.299:8–300:4. The fact that Maya Group—a company without major brand recognition and without having ever marketed a blaster before—managed to get the Xploderz on the shelves at major retailers is a strong indicator of commercial success. EX1004 pp.564:22–565:16; EX2015 ¶¶164, 230.

In 2011, the Xploderz grew from nothing to a 3.2% blaster market share. EX2007 p.85; EX2015 ¶¶168–177; EX2043(CX-0531C); EX2068(CX-0165C); EX2070(RX-0132C) p.126:16–20; EX2115(RX-0120C) pp.67:3–70:10. The Xploderz market share is remarkable given Hasbro's historical market dominance; Maya Group was a new entrant into a saturated market with no prior brand name

recognition; and the vast majority of new toys fail to launch. EX2015 ¶¶176–177; EX1004 pp.564:6–566:6; EX2068(CX-0165C); EX2067 pp.272:4–273:19.

The Xploderz sales were even favorable compared to market-leader NERF. EX2015 ¶¶155–164; EX2043(CX-0531C); EX2041(CX-517); EX2068(CX-0165C); EX2115(RX-0120C) pp.17:12–16, 67:3–70:10. In fact, if the XBlaster 200 was slotted into the NERF lineup in 2011, its sales would rank 38 out of 250 NERF products available at that time. EX2015 ¶161. Likewise, sales of the XStormer and XRanger in 2011 [redacted] EX2015 ¶162.

The multiple Xploderz line extensions also signify commercial success in the toy industry. EX1004 pp.450:1–8, 566:7–568:9. If the Xploderz were not commercially successful, Maya Group would not have been able to release multiple line extensions over the years following the initial launch. EX1004 pp.566:7–568:9; EX2015 ¶¶166–167.

The Xploderz commercial success is also shown by its creation of an entirely new product segment within the blaster category: Blasters that shoot SAP ammunition rounds. EX1004 pp.546:3–7, 568:10–569:20; EX2072(CX-0173.0003); EX2070(RX-0132C) pp.126:16–127:19; EX2073(CX-1631C) pp.87:17–88:8; EX2015 ¶¶178–179. Where blasters that shoot SAP ammunition rounds did not exist before the Xploderz, the marketplace now has many competitive

products, and this segment is closely tracked by the toy industry. EX2070(RX-0132C) pp.56:20–57:4; EX2015 ¶¶165–179; EX1004 pp.568:24–569:3.

The commercial success of the patented technology extended to licensees of the '683 Patent, including Hasbro, Splat-R-Ball and Gel Blaster. EX2007 84-85.

[redacted] EX2078(CX-0171.0035); *see also* EX2077(CX-1635C) pp.42:19–47:10, 60:10–15; EX2073(CX-1631C) pp.97:8–98:4.

2. The Xploderz' Commercial Success Was Because of the Patented Technology

The Xploderz' commercial success was directly attributable to the claimed invention recited in claims 5, 8, and 9 of the '683 Patent. EX2015 ¶¶186–234; EX1004 pp.442:14–443:11, 446:3–447:6, 474:9–14, 493:1–494:18, 501:11–502:14, 503:22–504:12, 505:1–506:8, 568:14–23, 581:17–582:10. In focus groups, boys

preferred the Xploderz with their greater distance and more ammo over comparison products including from NERF. EX2067 pp.57:2–7, 84:5–10, 265:3–270:18; EX2007 p.89 ("The most important features are 'shoots twice as far' as comparable products (i.e. Nerf) and 'Can hold 100 rounds in the magazine."); *see also* EX1004 pp.563:9–20. As discussed below, these advantages—more distance and more ammo—are merits of practicing the '683 Patent's claim 5 (for more ammunition) and claims 8 and 9 (for more distance). EX1004 pp.442:14–443:11, 446:21–447:6, 474:9–14, 493:1–494:18, 498:11–14, 501:11–502:14, 503:22–504:12, 505:1–506:8, 568:14–23, 581:17–582:10; EX2015 ¶¶186–234.

In contrast, when others tried to commercialize toy products allegedly projecting SAP material but lacking the synergistic effect of the '683 Patent's claims, they failed. For example, in 1995, more than twenty years before launching its first gel ball blaster, Petitioner itself launched the Goo Spewer. EX1004 pp.285:22–286:5, 299:18–301:6; EX2015 ¶¶212–214. The Goo Spewer was a water gun that "shot goo. It didn't shoot rounds of ammunition. It shot liquified goo" in allegedly SAP form. EX1004 pp.299:18–300:17; EX2015 ¶¶212–214. The Goo Spewer did not practice the '683 Patent's claims 5, 8, or 9, and, tellingly, failed in the marketplace. EX2069(Chia Dep.) pp.83:18–84:10, 85:5–12, 76:16–77:15, 78:18–79:19, 107:21–108:9, 109:21–110:4; EX1004 pp.299:18–300:17; EX2015 ¶¶212–214.

In fact, more than 20 years later, when Petitioner decided to make an SAP blaster that infringed the '683 Patent (as found in the parallel ITC proceeding; *see* EX2004), Petitioner sought out an Xploderz product [redacted] EX2081 (CX-0112C.0001); EX2069(Chia Dep.) pp.83:18–84:11, 91:1–18 ("[redacted]."), 97:4–19, 107:21–108:9, 109:21–110:4; EX2082(CX-0110C.0002); EX1004 pp.285:22–286:5, 299:18–301:6. After taking guidance from the Xploderz, Petitioner developed an SAP blaster that practiced the '683 Patent and which has "been very successful for PTT." EX1004 pp.301:4–6; EX2004 pp.28–31; EX2084(CDX-005C.52); EX2015 ¶215.

As described below, the synergy of the elements in '683 Patent's claims 5, 8, and 9 resulting in the as-claimed blaster to hold, load, and launch the as-claimed ammunition was the product differentiator between the Maya Group Blaster products and foam blasters like the NERF products, and it was the reason to buy such products. EX2032(CX-1634C) pp.287:18–289:1; 285:13–19; EX2067 pp.298:1–298:21; EX1004 pp. 507:16–508:12; 527:11–21, 563:9–20, 568:14–23; EX2015 ¶195.

The Maya Group touted the benefits enabled by the patented technology (e.g., more distance provided by claims 8 and 9, and more ammo provided by claim 5) in its advertising and product packaging. EX1004 pp.506:15–19, 581:17–582:10; EX2015 ¶¶196–199, 204–211; EX2067 pp.57:2–59:2 ("major benefits of our

blasters"), 274:11–275:9 (agreeing that "all of the features of the product that [Maya Group] used to create excitement in your TV advertising were directly linked to the use of SAPs as ammunition in your projectile launcher"); EX2033(CPX-0035) ("More ammo. More distance."); EX2085(CX-0167) at 0:00:15–24; EX2032(CX-1634C) pp.100:1–19, 104:12–106:6, 287:18–289:1.

The Maya Group's commercials highlighted the enhanced ballistics ("more distance: up to 85 feet") from the mechanism described in claims 8 and 9, and the ammunition capacity ("more ammo; clip holds 70 rounds") and easy loading/firing ("Xploderz: Quickly reload and shoot") from the feed chamber of claim 5. EX2085(CX-0167) at 0:00:15–24; EX2067 pp.62:12–64:4, 63:1–63:15, 274:11–17 (identifying "distance was by far the number 1, the fact that we shot farther. The amount of ammo that we could carry" as "features of the Xploderz product line that you promoted in the TV advertising"); EX1004 pp.505:1–506:19; EX2007 p.89; EX2015 ¶¶196–199, 204–211. Maya Group also touted the firing mechanism and linked it to distance, calling it a "Power Arm" that would "pull back the spring." *Id.*; EX2067 pp.261:12–263:4, 265:3–270:18; *compare id. with* '683 claim 8 ("a spring operatively arranged to…") and claim 9 (describing the impact of the "wherein the biasing force of the spring…" as practiced by Xploderz). These advantages are directly attributable to the fact that the Xploderz practiced the claimed inventions.

As illustrated above, with respect to claim 5, the as-claimed Xploderz ammo in conjunction with the feed chamber allowed more Xploderz SAP ammunition rounds to be stored onboard the launcher and loaded for firing with minimal actions by the user, which was an advantage over existing blasters. EX1004 p.446:3–12; EX2015 ¶192. Dr. Kudrowitz explained Xploderz' "more ammo" was tied to the Xploderz "ha[ving] a feed chamber that can hold that large amount of ammo and then feed it into the blaster." EX1004 pp.446:3–12; *see also id.* at 479:16–17 ("[T]he claims discuss a feed chamber, which is what allows you to hold lots of ammo."); EX2067 pp.268:2–8; EX2032(CX-1634C) p.288:6–13; EX2085(CX-0167) at 0:00:15–18 ("More ammo. Clip holds 70 rounds."); EX2015 ¶¶136, 186, 192, 208. *See also* EX2067 pp.274:11–17 (identifying "[t]he amount of ammo that we could carry" as promoted Xploderz feature).

In sum, Dr. Kudrowitz testified that (1) the ability of the Xploderz to "carry more ammo" was a primary driver of its commercial success; and (2) this ability of the Xploderz to carry more ammo was linked to the feed chamber and the use of SAPs as ammunition in a blaster—in other words, the combination of claimed elements in claim 5. EX1004 pp.446:12–447:6, 503:22–504:12; EX2015 ¶¶189, 192, 198, 201, 203, 206, 211, 232.

More, as demonstrated above with respect to claims 8 and 9, these claims recite specific components of the as-claimed projectile launcher, including an "air

compression chamber," a "piston," a "spring," and a "smaller diameter tube in communication with the air compression chamber." These components combined with as-claimed ammunition meant Xploderz fired ammunition that flew "double the range" of other on-market blasters. EX2067 298:12-16. Dr. Kudrowitz tied this combination found in '683 Patent claims 8 and 9 to the unique distance achieved by Xploderz product line:

> Q. And just so we're clear, how did the statements with an astounding 100-foot range and you pull and release a spring-loaded lever relate to the asserted claims?
>
> A. Yes, so the asserted claims relate to a piston that's spring-loaded that compresses air and transfers it to a smaller-diameter tube, which launches the SAP. And the range that you can get here is directly a result of those asserted claim components.

EX1004 pp.442:25–443:11. Dr. Kudrowitz explained that "the firing distance…is directly related to that firing mechanism that can–with the spring, the air compression chamber, the smaller-diameter tube–that can get that SAP to reach that distance." EX1004 pp.446:3–447:6; *see also id.* pp.501:11–502:14; *see also* EX2015 ¶¶137, 139, 192, 194, 207; EX2032(CX-1634C) pp.287:22–288:22.

C. The Patent-Practicing Xploderz Products Were Praised by the Toy Industry Because of the Patented Technology

The Xploderz' patented design did not exist in any other prior art blaster. EX2015 ¶¶194–195, 210; EX2067 pp.297:7–298:10; EX1004 pp.507:16–508:12; 527:11–21, 568:14–23. There were many blasters available on the market that were designed differently or used different ammunition, such as foam darts, discs, plastic balls, or other types of projectiles. EX2032(Ben-Ezer Dep.) pp.287:12–289:1; EX2067 pp.57:2–7, 84:5–10, 265:3–270:18; EX1004 pp.563:9–20; EX2015 ¶187. But before the launch of Xploderz, no other toy manufacturer had made an as-claimed blaster that fired the as-claimed SAP ammunition, and the novelty of the invention was reflected in the industry praise. EX2015 ¶¶187, 194–195, 210; EX2067 pp.297:7–298:10.

1. Wall Street Journal Article

In August 2011, the Wall Street Journal published an article praising the Xploderz "astounding 100-foot range"; its unique ammo, "squishy blue gel balls that break apart on impact … made from a super-absorbent polymer [that are] safe"; and its firing mechanism, "to fire, you pull and release a spring-loaded lever." EX2112(CX-1853) p.2; EX1004 pp.442:14–443:11.

The Wall Street Journal article provides a nexus to the patented technology. EX1004 pp.442:14–447:24. As non-limiting examples, the article praises (1) a

"spring-loaded lever," which according to Dr. Kudrowitz ties to the "spring operatively arranged to bias the piston" in the manner recited in claims 8 and 9; and (2) the "squishy blue gel balls…made from a super-absorbent polymer…to fire" which ties to the SAP ammunition elements being loaded into the launcher as required in claims 5, 8, and 9. EX1004 pp.442:25–443:11, 446:3–447:6, 501:11–502:14; EX2015 ¶¶132–133.

Dr. Kudrowitz testified that the 100-foot range reflects the "super absorbent polymers and the mechanism pulling and releasing a spring-loaded lever." EX1004 pp.442:25–443:11; *see also* EX2015 ¶¶135–139. He elaborated that "the range that you can get here is directly a result of th[e] claim components," e.g., a "piston that's spring-loaded that compresses air and transfer it to a smaller-diameter tube, which launches the SAP." EX1004 pp.442:25–443:11; *see also id.* pp.446:3–447:6, 501:11–502:14; EX2032(CX-1634C) pp.287:22–288:22.

2. Popular Science Article

In October 2012, Popular Science listed the Xploderz X2 Retaliator among "[a] dozen good ideas in gear." EX2087(CX-1408.0002). Popular Science explained that, "with a range of 100 feet, the Retaliator 2000 shoots farther than all other toy guns." EX2087(CX-1408.0002); EX1004 p.443:12–24. Dr. Kudrowitz has tied this praised firing range to the merits of the claimed invention, such as "the ammunition as described [in the claims] being the SAP ammo, and the blaster as

described by these claims being able to take the SAP and use that mechanism to launch it 100 feet." EX1004 pp.443:16–24; EX2015 ¶¶137–139.

The Popular Science article also praises "the marble-size bullets…made of a gel-like polymer, whiz through the air like BBs," but "[g]etting shot won't hurt" because "[t]hey disintegrate upon contact." EX2087(CX-1408.0002); EX1004 pp.443:12–24. The Xploderz ammo being a "gel-like polymer" that "whiz[z]es through the air" but "disintegrate[s] upon contact" is because the Xploderz ammo are, as claimed, comprised of "plurality of substantially spherical soft-projectiles formed from hydrated super absorbent polymer" that operate in conjunction with the projectile launcher limitations of claims 5, 8, and 9. EX2015 ¶136.

3. Toys "R" Us Award

The Xploderz were selected by Canadian Toys-R-Us store directors as their 2011 toy of the year. EX2045(CX-1179) p.1; EX1004 pp.445:10–446:20. A newswire article announcing this award discusses the merits of the claimed invention, such as the "ability to shoot 70 rounds per second" and "shooting further and carrying more ammo." EX2045(CX-1179) p.1. Consistent with his testimony here, Dr. Kudrowitz tied these advantages to the collective elements recited in claims 5, 8, and 9 of the '683 Patent:

> [The publication is] calling out specifically the firing ammo system. So the ammo plus the blaster. It also calls out that it's patented technology.

> It speaks to 70 rounds per second. And this is related to being able to have a feed chamber that can hold that large amount of ammo and then feed it into the blaster. Again, it also talks about the firing distance, which is directly related to that firing mechanism that can -- with the spring, the air compression chamber, the smaller-diameter tube -- that can get that SAP to reach that distance.

EX1004 pp.446:3–20; *see also id.* at 445:10–447:6; EX2015 ¶¶ 135–140.

4. TOTY Award

The Xploderz XBlaster 200 was voted a finalist in the "Outdoor Toy of the Year" category of the Toy Industry Association's "2012 Toy of the Year Awards." EX2088(CX-1177.0004); EX1004 pp.443:25–445:9. Dr. Kudrowitz, who was a judge at the 2012 Toy of the Year Awards, discussed the criteria that the judges used in voting for this award, including "creativity and innovation." EX1004 pp.443:25–444:25; EX2015 ¶140. Dr. Kudrowitz then tied the "creativity and innovation" criteria to the patented technology. EX2015 ¶140. For example, Dr. Kudrowitz explained that the as-claimed Xploderz blaster was "unlike the other blasters that were on the market at the time." EX1004 p.445:1–9; EX2015 ¶140.

5. Toy Fair Award

Xploderz was also named a Best New Toy of 2011 by the British Toy and Hobby Association. EX2042(CX-518); EX1004 p.447:7–24; EX2015 ¶134. Although the article announcing this award was provided by Xploderz in 2011, it

cannot be disputed that Xploderz, whose novelty was the practice of the claims, won the Best New Toy award in 2011. EX1004 p.544:2–18 ("Q. Regardless of who wrote this article, isn't the underlying fact the same, that the Xploderz did indeed win a New Toy Award in 2011? A. That is correct."). Thus, this award is more evidence of industry praise.

D. The Patent-Practicing Xploderz Products' Commercial Success and Industry Praise Were Not Due to Unclaimed Features or Features Found in the Prior Art

Petitioner's attacks on the "nexus" arguments—that the Xploderz' commercial success and praise was due either to unclaimed features or to features in the prior art—are unfounded in law and unsupported by the record. Pet. 60–66.

1. The Xploderz Commercial Success and Industry Praise Were Not Due to Unclaimed Features.

Petitioner says the Xploderz's immense commercial success and praise were due to "unclaimed features" because the claims do not recite "more distance" or "more ammo." *See* Pet. 61, 64. But as laid out above, these are the very advantages that claims 5, 8, and 9 provided.

A finding of nexus does not require praise of the literal claim language. *See In re Natural Alternatives, LLC*, 659 F. App'x 608, 614 (Fed. Cir. 2016) (finding nexus where customers "extoll[ed] the advantages" of the claimed invention, including the "many benefits of [the claimed composition]"). Rather, the Federal

Circuit has explained that "[f]or secondary considerations to have probative value, the decision maker must determine whether there is a nexus between the merits of the claimed invention and the secondary considerations." *Ashland Oil*, 776 F.2d at 306 n.42; *see also WBIP, LLC v. Kohler Co.*, 829 F.3d 1317, 1331 (Fed. Cir. 2016).[8]

Here, the "merits" and "advantages" of the claimed invention are the benefits achieved by practicing claims 5, 8 and 9—i.e., the greater ammunition capacity and the greater firing range relative to existing blasters. *See* §VII.B.2, §VII.C, *supra*. As noted above, in addition to the raw evidence, Dr. Kudrowitz further explained the firing range advantages from the "super absorbent polymers and the mechanism pulling and releasing a spring-loaded lever." EX1004 pp.442:25–443:11; *see also* EX2015 ¶¶135–139. He elaborated that "the range that you can get here is directly a result of th[e] claim components," e.g., a "piston that's spring-loaded that compresses air and transfer it to a smaller-diameter tube, which launches the SAP." EX1004 pp.442:25–443:11; *see also id.* pp.446:3–447:6, 501:11–502:14; EX2032(CX-1634C) pp.287:22–288:22. And he further testified to the increased

[8] The Federal Circuit's focus on the "advantages" or "merits" of the claimed invention is intuitive. Rarely will claims themselves recite the precise benefits of practicing them, as is the case here. EX1004 pp.446:21–447:6 (Dr. Kudrowitz: "We don't usually talk in claim terms in advertisements like this.").

ammunition advantage from Xploderz "ha[ving] a feed chamber that can hold that large amount of ammo and then feed it into the blaster." EX1004 pp.446:3–12; *see also id.* at 479:16–17 ("[T]he claims discuss a feed chamber, which is what allows you to hold lots of ammo."); EX2067 pp.268:2–8; EX2032(CX-1634C) p.288:6–13; EX2085(CX-0167) at 0:00:15–18 ("More ammo. Clip holds 70 rounds."); EX2015 ¶¶135–139, 186, 192, 208. *See also* EX2067 pp.274:11–17 (identifying "[t]he amount of ammo that we could carry" as "features of the Xploderz product line that you promoted in the TV advertising").

2. The Xploderz Commercial Success and Industry Praise Were Not Due to Features in the Prior Art

Petitioner's argument that the Xploderz commercial success and praise were due to known SAP alone is wrong. *See* Pet. 64. Although "objective evidence of nonobviousness lacks a nexus if it exclusively relates to a feature that was 'known in the prior art,'" that is not the case here. *Rambus Inc. v. Rea*, 731 F.3d 1248, 1257 (Fed. Cir. 2013).

It was not the use of SAP in a vacuum that enabled the Xploderz ammo to achieve astounding distance. Rather, it was the combination of the as-claimed Xploderz blaster with the as-claimed Xploderz ammunition in claims 8 and 9 that enabled the Xploderz line to shoot "twice as far as comparable NERF blasters." EX2067 p.267:2–6; EX1004 pp.442:14–443:11, 446:21–447:6, 474:9–14, 493:1–

494:17, 501:11–502:14, 503:22–504:12, 505:1–506:8; EX2015 ¶210. And it was precisely this combination of the blaster mechanism as-claimed and the ammunition as-claimed as recited in claims 5, 8, and 9 that did not exist in any other prior art blaster. EX2067 pp.297:7–298:10; EX1004 pp.507:16–508:12; 527:11–21, (Rosenblum) 568:14–23; EX2015 ¶¶139, 190, 193–195, 210, 233; *Rambus*, 731 F.3d at 1257–58.

On this point, Petitioner distorts Mr. Brawer's testimony to suggest that it was the SAP in a vacuum that provided for increased firing range and ammunition capacity. Pet. 62–64.[9] But it is telling what Petitioner did not emphasize: Mr. Brawer was testifying in the context of the Xploderz blasters, and he expressly linked the benefits to the combination of the as-claimed SAP ammunition and the as-claimed Xploderz blaster. *See, e.g.*, EX2067 pp.267:2–6 ("Q. And in your mind, the use of the SAPs as ammunition was part of what enabled the Xploderz products to shoot twice as far as comparable NERF products? A. It was by far the most important thing."), 267:7–268:8 ("Q. So, again, this use of the SAPs as the ammunition was part of what enabled the Xploderz products to hold more rounds . . . A. Yes."), 275:4–9 ("Q. Is it fair to say that all of the features of the [Xploderz]

[9] In the parallel ITC proceeding, the ALJ critiqued Petitioner's misrepresentation of Mr. Brawer's testimony on this exact issue. EX2007 p.90.

product that you used to create excitement in your TV advertising were directly linked to the use of SAPs as ammunition in your projectile launcher? A. Yes."). EX2015 ¶210.

Petitioner's cited case law is unpersuasive. In *Yita LLC v. MacNeil IP LLC*, the evidence of commercial success was tied to a singular "close-conformance" limitation disclosed in the prior art. 69 F.4th 1356, 1364-65 (Fed. Cir. 2023). Here, in contrast, the evidence of commercial success (and of objective indicia more generally) is tied to the combination of limitations, and to the combination of the as-claimed launcher with the as-claimed ammunition was not previously known. *See Medtronic, Inc. v. Teleflex Innovations S.A.R.L.*, 70 F.4th 1331, 1337 (Fed. Cir. 2023) (holding that even if features are "individually known" in the prior art there is a "nexus where the [objective indicia] evidence was 'tied to the combination of features as a whole' and the combination was not previously known."); *see also Rambus Inc. v. Rea*, 731 F.3d 1248, 1257–58 (Fed. Cir. 2013) (similar); *WBIP, LLC v. Kohler Co.*, 829 F.3d 1317, 1330–32 (Fed. Cir. 2016) (similar).

Unlike *Yita*, the Federal Circuit's decision in *Rambus* is instructive. 731 F.3d at 1257–58. There, the Federal Circuit vacated a PTAB finding that objective indicia evidence lacked a nexus because it related to features that allegedly were in the prior art. *Id.* Per the Federal Circuit, the PTAB's error was improperly focusing on one particular prior art feature of the claims ("dual-edge functionality"), without

considering "evidence that touted [the] patented design as a whole." *Id.* Petitioner encourages the Board to make this same error. Even if SAP was in the prior art, and even if certain launcher-related limitations were in the prior art, it is undisputed that no prior art combined the as-claimed launcher with the as-claimed SAP ammunition. Again, it is this combination of the as-claimed blaster and the as-claimed SAP ammunition that enabled the Xploderz to achieve the commercial success and industry praise described above.

The Petition also gives a cursory and incorrect one-sentence argument (at 65) that Patent Owner "cannot show any success/praise is due to allegedly novel as opposed to unclaimed and prior features of the devices (e.g., full-auto shooting, large ammo capacity, ornamentation/design, advertising, business acumen)." Dr. Kudrowitz considered each of these issues. EX1015 ¶¶216-234. In short, none of them explain Xploderz' smash success. Xploderz did not have "full-auto shooting" that was present in Maya Group's other blasters in the Blaster Pro line and yet was successful. EX2015 ¶233. Xploderz' large ammo capacity was a benefit of its claimed features, as discussed at length above. Xploderz' ornamentation/design "did not distinguish the Xploderz from competitor products." EX2015 ¶219. Xploderz' advertising was focused "on the patented claims, which were the aspects of the blaster that differentiated the product in the marketplace." EX2015 ¶225, 229 (collecting evidence). Nor is "business acumen" an unclaimed feature; if anything,

it was business acumen to create a new product that practiced the patented invention: "the blaster product itself needed to sell…in the end it's the consumer that decides." EX2015 ¶230 citing EX2067 pp.270:1–18. The evidence in §VII.B and §VII.C shows that what differentiated Xploderz in the marketplace and drove its praise and success is tied directly to the Xploderz' practice of claims 5, 8, and 9.

E. Petitioner Has Not Shown Simultaneous Invention

Petitioner identifies two alleged simultaneous inventions: (1) KR20-2010-0004855 ("Kim," EX1022); and (2) a YouTube video showing Spitballs posted by a user named Vat19 ("Vat19," EX1023). *See* Pet. 57–60. Neither undermines Patent Owner's objective indicia or supports Petitioner's Peev-Spitballs combination.

First, Kim and Vat19 cannot be simultaneous inventions because neither of them discloses key aspects of the claimed inventions. EX2015 ¶¶ 236–239; *see Endo Pharms. Inc. v. Actavis Pharms., LLC*, 922 F.3d 1365, 1378 n.14 (Fed. Cir. 2019) (affirming a district court's rejection of purported simultaneous invention evidence that did not disclose the same compound as the claimed invention).

At the ITC investigation, Mr. Delman testified that he had not contended that Kim specifically discloses a super absorbent polymer, as required by the '683 Patent's Challenged Claims. EX1004 p.302:7–22. Petitioner and its experts make no such assertion here, either. *See* Pet. 57–58; EX1016 ¶¶127–128. Instead, Petitioner incorrectly states that "Kim broadly covers all gel materials." Pet. 58. But

Kim never says, "all gel materials." EX2015 ¶¶236–238. And, as Dr. Kudrowitz explains, "[t]hat characterization by Petitioner has no basis in Kim's text, and it makes little sense that Kim's generic identification of a 'gel' could somehow disclose all of the many different types of gels in the world." *Id.* ¶¶237–238. Further, there is no reason to suggest that a POSITA would have somehow derived the '683 Patent's claimed hydrated SAPs from Kim's reference to a "gel or gel material" formed from a "cleaning substance." *Id*. (citing (EX1022 p.8). Kim does not mention hydrating his disclosed gel, and there is nothing linking SAPs to substances used for cleaning in the manner Kim describes. *Id*.

As for Vat19, all that video purports to show is a Spitball being blown out of a tube (see below).



EX1024. Petitioner does not allege that Vat19 includes the combined limitations of any of the '683 Patent's Challenged Claims (let alone the projectile launcher elements required in claims 5, 8, and 9). *See* Pet. 59–60; EX2015 ¶239.

Second, Vat19 was not purportedly published until December 20, 2010, more than seven months after the priority date of the '683 Patent. EX1023. By the time Vat19 was purportedly published in December 2010, the Xploderz products would have been disclosed to manufacturing partners and retailers looking to stock product, such that the invention would have become known to others. *See* EX2032(CX-1634C) pp.108:7–11; 112:20–113:2 ("first launch [of Xploderz] was in the end of 2010," [by January 2011] "products were already in the stores"); EX2067 pp.256:21–259:12, 259:15–266:2 (describing disclosure to focus group children and their parents in May, 2010). "The weight of evidence of simultaneous invention must…be carefully considered in light of all of the circumstances." *Regents of the Univ. of California v. Broad Inst., Inc.*, 903 F.3d 1296 (Fed. Cir. 2018). Here, the "circumstances" undercut Petitioner's suggestion that Vat19 represents an independent simultaneous discovery because Vat19 is dated after the commercial launch of a patent-practicing product by the initial assignee of the '683 Patent.

Third, even if Petitioner's purported simultaneous invention evidence were not so fundamentally flawed, it would not be enough to support the legal conclusion of obviousness. Simply put, "contemporaneous independent invention may not alone show obviousness," *Monarch Knitting Mach. Corp. v. Sulzer Morat GmbH*, 139 F.3d 877, 883 (Fed. Cir. 1998), and all the rest of Petitioner's obviousness case

based on Peev and Spitballs has already been debunked and outclassed by overwhelming evidence of commercial success and industry praise.

Respectfully submitted,

Date: December 6, 2024

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CERTIFICATION UNDER 37 CFR § 42.24(d)

Under the provisions of 37 CFR § 42.24(d), the undersigned hereby certifies that the word count for the foregoing Patent Owner Response 13,564, which is less than the 14,000 allowed under 37 CFR § 42.24(b)(1).

Respectfully submitted,

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CERTIFICATE OF SERVICE

Pursuant to 37 C.F.R. § 42.6(e)(4), the undersigned certifies that on December 6, 2024, 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:

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