

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

LIGHT & WONDER, INC.
Petitioner

v.

EVOLUTION MALTA LIMITED
Patent Owner.

U.S. Patent Nos. 10,629,024; 11,011,014; 11,756,371

REPLY DECLARATION OF STACY FRIEDMAN

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I. INTRODUCTION

1. I have been retained by counsel for Petitioner Light & Wonder, Inc. (“Petitioner”) to investigate and opine on certain issues relating to the instituted IPR proceedings IPR2025-01073 on United States Patent No. 10,629,024 (“the ’024 patent”), IPR2025-01072 on U.S. Pat. No 11,011,014 (“the ’014 patent”) and IPR2025-01078 on U.S. Pat. No. 11,756,371 (“the ’371 patent”) (collectively, “the challenged patents”). I understand the IPRs request that the Patent Trial and Appeal Board (“PTAB” or “Board”) review and cancel claims 1-5, 7-12, 14-18 and 20 of the ’024 patent, claims 1-3, 5-11, 13-19 and 21-24 of the ’014 patent, and claims 1-2, 4-12, 14-22 and 24-30 of the ’371 patent (collectively the “challenged claims”). I have specifically been asked to consider and opine on declarations filed by Dr. Michael Casey in these matters.

2. Due to the similarity in these the claims of these patents, and because they are continuations and share identical specifications, I have provided a combined and identical declaration for each proceeding.

3. I previously submitted a combined declaration in each of these proceedings dated May 29, 2025 (the “Friedman Decl.”). I incorporate that declaration herein.

4. The opinions set forth in this declaration are based on my personal knowledge, my professional judgment, and my analysis of the materials and

information referenced in this declaration, its exhibits, and Appendix A to this declaration.

5. I am being compensated for my consulting services including time spent testifying at any hearing that may be held. In the past four years, I have testified by deposition 13 times and 8 times at trial or hearing. My compensation does not depend on the outcome of these *inter partes* reviews or the co-pending district court litigation, and I have no other financial interest in this *inter partes* review. I am over 21 years of age and am legally competent to testify. If called as a witness, I could and would testify to the opinions set forth below. I reserve the right to create additional summaries, tutorials, demonstratives, charts, drawings, tables, or animations that may be appropriate to supplement or demonstrate my opinions if I am asked to testify at hearing.

6. I understand that the '024, '014 and '371 patents have been assigned to Evolution Malta Limited.

7. This declaration is based on the information currently available to me. To the extent that additional information becomes available, I reserve the right to continue my investigation and study, which may include a review of documents and information that may be produced, as well as testimony from depositions that have not yet been taken.

8. I refer to the “Declaration of Michael Casey, Ph. D. Regarding U.S. Patent No. 11,011,014” filed as EX2041 in IPR2025-01072 as “Casey014”; the “Declaration of Michael Casey, Ph. D. Regarding U.S. Patent No. 10,629,024” filed as EX2042 in IPR2025-01073 as “Casey024”; and the “Declaration of Michael Casey, Ph. D. Regarding U.S. Patent No. 11,756,371” filed as EX2043 in IPR2025-01078 as “Casey371.”

II. DR. CASEY’S DECLARATION REGARDING THE ’014 PATENT

A. Exploitable Games and Dr. Casey’s Improper POSA

9. Dr. Casey opines that casino game designers “must ensure that a game does not include a feature that is exploitable by players to gain an advantage.” Casey014 at ¶ 55. Dr. Casey is wrong. Exploitable casino games (games where the player can gain a theoretical advantage over the casino) not only exist, but they have existed for decades. Blackjack is beatable via card counting. Some slot machines include “persistence” or “banking” features that accumulate value from one game to the next and can become exploitable under certain circumstances. I personally developed and shipped several such exploitable slot machines while at Silicon Gaming over 25 years ago, and some successful persistence slot machine titles today are beatable.¹ Therefore, when Dr. Casey argues that a POSITA would not look to an exploitable game feature for an obviousness combination, that

¹ EX1074.

argument rests upon the provably false premise that such exploitable features would not or should not be released to casinos. Since such games have in fact been (and continue to be) released, Dr. Casey's reasoning is flawed.

10. Dr. Casey recites Evolution's definition of a person of ordinary skill in the art that includes "a bachelor's degree in engineering, computer science, or math, and at least two years of experience in designing games (e.g., table games, electronic games, slot machines)" and states "I agree with this formulation." Casey014 at ¶ 76. He also states that he understands "that claim terms are interpreted according to their ordinary and customary meaning as understood by a person of ordinary skill in the art." Casey014 at ¶ 77. In my opinion, Dr. Casey has failed to correctly apply the knowledge of a POSITA² and instead has interpreted the claims and the prior art from the viewpoint of someone who is ignorant of the principles of casino game design.

11. I agree with Evolution that a POSITA has experience in game design. As I explained in my declaration, "a POSITA familiar with gaming mathematics would already understand" how to set payouts "for numbers not selected ... to account for the increased payouts of the selected numbers." Friedman Decl. at ¶ 95, citing '024 Patent at 5:24-30. I explained that a POSITA "would have been

² Dr. Casey uses the acronym POSA; I understand POSA and POSITA to be interchangeable but it is my custom to use POSITA.

capable of using probability theory to carry out the calculations necessary to implement the mathematics described in the challenged patents.” *Id.*

12. Dr. Casey’s POSA is not so skilled. In Dr. Casey’s view, POSA would think that several game features disclosed by Kido were “easily exploitable” such that “the game operator would lose money” by offering them, and on that basis argues that a POSA would *not* have been motivated to look to Kido as the basis of an obviousness combination. Casey014 at ¶¶ 135, 165. I disagree. As a first point, I understand that the teachings of Kido (and other prior art references), including the specific game features therein, would have been known to a POSITA and therefore would have been part of that POSITA’s library of known game features. Friedman Decl. at ¶ 22. Just as a painter’s process involves using a palette to mix paints, a POSITA’s process involves using a spreadsheet to mix probabilities. Dr. Casey’s argument rests on the improper understanding that a POSITA either cannot do this, or would not be motivated to. But I note that Dr. Casey does not actually argue that the prior art teaches away from doing so, and if he had I would disagree. Instead, his objection to combining the prior art is based on the flawed premise that doing so would necessarily lead to an “exploit” in the eyes of his POSA, or that a POSITA would not be able to balance the various mathematical factors to achieve a desired house edge. He is incorrect.

13. Dr. Casey's example of the "exploit" involves the player wagering on every possible roulette number (all 38 positions), reasoning that the ball will therefore always land on a star mark and trigger the bonus, and then the player can increase their wager and receive a guaranteed win and profit. Casey014 at ¶ 135. As an initial point, Dr. Casey has misread the disclosure of Kido, which says the bet in the bonus game is the same as (not increased from) the bet that started the game. Kido at [0203], Fig. 9. In other words, Dr. Casey's "exploit" of increasing the wager is not possible under the disclosed rules.

14. Moreover, Dr. Casey's reasoning is equally applicable to the challenged patents themselves: claim 1 of the '014 patent includes the steps of the player making a single-position bet (element 6), randomly selecting a first selected position that is the same as the player's single position (element 9), determining a first payout for the player's first position (element 10) and indicating that the first player is to be paid at the first payout (element 12). Claim 8 of the '014 patent discloses a 500x payout. Using Dr. Casey's "exploit," a player playing the game of claim 8 of the '014 patent could simply wager one credit on each of the 38 positions on the wheel: they would lose 37 credits but win 500x on the last, for a massive overall profit. At Dr. Casey's contemplated 1 minute per round of play and \$10 per credit, and applying Dr. Casey's logic in his paragraph 135, Dr. Casey's POSA would calculate that the player would profit \$4,620 per spin and

\$277,200 per hour by playing the game claimed in the '014 patent. Moreover, Dr. Casey opines that Lightning Roulette is an embodiment of the claims and his practicing-product chart illustrates a 500x award. Casey014 at 90-91.

15. If winning over a quarter-million dollars per hour in Evolution's Lightning Roulette sounds too good to be true, that's because it is. A competent game designer and correct POSITA would understand that, even though the literal text of the '014 patent claims state that the player's wagered-upon position, the randomly-selected position, and the ball position all coincide (*see* claim 1 elements 9 and 11, "wherein the first selected position is the same as the single first position" and "the ball has fallen in the single first position"), it is not mathematically and operationally feasible for the privilege of an increased pay to occur every spin, whether in the game of the challenged patents or in the prior art. That same POSITA would understand how to "account for" increased pays – just as the patent specification indicates – by limiting the frequency of those increased pays to achieve an overall house advantage. Doing so is a fundamental part of the job of a casino game designer, who understands how to apply probability theory in order to adjust payouts and probabilities to achieve a desired overall house edge. *See, e.g.* Friedman Decl. at ¶ 645.

16. Put another way, a proper POSITA knows that a description of a very large award, such as 500x, cannot feasibly occur on every play or spin in a game

with only 38 equal possibilities where the player is allowed to bet on all of them. That knowledge applies equally to the '014 patent as it does to the prior art including Kido or Baron.

17. Dr. Casey spends several pages making mathematical arguments about Kido's game features allegedly being unbalanced or exploitable, but all of these arguments are based on the flawed foundation that the game features he identifies as exploitable actually occur every round. Casey014 at ¶¶ 134-158, notably ¶ 144 ("the probability that the roulette ball lands in the same pocket that has the star mark is 1 in 38 (when there is one star mark).") Dr. Casey's POSA *assumes* there is always a star mark in the game of Kido, but he entirely ignores the fact that in order for the math to work (or to use his words, be "balanced" and not "exploitable"), there must be spins where *there is no star mark*. Similarly, he ignores the equivalent fact for the '014 patent and its claimed 500x award which likewise cannot profitably occur on every spin. A real POSITA would understand this.

18. Under a proper concept of POSITA as a competent game designer, that POSITA would understand that roulette is hundreds of years old and that if a POSITA's goal is to make the game more "interesting" – a common goal taught by the prior art – the POSITA necessarily must change *something*. That same POSITA would therefore look to relevant prior art for sources of game design

inspiration, especially when those prior art documents described game features that were intended to increase player excitement or interest. Friedman Decl. at ¶¶ 107, 119, 123, 126. That same competent POSITA would understand that drawing inspiration from multiple sources, such as by mixing and matching features from different prior art game concepts, was a common way to create new game ideas.

19. Most importantly, and in contrast with Dr. Casey's POSA, a correct POSITA would understand how to apply probability theory to a collection of game rules in order to maintain a suitable house edge. Friedman Decl. at ¶¶ 95-103, 645. That means if a game feature under review (or combination thereof) appears to pay back too much to the player, a POSITA doesn't simply throw up their hands and give up as Dr. Casey implies, instead a POSITA would know to adjust aspects of the game and re-evaluate. In the case of Kido's star mark, a POSITA would have readily envisioned a random probability distribution for offering no star marks, one star marks, two or more star marks, etc., and in conjunction with the expected payback of each available bonus feature, calculate the overall game return. Performing such calculations is a critical part of a game designer's job.

20. That same POSITA who understands game design would also have understood that the purported innovation of the challenged patents had already been described in several other prior art patents in addition to the applied prior art Kido, Baron and Yee references. Friedman Decl. at ¶¶ 104-110. For example, the

Orselli reference, U.S. 5,540,442, claims comparing a first winning number selected by the spin of a roulette wheel and ball to a random number selected by a random number generator, and “declaring said random number a second winning number **only if** said random number is the same as said first winning number.”

Orselli '442 at 7:7-8:5, emphasis added. In other words, the Orselli reference acknowledges that the randomly-generated number and the randomly-spun position of the ball do not always match.

21. But in the claims of the challenged patents, the ball **always** falls into the position selected by the player, and that same position is **always** the randomly-selected position for the increased payout, so the player **always** wins an increased payout. A POSITA would understand that no operationally-feasible roulette game can always win and would thus interpret the challenged claims to reflect only winning game scenarios, not all possible game scenarios. This interpretation is consistent with Evolution’s arguments that its Lightning Roulette is a practicing product (e.g., Casey014 at ¶ 202) even though it likewise does not always win.³ A POSITA, understanding that no feasible roulette game can always win, would understand how to calculate and design the payouts and probabilities of game

³ If the challenged claims are to be interpreted literally, where each claimed system or method randomly selects a wheel position that always corresponds to the player’s bet and the ball always falls into that same position, then Lightning Roulette is not a practicing product and no other commercialized roulette games could possibly infringe.

features across both winning and losing outcomes to achieve a desired house edge, and would thus look to prior art game features that likewise do not always win for inspiration. As I explained in my opening declaration, the game feature claimed as innovative by Evolution had already been implemented by many different prior art references, including Orselli. Dr. Casey does not dispute this fact.

22. In sum, I disagree with Dr. Casey's opinions that a POSITA would have disregarded any game feature found in the prior art because they thought it was "exploitable," and I also disagree that a POSITA would have thought those prior art features were "exploitable" in the first place. Rather, in my opinion, a POSITA would have looked at relevant prior art game features, been able to combine them, been able to mathematically evaluate those combinations, and been able to adjust or balance the mathematics to compensate for any overly-generous payback, because someone who cannot do such things is not a competent casino game designer and therefore cannot be a POSITA.

23. Therefore, in my opinion, all of Dr. Casey's opinions as to what his POSA would have understood about the prior art, including that person's opinions as to motivation to combine, are not relevant to this matter because Dr. Casey's POSA is not a POSITA.

24. In addition, several of Dr. Casey's statements about what his POSA would allegedly understand further underscore my opinion that Dr. Casey's POSA

is not a POSITA. For example, Dr. Casey asserts that “a POSA would understand that frequent low impact bonuses are unpopular with many players that resent celebrating consistently small wins.” Casey014 at ¶ 134. Dr. Casey points to no evidence or support for the rather nonsensical premise that players “resent celebrating” wins, regardless of the amount. In blackjack, for instance, the only possible winning amounts are even money (1-to-1) or 6-to-5 for a natural blackjack, which would meet Dr. Casey’s qualification of “consistently small,” yet blackjack is a far more popular game than roulette according to current Nevada revenue statistics. EX1075 at p. 4 (Nevada statewide summary).

25. Dr. Casey also states “a POSA would not have modified Kido’s progressive jackpot to include a second star mark because that would have made it less attractive to players.” Casey014 at ¶ 150. Dr. Casey’s POSA therefore ignores the teachings of Kido that “award[] a new game value to *several numbers* ... such as numbers indicated on a wheel, thereby diversifying a game characteristic and *increasing a player’s game desire.*” Kido at [0008], emphasis added. Dr. Casey does not address or rebut my opinion that since Kido discloses multiple new game values, and also discloses setting a star mark to achieve a new game value, that it is at least obvious that the goal of Kido’s invention can be satisfied by awarding a new game value to several star marks. Friedman Decl. at ¶

389. Dr. Casey's opinion that doing so would be "less attractive" to players is contrary to the teachings of Kido itself.

B. Claims 5, 13, and 21

26. Dr. Casey states: "claims 5, 13, and 21 require the game to select a second number on the roulette wheel to receive an increased payout *and* for that payout to be different than the first payout." Casey014 at ¶¶ 131, 187, emphasis added. I disagree: the claim language contains no limitation that the amount of the payout for the second number must be "increased" relative to anything, just that the payout be "different than the payout for the single first position." For example, a payout of 35:1 is different than a payout of 71:1, and both payouts are disclosed by Kido. Kido at Fig. 8. For another example, a payout of 7:1 is different than a payout of 100:1, and both payouts are disclosed by Baron. Baron at Fig. 3.

27. Referring to my paragraph 507, Dr. Casey states that my analysis of Baron does not explain "why generating multiple 'roulette outcomes' requires selecting both a first and second position for increased payouts." Casey014 at ¶ 188. As above, I disagree that "selecting both a first and second position for increased payouts" is a limitation of the claims, and I do explain that the two payouts of 100:1 and 7:1 disclosed by Baron are different. Friedman Decl. at ¶ 507.

28. Further, I also explain that “it is inherent that the determined payouts for a win on the first and second marks could only either be the same or different. Therefore, it is at least obvious that the payouts for winning on a first star mark vs. winning on a second star mark can be different.” Friedman Decl. at ¶ 391. Dr. Casey offers no rebuttal to this position, nor to the point that “a POSITA would have found it obvious that payouts for different outcomes in a gambling game may be different.” *Id.* at ¶ 509.

29. In addition to Dr. Casey’s misinterpretation of claim scope stemming from his importing of non-existent claim limitations, his argument as to claims 5, 13 and 21 center around his POSA’s alleged lack of motivation to combine the various features found in the prior art because, according to him, a POSA would have found them exploitable. Casey014 at ¶¶ 132-158. The errors in that argument have been addressed above and for brevity will not be repeated here.

30. As to Kido, it suffices to say that Dr. Casey admits that Kido discloses the Prog Bonus, Special Rate, Second Special Rate, and Free Spot routines. Casey014 at ¶ 133. Dr. Casey argues that “Kido’s comment about combining privileges does not suggest selecting multiple numbers to get a star mark.” Casey014 at ¶ 159. But Dr. Casey has overlooked Kido’s teaching of “a roulette gaming device that awards a new game value to *several numbers* ... such as

numbers indicated on a wheel.” Kido at [0008], emphasis added. In my view, Kido’s teachings are not limited to a single star mark.

31. Dr. Casey admits that Kido suggests “that one star mark can award multiple privileges.” Casey014 at ¶ 159. As I noted in my opening declaration, if two privileges are combined, either the same star mark triggers both privileges, or two different marks are used to trigger one each, and therefore either option would have been obvious in view of the disclosures of Kido. Friedman Decl. at ¶ 90. Dr. Casey does not refute my opinion.

32. As to Baron, Dr. Casey does not rebut my opinions at all, and in fact appears to be discussing a different embodiment in Baron with three physical wheels than the embodiment in Baron that I primarily relied upon. Casey014 at ¶¶ 177-178, *cf.* Friedman Decl. at ¶ 443 citing Baron Fig. 6, illustrated at Friedman Decl. p. 226. Therefore Dr. Casey’s opinion is non-responsive to my declaration.

33. Dr. Casey offers no rebuttal to my opinions that the combination of obviousness references I set forth in my declaration, once combined, would disclose all elements of claims 5, 13, and 21. His opinion as to my obviousness combinations are limited to whether a POSITA would have been motivated to make them in the first place.

C. Claims 8, 16, 24

34. Dr. Casey's opinions related to exploitability have been addressed above and for brevity will not be repeated here. It suffices to say that when the proper abilities of a POSITA are considered, a POSITA was both motivated to look to prior art features and capable of combining them, as I discussed in my opening declaration. Therefore, I disagree with Dr. Casey's "exploitability" and other mathematical arguments. Casey014 at ¶¶ 165, 167, 168, 170.

35. Dr. Casey offers no rebuttal to my opinions that the combination of obviousness references I set forth in that declaration, once combined, would disclose all elements of claims 8, 16, and 24. His opinion as to my obviousness combinations are limited to whether a POSITA would be motivated to make them in the first place.

36. As to Kido, Dr. Casey states that my "proposed modification also does not make sense ... Mr. Friedman proposes substituting Kido's star mark that with Yee's display of '500x'." Casey014 at ¶ 166. Dr. Casey has thus failed to address the entirety of my opinion, which includes that "a POSITA would have thought it obvious to substitute *or add* Yee's disclosure of a multiplier 500x." Friedman Decl. at ¶ 434, emphasis added. My opinion is not limited, as Dr. Casey implies, to substituting one of Kido's existing awards with 500x. Rather, I opined that both Kido and Yee relate to variations of roulette involving a comparison

between a randomly generated number with a number generated by a spin of a roulette wheel, and that a number generated by spinning a roulette wheel *is* a randomly generated number. Friedman Decl. at ¶ 426. Since Yee and many prior games have disclosed using and displaying a 500x multiplier, it would have been obvious to a POSITA that the game of Kido could have done so. Friedman Decl. at ¶ 430. Moreover, the specific multiplier was an arbitrary design choice. *Id.* Dr. Casey does not dispute any of this.

37. As to Baron, Dr. Casey states “Mr. Friedman does not identify which award he intends to replace with 500x.” Casey014 at ¶ 191. Dr. Casey has thus failed to address the entirety of my opinion, which includes that “a POSITA would have thought it obvious to substitute *or add* Yee’s disclosure of a multiplier 500x.” Friedman Decl. at ¶ 561, emphasis added. My opinion is not limited, as Dr. Casey implies, to substituting one of Baron’s existing awards with 500x. Rather, I opined that both Baron and Yee disclosed an increased payout feature based on comparing a randomly selected number to a number generated by a spin of a roulette wheel, and that a number generated by spinning a roulette wheel *is* a randomly generated number. Friedman Decl. at ¶ 552. Since Yee and many prior games have disclosed using and displaying a 500x multiplier, it would have been obvious to a POSITA that the game of Baron could have done so. Friedman Decl. at ¶ 557.

Moreover, the specific multiplier was an arbitrary design choice. *Id.* Dr. Casey does not dispute any of this.

38. Dr. Casey at least comprehends that it would be possible to replace the progressive jackpot in Baron with a 500x award, but he suggests “that would change the nature of the game all together” because “players view fixed odds such as 500x as less exciting than a progressive jackpot.” Casey014 at ¶ 191. Dr. Casey also states “Mr. Friedman does not adequately explain why a POSA would make such a change.” *Id.* I disagree on both counts: nothing about that proposed modification (replacing the progressive with a 500x award) is different other than the award – the game still uses a roulette wheel, ball, processor, etc. Moreover, whether players view fixed odds such as 500x as less exciting than a progressive jackpot is immaterial. As I explained before, the goal of both Baron and Yee is to provide “new and more interesting ways to play roulette, particularly when the reward for a winning outcome at the end of a round of play ... may be enhanced.” Friedman Decl. at ¶ 562. A 500x award is decidedly “enhanced” and more exciting relative to a traditional roulette payout of 35-1. Friedman Decl. at ¶ 557.

39. Additionally, a POSITA would have understood that there are some settings in which a fixed payout may be preferable to a progressive jackpot. For example, progressives require additional electronics to control the jackpot meter, additional accounting practices to handle jackpot resets and seeding, and may

come with added regulatory burdens, all at additional cost to the casino. A POSITA would have understood that a gaming operator could sensibly weigh the pros and cons and decide that a large fixed payout is more appropriate for a given circumstance than a progressive jackpot, and therefore would have understood that a large fixed payout and a large progressive jackpot are alternatives. In fact, a POSITA would have known that it was (and is) common for electronic games with rare, large top awards, such as certain slot machines, to offer progressive jackpot functionality as a configurable option that can be turned on or off as the operator desires.

D. Practicing Product and Order of Steps

40. Dr. Casey argues that Evolution's Lightning Roulette practices claims of the '014 patent. Casey014 at ¶ 202. For claim element 1[j], Dr. Casey provides several examples including "the image below shows that 2 has a 200x payout; 3, 5 and 20 have a 100x payout; 14 has a 50x payout, and all other numbers have a 30x payout." Casey014 at 91, citing EX2027 at 4. I disagree that the image cited by Dr. Casey shows that "all other numbers have a 30x payout" since nothing reflecting 30x is shown in the image he relies upon:

The game determines payouts for multiple positions on the roulette wheel. For example, the image below shows that 2 has a 200x payout; 3, 5, and 20 have a 100x payout; 14 has a 50x payout, and all other numbers have a 30x payout.



EX2027, 4.

Casey014 at 91

41. EX2027 is labeled “Lightning Roulette Fact Sheet (June 2020).” That document states that “the Straight Up bet payout is 30x1”:

A key difference between Roulette and Lightning Roulette is the payout for a Straight Up bet. In Lightning Roulette, the Straight Up bet payout is 30x1, but the game adds the chance to win multiplied payouts on the Straight Up bet.

EX2027 at 2

42. Therefore, the payout for the straight bet was set before any particular game starts, and was set as early as 2020 if the date on the document is accurate. That means the payout of 30-1 was necessarily determined before the spin of the wheel for a particular game has started. However, for the same element 1[j], Dr. Casey earlier argues that there is a required order of steps where “a first and second payout are determined” and “this must happen after the ball has been spun and

before it falls into an outcome position.” Casey014 at ¶ 103. Dr. Casey’s order of steps reasoning conflicts with his analysis that Lightning Roulette is a practicing product, since Lightning Roulette does not determine the 30x payout “after the ball has been spun.”

43. In my opinion, a POSITA would disagree with Dr. Casey’s overly-narrow order of steps restrictions.

44. Dr. Casey argues that, “as a matter of logic,” the claimed step of “determine that the roulette wheel and the ball have been spun for the spin of the roulette wheel” must “happen first because the subsequent limitations all reference the spin of the roulette wheel.” Casey014 at ¶ 103. I disagree and Dr. Casey’s citation to the Lightning Roulette 30x payout disproves his position. The 30x payout is a payout “for” the spin of the roulette wheel that was nevertheless not determined “during” that spin – in other words, the wheel spin did not “happen first.” Therefore, Dr. Casey’s logic is flawed. More generally, just as a matter of grammar, game numbers intended to be used “for a spin of the roulette wheel” do not necessarily have to be generated “during” or “by” that spin of the roulette wheel. *See* Friedman Decl. at ¶ 351, n.46.

45. The claimed step of “randomly select a first selected position on the roulette wheel for the spin of the roulette wheel prior to the ball falling into an outcome position on the roulette wheel” is literally limited to occurring “prior to

the ball falling into an outcome position” but there is no limitation that it occur “after” any other event, such as being spun, as Dr. Casey argues. Friedman Decl. at ¶ 360.

46. Similarly, the claimed step of “determine a first payout for the first single position and a second payout for the single second position” is not limited to occurring either before or after any event as Dr. Casey argues (“this must happen after the ball has been spun *and* before it falls into an outcome position”, emphasis added). Lightning Roulette provides an example of a payout being determined years in advance of the ball and wheel being spun, thus disproving Dr. Casey’s starting bound that payouts must be determined after the ball has been spun. Friedman Decl. at ¶ 369, n.48.

47. Also, Dr. Casey justifies his ending bound that “determination of the first and second payouts must occur before the ball falls” because “players would be wary and skeptical of a game that announces increased payouts only after the winning number has been determined. In addition, determining the payouts while the ball is spinning allows the excitement to build.” Casey014 at ¶ 103. But there are no limitations in the claim language relating to player wariness or skepticism, nor to building excitement. Furthermore, there is no claim requirement to “announce” or “display” the payouts determined in element 10 at all, let alone at the time they are determined. Dr. Casey’s “wary and skeptical” argument is based

on steps that do not exist. In fact, the only relevant limitation in the claim language is “indicate that the first player is to be paid at the first payout for the spin of the roulette wheel.” A POSITA would understand that the first payout must be known by that point so it can be indicated, but Dr. Casey’s other timing limitations are illusory.

E. Baron and Random Roulette Numbers

48. Dr. Casey fundamentally misapprehends the Baron reference, writing “each game, Baron spins all three roulette wheels.” Casey014 at ¶¶ 177-180. I disagree, and I discussed several embodiments in Baron that use a single physical roulette wheel to produce one roulette outcome while using processor-based random number generation to produce other roulette outcomes. *See e.g.*, Baron at [0088], Friedman Decl. at ¶ 474. I also described that Baron uses processor-generated roulette outcomes in combination with the physically-generated roulette outcome to determine game outcomes, just as the challenged patent does.

Friedman Decl. at ¶¶ 471-478. Dr. Casey acknowledges that Patent Owner’s Lightning Roulette product does the same. Casey014 at pp. 90-91. Therefore, all of the challenged patent, Lightning Roulette, and the applied embodiments of Baron use a computer RNG in conjunction with a physical roulette wheel.

49. Dr. Casey’s opinion appears to distinguish a “roulette outcome” from a randomly-generated number in the same range of roulette outcomes. A POSITA

would not recognize such a distinction but instead would understand that if an outcome distribution consists of the numbers 0, 00, and 1 through 36, all equally likely, then that outcome distribution can equivalently be generated by a physical spin of a roulette wheel and ball, a computer-generated physical model of a ball and roulette wheel including physics and orbital mechanics, or a computer-based random number generator programmed to simply select one of those numbers randomly with a uniform distribution. Therefore, a POSITA would disagree with Dr. Casey's understanding that a physical roulette wheel and ball cannot be used to randomly select a roulette position for a *different* spin of a roulette wheel and ball, when it is that different spin upon which the claimed wager is made. Both Baron and Yee disclose doing so. Yee discloses doing so on a prior spin of the same wheel, Baron discloses doing so on a contemporaneous spin of a different wheel (or using an RNG instead).

F. Claim Construction of Payout

50. Dr. Casey offers a claim construction of "payout" in his declaration as "the amount a player will win in relation to the amount wagered." Casey014 at ¶¶ 78-95. I am informed that the Board has already ruled that the construction of "payout" is not as limited as Dr. Casey suggests and instead means "an amount that is paid someone." IPR2025-01072 December 17, 2025 Institution Decision at 9. I applied a plain and ordinary meaning for "payout" in my original declaration that

is consistent with the Board's holding. Nevertheless, I have been asked to comment on Dr. Casey's understanding.

51. As a first matter, every prize amount P that can be won in a wagering game, can always be expressed "in relation to" the amount that was wagered W, simply as P-to-W. For instance, if a player stands to win a \$75,000 prize with a \$1 wager, the payout can be phrased as 75,000-to-1. The same prize on a \$10 wager could be phrased as 75,000-to-10 and reduced to 7,500-to-1.

52. Dr. Casey's claim construction of "payout" is not only inconsistent with the Board's construction, it is inconsistent with his own prior use of the term. Dr. Casey was formerly employed by WMS Gaming, now a subsidiary of the Petitioner. Dr. Casey is the first named inventor on U.S. Pat. No. 7,780,511, which is now assigned to the Petitioner. EX1078. Among other things, the '511 Patent discloses "the probability of the player achieving a high *payout* during the second event is greater than it would have been if the player had selected a different player selectable element during the first event." EX1078 at 5:32-35, emphasis added. The '511 Patent explains that "if the player successfully selects the player-selectable element for the alien disguised as a human, the player is awarded with a large payout" as opposed to "a smaller payout;" the patent provides examples of "a 250 credit bonus" for the large payout and "75 credits" as "a lesser amount than the 250 credits that the player would have been awarded if the correct selection had

been made.” EX1078 at 6:46-7:24. Therefore, Dr. Casey’s opinion as to the claim construction of “payout” in this matter is inconsistent with his past use of the term to refer to an absolute amount of credits paid to the player, such as 250 credits or 75 credits, rather than an amount “in relation to the amount wagered.”

53. In arguing for the narrower meaning of “payout,” I understand that Patent Owner has identified my deposition statement “table games almost always specify payouts as N-to-1.” EX2045 at 46:16-18. In that portion of my questioning, I was attempting to distinguish between “N-to-1” phrasing and “N-for-1” phrasing, but to the extent Patent Owner has misinterpreted my statement to imply that table games “always specify payouts as N-to-1” then I provide the following counterexample:

54. The sole named inventor on the ’014 Patent is Todd Haushalter, and according to his LinkedIn profile, Mr. Haushalter “held roles at Shuffle Master as Vice President of Business Strategy, Directory of Product Development, and Product Director – Asia.” EX1076 at 1. More specifically, he was “Director of Product Development” at SHFL Entertainment (formerly Shuffle Master, Inc.) between July 2010 and December 2011. *Id.* at 3.

55. SHFL Entertainment, now owned by the Petitioner, was a leading distributor of proprietary casino table games, including Three Card Poker and its variations. EX1077 is a Rules of Play document for Three Card Poker Progressive

dated March 30, 2011, during the period of time when Mr. Haushalter was Director of Product Development at SHFL. In that document, payouts are listed in three different formats, including “500 for 1”, “100%” and “\$25,” thus proving that table games do not *always* specify payouts in relation to the amount wagered. EX1077 at 4.

56. Additionally, the terms “payout” and “pay” are used synonymously in that document: “a player making the progressive side wager also qualifies to win an envy payout. If another player at the table hits a hand associated with an envy pay, all other players who made the progressive side bet win the envy pay. The player hitting the hand receives the normal prize pay only, but does NOT receive the envy pay.” EX1077 at 5. The envy pays are listed as either \$100 or \$25.

57. Therefore, in my opinion, Dr. Casey’s construction of “payout” is too narrow and does not reflect how the inventor of the challenged patents used the term in the patents, how the inventor’s former employer used the term in its game documentation, and how Dr. Casey himself has used the term in his own patent.

G. Claim Construction of First Bet Information

58. Dr. Casey states “the claims specify that each payout is for a ‘single position’ ... a POSA would have understood this refers to a straight-up bet.” Casey014 at ¶ 80. In my opinion, Dr. Casey has introduced a claim construction that improperly limits the claimed “first bet information” to a straight-up bet, while

excluding any other possible “first bet information ... corresponding to only a single first position on the roulette wheel.” A POSITA would not think the claimed first bet information should be limited by anything other than the claim language itself.

59. Inconsistently, Dr. Casey later argues that “in the game covered by the claims, simply making a straight up bet is sufficient.” Casey014 at ¶ 181. I agree that a straight up bet is an *example* of a bet covering a single position, but Dr. Casey then argues that a side bet that covers a single position does not fall within the scope of the claims. I disagree: the claim language does not use the phrase “side bet” or “straight up bet” or anything that could distinguish one bet “corresponding to only a single first position” from another. Therefore, a POSITA would understand that any bet information that “corresponded to only a single first position on the roulette wheel” could meet the claim language, regardless of whether that bet was named “straight” or “side bet” or “bonus” or anything else.

60. By way of counterexample, a casino could offer a promotional “Birthday” bet, where any player who made the Birthday bet would win 40-for-1 on bets up to \$5 if (a) it was the player’s birthday and (b) the roulette ball landed on the position corresponding to the day of their birthday (between 1 and 31). Because each person has only one birthday, the Birthday bet is an example of first bet information that corresponds to only a single first position on the roulette wheel

and is not a straight up bet. In my opinion, this counterexample disproves Dr. Casey's claim construction wherein "first bet information" is limited to a prior art straight-up bet.

61. Dr. Casey may object that the Birthday bet is exploitable since it has a player advantage. I agree that it has a player advantage (5.26% in the player's favor, compared to the typical 5.26% edge in the house's favor), but because it is available for at most \$5 per spin and because roulette games typically occur less than once per minute, the maximum theoretical value of the promotion is less than \$16/hour/player. A POSITA would have understood that \$16/hour is a very feasible promotional cost for keeping players in a casino, especially those celebrating birthdays, and would further understand that most roulette players do not just make single wagers but instead tend to combine chips in patterns across several numbers which would have the effect of swinging the overall theoretical result back toward the house's favor. This example demonstrates that casinos are fully capable of balancing costs and benefits of offering "exploitable" games and further refutes Dr. Casey's arguments about a POSITA's knowledge and motivations.

H. Objective Indicia of Non-Obviousness

62. Dr. Casey identifies three categories of objective indicia of non-obviousness: industry praise, copying, and commercial success. Casey014 at ¶¶

192-201. As set forth in my opening declaration, I have been informed “that for such objective evidence to be relevant to the obviousness of a claim, there must be a causal relationship (called a ‘nexus’) between the claim and the evidence and that this nexus must be based on what is claimed and novel in the claims rather than something in the prior art.” Friedman Decl. at ¶ 53.

63. Applying this standard, in my opinion, none of Dr. Casey’s objective indicia are based on a nexus that is “novel in the claims rather than something in the prior art.” For example, Dr. Casey quotes EX2008 and applies his own emphasis (not present in the source material) on the phrase “big-win multipliers.” Casey014 at ¶ 195. Similarly, Dr. Casey states “RouletteX randomly adds multipliers to several roulette numbers each time the roulette wheel is spun such that, if one is hit, players are awarded various increased payouts.” Casey014 at ¶ 197, quoting an anonymous (uncited) reference that illustrates awards up to 1000x.

64. In my opinion, big-win multipliers and awards up to 1000x are not novel in the claims but are instead found in the prior art. As early as 1996, the Orselli ’442 reference disclosed “Because the probability of a coincidence of the number selected by the roulette wheel and that generated by the random number generator is rather small, the payout for a win on the side bet can be substantial, and typically *odds of 1000 to 1* can be paid.” Orselli ’442 at 3:8-12, emphasis added. By 2002, the de Raedt ’126 reference disclosed “randomly selecting a

plurality of numbers as bonus game numbers,” determining multipliers such as “five times the normal payoff,” and “at the end of each spin, the controller 22 will automatically re-assign the numbers corresponding to the bonus odds prizes, in order to maintain randomness.” DeRaedt ’126 at [0047]-[0051], [0059]. By 2013 the Hsu ’459 reference disclosed a “dynamic raised odds calculation element” that “randomly selects a specific number of the game results and generates dynamic raised odds for the selected game results respectively” including for roulette. Hsu ’459 at Abstract, Figs. 8-9. In addition, the applied prior art references Kido, Baron and Yee contain these game features as more fully explained in my opening declaration.

65. In other words, the game features that Dr. Casey identifies as being responsible for the success of Lightning Roulette – randomly-selected payout multipliers – were not novel to Lightning Roulette but were found in several prior art references. In my opinion, this fact demonstrates that the success of Lightning Roulette was attributable to other factors, such as sales and marketing execution or quality of production in a live-dealer format, rather than being causally linked to anything novel in the claims.

III. DR. CASEY’S DECLARATION REGARDING THE ’024 PATENT

66. In general, since Casey024 is largely cut-and-paste from Casey014, I incorporate the analysis and opinions set forth in Section II and reiterate them for

the corresponding portions of Casey024 that were cut-and-paste from Casey014. In this section I focus on the material in Casey024 that is distinct from Casey014. To guide my analysis, I used Microsoft Word to perform a redline comparison between Dr. Casey's two declarations.

A. Cut-and-Paste Errors

67. Dr. Casey has made several errors in quoting the claim language, specifically by quoting or paraphrasing language from the '014 patent that is not present in the '024 patent.

68. For example, Dr. Casey states “the claims specify that each payout is for a ‘single position,’ which means the payout is for a bet made on a single number.” Casey024 at ¶ 80. Dr. Casey is wrong, the phrase “single position” is not found in any claim of the '024 patent.

69. Similarly, Dr. Casey states that Kido's steps “A11 and A12 do not meet the claim element of ‘determine a first payout for the first single position and a second payout for the single second position’,” but the claims of the '024 patent contain no such language. Casey024 at ¶¶ 120-123. Therefore Dr. Casey's opinions as to Kido are inapt.

70. Similarly, Dr. Casey states that “Baron does not disclose the claimed “[first | second] bet information corresponding to only a single [first | second] position on the roulette wheel,” but the claims of the '024 patent contain no such

language. Casey024 at ¶¶ 175-177. Therefore Dr. Casey's opinions as to Baron are inapt.

71. The claims of the '024 patent require bet information "corresponding to at least" a first or second position on the roulette wheel, not "only" a single position as in the '014 claims. Dr. Casey cites to traditional roulette pay tables and admits that traditional roulette offers many wagers corresponding to multiple roulette positions. Casey024 at ¶¶ 84-85, n.2 (noting that red, black, even, odd, corners and splits are all "bets corresponding to multiple positions"). In my opening declaration I opined that Baron's disclosure of conventional roulette wagers, some of which are known to have higher payouts than others, is inherent disclosure that a first payout can be higher than a second payout. Friedman Decl. at ¶ 259. Dr. Casey does not address or rebut this opinion and his evidence confirms it.

IV. DR. CASEY'S DECLARATION REGARDING THE '371 PATENT

72. In general, since Casey371 is largely cut-and-paste from Casey014, I incorporate the analysis and opinions set forth in Section II and reiterate them for the corresponding portions of Casey371 that were cut-and-paste from Casey014. In this section I focus on the material in Casey371 that is distinct from Casey014. To guide my analysis, I used Microsoft Word to perform a redline comparison between Dr. Casey's two declarations.

A. Cut-and-Paste Errors

73. Dr. Casey has made several errors in quoting the claim language, specifically by quoting or paraphrasing language from the '014 patent that is not present in the '371 patent.

74. For example, Dr. Casey states “the claims specify that each payout is for a ‘single position,’ which means the payout is for a bet made on a single number.” Casey371 at ¶ 80. Dr. Casey is wrong: the phrase “the first bet is a bet on a single position” is found only in dependent claims 10, 20, 30 of the '371 patent, and no claims depend from those, so “the first bet” in the other claims of the '371 patent are not limited to “a bet on a single position” as Dr. Casey states.

75. Dr. Casey also states that “Kido does not select a first payout before the ball falls into an outcome position on the wheel.” Casey371 at ¶ 123. I disagree: Dr. Casey has imported illusory claim limitations into his analysis. There is no requirement in the claim language to “select a first payout before the ball falls into an outcome position on the wheel” so Dr. Casey’s statement is inapt. The claims of the '371 require only selecting a *position* prior to the ball landing, not a *payout*. In fact, there is no requirement in claim 1, 11, or 21 that the increased payout be selected or known. The claims require (a) selecting a position to *have* an increased payout, (b) determining that the increased payout is *applicable* to a particular bet, and (c) also limit the first payout to be “greater than a first non-

selected payout that would have been applicable to the first bet” under certain conditions, but the claims do not specifically require determining the exact amount of that payout. For instance, the value of a non-zero progressive prize that is added to a base payout is always going to be “greater than” the base payout alone, and therefore satisfies the claim language, even if the precise value of the total payout is not known. Kido discloses this. Friedman Decl. at ¶¶ 587-588. The claims of the ’371 patent – except for those that specify particular numbers – require selecting the *position* with the first increased payout, not determining what that increased payout is.

76. Dr. Casey allegedly quotes Claim 4 of the ’371 patent and opines that Kido does not teach Claims 4, 14, 24. Casey371 at ¶¶ 129-164. However, Dr. Casey has actually quoted claim 7 of the ’024 patent, not claim 4 of the ’371 patent. Dr. Casey’s entire opinion in this section of his declaration is thus not tied to the claim language of the ’371 patent. The redline comparison reveals that paragraphs 132 through 161 of Casey371 are essentially identical to paragraphs 132 through 161 of Casey024, including misspelling my name at paragraph 133.

77. In paragraph 162, which is different between the two declarations, Dr. Casey states “for the ‘select a second increased payout’ element of claims 4, 14, and 24, Mr. Friedman does not identify any selection of a payout made by Kido.” Casey371 at ¶ 162. As above, Dr. Casey has misquoted the claim language. There

is no “select a second increased payout” element in claims 4, 14, and 24 so Dr. Casey’s rebuttal is inapt.

B. File History

78. Dr. Casey misquotes and misinterprets the file history of the ’371 patent, stating that in response to an office action rejection in view of Yee, “Applicant amended the claims to specify a ‘first bet’ to clarify that the claims are ‘directed to a single bet on a single spin.’” Casey371 at ¶ 75. I disagree: the actual statement in the Applicant’s remarks is “to clarify that claim 1 is directed to a single bet on a single spin.” EX1012 at 141. Issued claims 4, 14, and 24, depending from claims 1, 11 and 21 respectively, all introduce “a second bet on the second selected position” and therefore disprove Mr. Casey’s theory that all of the claims of the ’371 patent are limited to a single bet on a single spin.

C. Specific Payouts

79. Dr. Casey states “Mr. Friedman does not explain why he selected 29:1 as a reduced payout” and complains that I do “not present any mathematical analysis to show that the 29:1 reduced payout is needed to balance out adding the possibility of winning an increased 49:1 payout on one number per spin,” citing to my paragraph 649. Casey371 at ¶ 176. However, a 29:1 reduced payout does not “balance out” an increased 49:1 payout on one number per spin. In fact, under Dr. Casey’s proposed rules, the house edge would be 19.67%, nearly four times as

large as a traditional roulette game,⁴ so I disagree with Dr. Casey's implication that such a game is "balanced" as he uses that term.

80. In any event, I would refer Dr. Casey to the following paragraph 650 in my declaration in which I state "a POSITA would have stumbled across a payout of 29:1 during the course of ordinary exploration of game design possibilities" and further describe how a 29:1 payout would compensate for a larger award suggested by Kido and/or Yee by maintaining the house edge of traditional roulette. Friedman Decl. at ¶ 650. Dr. Casey does not address or refute this opinion.

V. CONCLUSION

81. Based on the foregoing analysis, it is my opinion that the above described claims of the challenged patents are anticipated and/or obvious over the applied prior art as described herein.

VI. RESERVATION OF RIGHTS

82. This declaration presents my opinions to date. As additional data, information, testimony, or expert reports from the various defendants become available to me or are provided to me, I may consider this information and I may find it appropriate to revise or supplement my analysis, opinions, and conclusions.

⁴ A 49:1 payout on a straight bet is a player edge of 31.58%. A 29:1 payout on a straight bet is a house edge of 21.05%. If exactly one number has the increased 49:1 payout and the other 37 have a 29:1 payout, the house edge averaged over all straight bets is 19.67%. The house edge on the traditional straight bet is 5.26%.

Thus, I reserve the right to modify or supplement this declaration and the opinions contained herein.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; that these statements were made with knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under 18 U.S.C. § 1001; and further that such willful false statements may jeopardize the validity of the application or any patent issued thereon. I declare under penalty of perjury under the laws of the United States of America that the foregoing is true and correct.

Executed on June 16, 2026.



Stacy Friedman

APPENDIX A

APPENDIX A

MATERIALS REVIEWED

1. Declaration of Michael Casey, Ph. D. Regarding U.S. Patent No. 11,011,014 filed as EX2041 in IPR2025-01072
2. Declaration of Michael Casey, Ph. D. Regarding U.S. Patent No. 10,629,024 filed as EX2042 in IPR2025-01073
3. Declaration of Michael Casey, Ph. D. Regarding U.S. Patent No. 11,756,371 filed as EX2043 in IPR2025-01078
4. EX1074, May 26, 2026 Frank Floor Talk: Slots 101 – Persistence slot machines, downloaded May 31, 2026 from <https://cdcgaming.com/commentary/frank-floor-talk-slots-101-persistence-slot-machines/>
5. EX1075, Nevada Gaming Control Board, Monthly Revenue Report, April 2026, downloaded June 14, 2026 from <https://www.gaming.nv.gov/siteassets/content/about/gaming-revenue/monthly-revenue-report---april-2026.pdf>
6. EX1076, LinkedIn profile of Todd Haushalter, downloaded June 14, 2026 using LinkedIn's "Save to PDF" function from <https://www.linkedin.com/in/toddhaushalter/>
7. EX1077, Let It Ride Progressive and Three Card Poker Progressive rules of play, downloaded June 11, 2026 from https://www.gaming.nv.gov/siteassets/content/divisions/enforcement/rules-of-play/Let_It_Ride_Progressive_-_Three_Card_Poker_Progressive.pdf
8. EX1078, U.S. Patent No. 7,780,511 to Casey