UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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PRIME TIME TOYS LLC, PRIME TIME TOYS LTD. and
EASEBON SERVICES LTD.
Petitioner,
v.
SPIN MASTER INC.,
Patent Owner.

_____

Case Nos.
IPR2023-01339, Patent No. 8,640,683
IPR2023-01348, Patent No. 8,371,282;
IPR2023-01461, Patent No. 8,596,255

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VIDEOTAPED DEPOSITION OF DR. AMY COURTNEY
APPEARING REMOTELY
April 10, 2025
9:58 a.m.

Reported by: Eileen Mulvenna, CSR/RMR/CRR/RDR

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1 REMOTE VIDEOTAPED DEPOSITION of
2 DR. AMY COURTNEY,
3 in the above-titled action, held on Thursday,
4 April 10, 2025, commencing at approximately
5 9:58 a.m., before Eileen Mulvenna, CSR/RMR/CRR/RDR,
6 Certified Shorthand Reporter, Registered Merit
7 Reporter, Certified Realtime Reporter, Registered
8 Diplomate Reporter, and Notary Public of the State
9 of New York.
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1 A P P E A R A N C E S:

2

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1 I N D E X

2 WITNESS EXAMINATION BY PAGE

3 DR. AMY COURTNEY

4 MR. DARBY 7

5 MR. COMACK 126

6 MR. DARBY 141

7

8 E X H I B I T S

9 PAGE

10

11 Exhibit 1001 No Bates Numbers, '282 55

12 Patent

13 Exhibit 1001 No Bates Numbers, '683 55

14 Patent

15 Exhibit 1033 No Bates Numbers, Ball 109

16 bearing (BB) gun injuries

17 by Tsui Chi Leung and Tang

18 Yiu Hang

19 Exhibit 1037 No Bates Numbers, Rebuttal 23

20 Declaration of Dr. Amy

21 Courtney, Ph.D., CAISS

22

1 E X H I B I T S

2

3 Exhibit 1044	No Bates Numbers, System for Assessing Eye Injury Potential of Propelled Objections by Robert E. Berger	63
8 Exhibit 1045	No Bates Numbers, Hard Target Performance Testing of Non-lead, Frangible Ammunition by Eric Samuel Oglesby	96

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1 THE REPORTER: Before I swear in the
2 witness, do all counsel stipulate to the
3 witness being sworn in remotely?
4 MR. DARBY: Yes.
5 MR. COMACK: Yes.
6 THE REPORTER: Counsel, please state
7 your appearances for the record.
8 MR. DARBY: This is Kenneth Darby
9 speaking for the patent owner in each of the
10 IPR proceedings today.
11 MR. COMACK: And this is Brian Comack
12 speaking for the petitioners in each of the
13 IPR proceedings and then representing
14 Dr. Courtney.
15 (Witness sworn.)
16 THE REPORTER: You may proceed.
17 MR. DARBY: Okay. For the record,
18 this deposition today is addressing three
19 inter partes review proceedings; Case
20 No. IPR2023-01339 regarding U.S. Patent
21 No. 8,640,683; IPR2023-01348 regarding U.S.
22 Patent No. 8,371,282; and IPR2023-01461

1 regarding U.S. Patent No. 8,596,255.
2 Just to note for the record, we'll
3 refer to the three, '683, '282, and '255
4 patents that I just mentioned collectively as
5 the Spin Master patents.
6 This is Kenneth Darby speaking for
7 Hasbro, an exclusive licensee acting on
8 behalf of Spin Master, the patent owner. And
9 the witness is Dr. Courtney.
10 DR. AMY COURTNEY,
11 having been duly sworn by Eileen Mulvenna,
12 a Notary Public of the State of New York,
13 was examined and testified as follows:
14 EXAMINATION
15 BY MR. DARBY:
16 Q. So, Dr. Courtney, just to confirm, you
17 have been retained as an expert witness on behalf of
18 Prime Time Toys, LLC; Prime Time Toys, Limited; and
19 Easebon Services, Limited. Is that correct?
20 A. That's my understanding, in a rebuttal
21 capacity.
22 Q. Can you explain what you mean by

1 "rebuttal capacity"?
2 A. Yes. I was retained to evaluate
3 certain areas of testimony of your expert
4 Dr. Kudrowitz and respond to those.
5 Q. And you were retained to opine in a
6 rebuttal capacity in the three IPR proceedings that
7 I just provided the identifying case numbers for; is
8 that right?
9 A. That's right.
10 Q. Okay. And you are aware that these
11 three proceedings are about the three '683, '282,
12 and '255 patents that I called the Spin Master
13 patents; is that right?
14 A. I am aware.
15 Q. And are you aware that Prime Time
16 Toys, LLC, Prime Time Toys, Limited, and Easebon
17 Services, Limited, are the petitioner in each of
18 these three IPR proceedings?
19 A. Yes.
20 Q. So before we get going, I'm going to
21 go over a series of ground rules and other
22 preliminaries. It's going to be a bit dull, but

1 please just bear with me on these.
2 So to start, because this is a remote
3 deposition, it's conducted using videoconferencing
4 equipment. There may be a slight delay in our
5 communications. So let's just both try to speak
6 slowly and be careful not to interrupt one another;
7 is that fair?
8 A. Yes.
9 Q. If I ask you a question today and you
10 don't understand it, please let me know so that I
11 can rephrase or clarify my question. Okay?
12 A. Okay.
13 Q. And I'll assume that you answer my
14 question -- excuse me, I'll assume that you
15 understand my question if you answer it; is that
16 fair?
17 A. To the extent I understand it at that
18 time, yes.
19 Q. If you realize later on in the
20 deposition that you didn't understand one of the
21 questions I asked, you can always feel free to
22 clarify and go back. Okay?

1 A. Thank you.
2 Q. So even though we're remote, you
3 understand that you're under oath and providing
4 testimony just like you would if you were in front
5 of a judge or a jury; right?
6 A. Yes, I understand.
7 Q. And remember that you remain under
8 oath for as long as this examination persists, and
9 that includes even during breaks that we'll take
10 during the examination. Okay?
11 A. Yes.
12 Q. Is there any reason that you cannot
13 give true and accurate testimony today?
14 A. No.
15 Q. For breaks, I'll try to take a break
16 every hour or so. But if you need a break before
17 then or before I offer one, you can just let me
18 know. Okay?
19 A. Sounds good.
20 Q. All right. All I ask is that if
21 there's a question pending, just answer -- respond
22 to the pending question before we go on a break; is

1 that fair?
2 A. Yes.
3 Q. Okay. And when we come back from
4 breaks, I'll always ask you whether you had any
5 discussions with any other person during the break
6 regarding the substance of your deposition
7 testimony. And just so you know, those type of
8 discussions are prohibited. So just make sure that
9 you're not talking to anybody else during the breaks
10 about your testimony; is that fair?
11 A. Yes.
12 Q. Okay. Please also do not consult any
13 notes or documents during the breaks; is that fair?
14 A. Yes.
15 Q. And you'll agree to do that?
16 A. Yes.
17 Q. Okay. If at any point we're having
18 technical difficulties, you can't hear me or you
19 feel like I can't hear you, we can just pause and
20 get those things worked out. Just let me know if
21 you're experiencing any sort of difficulties, or if
22 you think that I'm experiencing any sort of

1 technical difficulties. Okay?
2 A. Yes, thank you.
3 Q. Just for the record, who's in the room
4 with you today?
5 A. Brian Comack.
6 Q. Is anyone else in the room with you?
7 A. No.
8 Q. Okay. And you understand that you
9 cannot communicate with anyone verbally or
10 nonverbally while I'm examining you; correct?
11 A. Yes.
12 Q. Your counsel may object to my
13 questions as we're going through the examination.
14 You still need to answer questions even if counsel
15 objects unless counsel directs you not to answer
16 those questions or unless you think that answering
17 the question will divulge some sort of confidential
18 information; is that fair?
19 A. That was kind of complicated. I
20 generally understand that I'm here to answer your
21 questions.
22 Q. Okay. Let me try again.

1 Do you understand that counsel -- your
2 counsel can object to my questions as I ask them to
3 you today?
4 A. Yes.
5 Q. Okay. And do you understand that you
6 still need to answer my question even if your
7 counsel objects?
8 A. Generally speaking.
9 Q. Okay. Your counsel may inform you not
10 to answer, and in that scenario, you can withhold
11 your answer until counsel and I work that out.
12 Okay?
13 A. Understood. Thank you.
14 Q. If at any time I ask you a question
15 and you believe that responding will divulge
16 confidential information, please let me know, and we
17 can work that out before you respond. Okay?
18 A. Okay.
19 Q. All right. Do you have any papers
20 with notes on them or anything like that with you?
21 A. I have two papers with no notes. I
22 asked for a list of exhibits for both the petitioner

1 and -- and your list of exhibits, and that's what I
2 have. There's no notes on them. Mr. Comack printed
3 those out for me this morning.
4 Q. Okay. And those are exhibit lists and
5 nothing more?
6 A. Correct.
7 THE REPORTER: Can we take a pause for
8 a minute?
9 MR. DARBY: Yes.
10 (Pause.)
11 MR. DARBY: Okay. For the record, I'm
12 going to ask counsel -- Brian, I'm going to
13 ask for you to provide those exhibit lists so
14 that we can append them to the deposition
15 transcript as Appendix A and Appendix B to
16 the deposition.
17 MR. COMACK: That's not a problem. Do
18 you want me to, during this deposition,
19 provide scanned copies, is that what you
20 mean, or after the deposition?
21 MR. DARBY: We can do it on a break.
22 MR. COMACK: Okay. Sounds good.

1 BY MR. DARBY:
2 Q. Okay. Dr. Courtney, for the exhibits
3 at issue in these IPR proceedings, we sent over
4 unmarked paper copies to petitioners' counsel. I
5 believe you have those binders in front of you; is
6 that accurate?
7 A. I have -- there are three binders here
8 that I understood to have come from your office.
9 Q. And have you had an opportunity to
10 look through those binders to see the documents that
11 they contain?
12 A. No, I've not.
13 Q. Okay. Dr. Courtney, who is your
14 current employer?
15 A. Exponent.
16 Q. Your CV suggests that you are
17 affiliated with Exponent's Tampa office; is that
18 right?
19 A. Yes.
20 Q. And have you worked at or visited any
21 of the other offices at Exponent?
22 A. Yes, I was formerly based in

1 Exponent's office in Atlanta, Georgia. I have
2 visited other offices over time.
3 Q. But you've only worked in the Atlanta
4 office and the Tampa office before; is that
5 accurate?
6 A. Yes.
7 Q. Okay. Which other offices of Exponent
8 have you visited?
9 A. Phoenix; Detroit; Miami; Natick,
10 Massachusetts. Those come to mind at the moment.
11 Q. Okay. And what is your current job
12 title at Exponent?
13 A. Senior manager.
14 Q. Have you held any other titles at
15 Exponent?
16 A. Yes.
17 Q. What other titles have you held at
18 Exponent?
19 A. Manager and senior associate.
20 Q. And is it true that you're a part of
21 the biomechanics group at Exponent?
22 A. Yes.

1 Q. Have you ever been a part of any other
2 groups at Exponent?
3 A. No.
4 Q. How long have you been employed by
5 Exponent?
6 A. Almost 12 years.
7 Q. And are you being compensated for
8 Exponent for providing testimony in this proceeding?
9 A. Not specifically. I'm a salaried
10 employee of Exponent, and my compensation is not
11 dependent on today's proceedings or their outcome.
12 Q. Do you receive any bonuses or any
13 other compensation beyond your salary at Exponent?
14 A. There are benefits associated with the
15 positions health and so forth. There is a bonus
16 opportunity each year. So that just varies.
17 Q. And what does it vary based on?
18 A. I couldn't tell you since I'm not the
19 one making the decision. When I said "opportunity,"
20 I meant there's a designated time each year where
21 performances are reviewed and discussed and bonuses
22 are determined.

1 Q. So it's discretionary?
2 A. Yes.
3 Q. And you don't know what factors go
4 into the discretionary decision of whether or not
5 you receive a bonus from Exponent; is that fair?
6 A. Specifically. They have told us, you
7 know, it has to do in part with the success of the
8 entire company being shared with employees.
9 Q. Do you know how Exponent is being
10 compensated based on your testimony in these
11 proceedings?
12 A. Yes.
13 Q. How is Exponent being compensated
14 based on your testimony in these proceedings?
15 A. Exponent charges $425 per hour for my
16 services in 2025, and that's the same for any
17 billable work.
18 Q. Have you ever been retained as an
19 expert witness in any legal proceeding before these
20 current IPR proceedings?
21 A. Yes.
22 Q. How many times?

1 A. More than a hundred.
2 Q. And of those hundred times that you've
3 been retained as an expert witness in legal
4 proceedings, how many of those did you offer
5 testimony?
6 A. So I believe I said more than a
7 hundred, and I can answer the second -- this
8 question more specifically. Approximately 30, maybe
9 35.
10 Q. And have you ever provided live
11 testimony in front of a judge or a jury?
12 A. Yes.
13 Q. How many times?
14 A. That's included in the number I gave
15 you. Approximately eight times.
16 Q. And I assume you've been deposed
17 before, as well; correct?
18 A. Yes.
19 Q. How many times?
20 A. Approximately 30.
21 Q. Have you ever been retained as an
22 expert witness in a patent case before these current

1 IPR proceedings?
2 A. Yes.
3 Q. How many times?
4 A. Less than five. Probably two or
5 three.
6 Q. And did you provide testimony in those
7 two or three prior patent proceedings?
8 A. No, they resolved prior to me giving
9 testimony.
10 Q. Are you an inventor on any domestic or
11 foreign patents, to your knowledge?
12 A. No.
13 Q. I assume from your prior experience
14 that you've read a patent before these proceedings;
15 is that accurate?
16 A. Yes.
17 Q. And did you analyze any patent claims
18 in the prior proceedings that you mentioned?
19 A. Yes.
20 Q. So you know what a patent claim is?
21 A. Generally.
22 Q. What's your understanding of a patent

1 claim?
2 MR. COMACK: Objection as to form.
3 THE WITNESS: I don't know the
4 definition. I have just read items in
5 patents that were listed as claims, and in a
6 given -- if I was retained, I would have been
7 asked to evaluate one or more of those items.
8 BY MR. DARBY:
9 Q. What do you mean by "evaluate"?
10 A. Well, it depends on whether the patent
11 was part of actual patent litigation versus in some
12 other type of litigation. So in a patent case, I
13 would be comparing claims with possibly science,
14 scientific principles, possibly against another of
15 what other comparison patent was being asked to
16 compare to.
17 Q. Do you know what it means for a patent
18 claim to be obvious?
19 A. Not specifically.
20 Q. Do you recall conducting an
21 obviousness analysis in any of the other patent
22 cases that you worked on?

1 A. I don't recall one way or the other.
2 Q. Did you conduct an obviousness
3 analysis in these IPR proceedings regarding the Spin
4 Master patents?
5 A. As I said earlier, I was retained as a
6 rebuttal witness. So I think the correct answer is
7 no. I was evaluating certain aspects of the
8 testimony and declaration of Dr. Kudrowitz.
9 Q. So just to confirm, in connection with
10 your analysis in this case, did anyone ever explain
11 to you the kinds of facts and evidence that are
12 required to show that a patent claim is obvious?
13 A. No, we did not discuss the elements of
14 proving or disproving obviousness.
15 Q. Okay. Dr. Courtney, going back to the
16 three binders that you have on the table with you,
17 the first is marked with Case No. IPR2023-01348.
18 There's a second that's marked with Case
19 No. IPR2023-01339. And there's a third that's
20 marked with Case No. IPR2023-01461; is that right?
21 A. Yes, that's right.
22 Q. Can you locate Exhibit 1037, 1-0-3-7,

1 in each of those binders. If you could just let me
2 know verbally once you've done so.
3 A. Okay.
4 (Exhibit 1037, No Bates Numbers,
5 Rebuttal Declaration of Dr. Amy Courtney,
6 Ph.D., CAISS, received and marked.)
7 MR. COMACK: Kenneth, just a quick
8 point, you didn't send me copies of the
9 exhibits, which is totally fine. I have
10 electronic copies. I assume whatever you put
11 in the books matches exactly what was filed
12 in the case. And if that's the case, I'll
13 just use the copies that I have to follow
14 along.
15 Is my understanding correct?
16 MR. DARBY: Your understanding's
17 correct.
18 MR. COMACK: Thank you.
19 BY MR. DARBY:
20 Q. Dr. Courtney, if at any time you look
21 at an exhibit and it does not look familiar to you
22 or you think it may have been misidentified or

1 otherwise included by mistake, you can just let me
2 know. Okay?
3 A. Okay.
4 Q. Okay. Please take as much time as you
5 need to flip through those three documents, which
6 should be Exhibit 1037 from each case. And just let
7 me know once you've refamiliarized yourself with
8 those documents.
9 (Document review.)
10 THE WITNESS: Okay.
11 BY MR. DARBY:
12 Q. And do you recognize these three
13 documents, Exhibit 1037 in each of the three case
14 binders, as your declaration for each of these three
15 IPR proceedings involved in the Spin Master patents?
16 A. Yes, with my CV and testimony list.
17 Q. And do you agree with me that these
18 documents are identical?
19 A. They appear to be. I didn't read
20 every page, but they appear to be the same.
21 Q. In preparing your declaration, do you
22 recall preparing different versions of them?

1 A. No, it was a process, but an ongoing
2 process with the working document until it was
3 finalized.
4 Q. So to the best of your understanding,
5 one declaration was submitted in each of the three
6 IPR proceedings; correct?
7 A. That's my understanding.
8 Q. Okay. Please select one copy of those
9 documents, Exhibits -- Exhibit 1037, to use for
10 today's deposition, and you can put the other two
11 aside.
12 A. Okay. I have the binder that's
13 associated with Patent '683 open in front of me.
14 Q. Okay. And you're turned to
15 Exhibit 1037?
16 A. Yes.
17 Q. Okay. And we just established that
18 Exhibit 1037 in the '683 IPR proceeding is the same
19 as Exhibit 1037 from the other two proceedings, as
20 well; right?
21 A. Yes, it appeared to be the same.
22 Q. Okay. So I'm going to ask you

1 questions about your declaration today. And is it
2 fair that I'm asking you about the version you're
3 looking at right now, that your responses will apply
4 to your declaration in all three IPR proceedings
5 involved in the Spin Master patents?
6 A. Yes.
7 Q. Okay. Dr. Courtney, did you review
8 your declaration in preparation for today's
9 deposition?
10 A. Yes.
11 Q. And approximately how much time did
12 you spend reviewing your declaration to prepare for
13 today's deposition?
14 A. I believe I read it twice. I don't
15 know how much time that was.
16 Q. More or less than an hour?
17 A. Probably more than one hour, less than
18 two hours.
19 Q. And are you prepared to answer
20 questions about your declaration today?
21 A. Yes.
22 Q. When you were reviewing your

1 declaration, did you find anything in it that you
2 wanted to correct, any errors?
3 A. No, not that I can think of.
4 Q. Okay. and do you agree that this
5 declaration contains your complete opinions for
6 these three IPR proceedings?
7 A. It contains my response to what I've
8 been asked to evaluate to date.
9 Q. Do you have any opinions that are not
10 contained?
11 A. Not as we sit here today, no.
12 Q. Did you personally write this
13 declaration?
14 A. I did.
15 Q. What was your process in writing the
16 declaration?
17 A. I began by reviewing documents that
18 were provided to me, clarifying with counsel what my
19 scope of evaluation was, doing research on my own in
20 the scientific literature and standard textbooks,
21 writing drafts.
22 I did discuss a draft that was in

1 progress with counsel. They asked me to expand on
2 an area or two, but I don't remember what those were
3 at the moment. And then I submitted them -- my
4 declaration, and they did put it into this official
5 legal format, but the content is mine.
6 Q. Without divulging any specific subject
7 matter which may or may not be privileged or
8 confidential, do you recall if counsel made any
9 revisions to your words that you wrote for the
10 declaration?
11 A. Certainly nothing substantive. As I
12 said, they may have asked me to expand on a certain
13 area or two, but that was my work.
14 Q. How many hours did you spend
15 developing your opinions in preparing this
16 declaration?
17 A. I haven't summed them completely. If
18 I could estimate, between 30 and 40.
19 Q. Okay. Please turn to paragraphs 14
20 through 17 of your declaration. Take a moment to
21 refresh yourself on those paragraphs, and you can
22 let me know when you're done.

1 (Document review.)
2 THE WITNESS: Okay.
3 BY MR. DARBY:
4 Q. And would you agree with me that
5 paragraphs 14 through 17 summarize your opinion in
6 these three IPR proceedings?
7 A. They summarize my rebuttal opinions to
8 Dr. Kudrowitz -- to these areas of Dr. Kudrowitz's
9 work.
10 Q. Okay. And did petitioners' counsel
11 direct you to make these opinions?
12 A. I'm not sure I understand the
13 question.
14 Q. Did petitioners' counsel ask you to
15 explore these areas, these specific --
16 A. Yes.
17 Q. -- areas?
18 (The reporter seeks clarification.)
19 THE WITNESS: My answer was yes.
20 THE REPORTER: Thank you.
21 BY MR. DARBY:
22 Q. I believe you testified earlier that

1 you communicated with petitioners' counsel during
2 the process of developing your opinions and
3 preparing the declaration; is that fair?
4 A. Yes.
5 Q. Did you communicate with anyone else
6 during the process of developing your opinions and
7 preparing the declaration?
8 A. Not that I recall. At the outset,
9 when I was first retained, I communicated with
10 Dr. Maureen Reitman, who initially contacted me
11 about potentially being involved.
12 Q. Did you have a discussion with
13 Dr. Reitman before you developed your opinions?
14 A. Yes, before I started any work.
15 Q. And what did you talk about with
16 Dr. Reitman?
17 A. The larger scope, briefly just what
18 type of litigation this was and what area counsel
19 was looking for someone who was qualified to
20 evaluate the issues that you see summarized in
21 paragraphs 14 through 17.
22 Q. But nothing substantive regarding your

1 opinions?
2 A. No.
3 Q. So just to clarify, you've had a
4 discussion with Dr. Reitman, but your discussion
5 with Dr. Reitman did not contain any substantive
6 discussion relating to any of your opinions in this
7 declaration; is that accurate?
8 A. Yes, it is.
9 Q. Did you communicate with anyone else
10 during the process of developing your opinions and
11 preparing this declaration, beyond petitioners'
12 counsel?
13 A. No.
14 Q. Okay. Please take a minute, refer to
15 paragraphs 4 through 5 of your declaration, and take
16 a moment to refresh yourself on those paragraphs.
17 And you can let me know when you're done.
18 (Document review.)
19 THE WITNESS: Okay.
20 BY MR. DARBY:
21 Q. Did you study the three Spin Master
22 patents during the process of developing your

1 opinions in preparing this declaration?
2 A. I reviewed them.
3 Q. Did you read them in their entirety,
4 from cover to cover?
5 A. I believe so.
6 Q. Did you rely on the Spin Master
7 patents as evidence supporting your opinions,
8 including those summarized at paragraphs 14 through
9 17 of your declaration?
10 A. No.
11 Q. How did you rely on the Spin Master
12 patents in developing your opinions?
13 A. So I believe my answer was no, I did
14 not rely on the patents in forming my opinions.
15 Reviewing the patents provided me general context of
16 what the litigation was about.
17 Q. But you're not offering any opinions,
18 then, about the patents?
19 A. Correct.
20 Q. You mentioned earlier that you
21 reviewed the patents -- the Spin Master patents to
22 provide a general context of what the litigation was

about.

Can you explain what you mean by "general context"?

A. By "general context," I mean why was Dr. Kudrowitz offering a declaration, why was he offering testimony, you know, what brought about these proceedings.

Q. Okay. You already answered this question, but I don't see it in the realtime transcript. So I'm just going to ask again.

Dr. Courtney, you're not offering any opinions about the Spin Master patents; correct?

A. Correct.

Q. Did you use the Spin Master patents to inform your understanding about superabsorbent polymers?

A. No.

Q. Did you rely on the content of the Spin Master patents to inform your understanding about the Spitballs' reference or any other exhibit that you reviewed?

A. No.

1 Q. Beyond the Spin Master patents, what
2 other documents or materials did you consider in
3 developing your opinions and preparing your
4 declaration?
5 A. I had a copy of Dr. Reitman's report,
6 as well as her testimony. I had a copy of
7 Dr. Kudrowitz's declaration and his testimony in
8 these proceedings. I had some of the exhibits that
9 were attached to Dr. Kudrowitz's testimony.
10 I had some scientific references, as
11 well as textbook references that were cited to in my
12 declaration. That's what comes to mind at the
13 moment.
14 Q. Anything else?
15 A. I was provided with some media
16 references to superabsorbent polymers that were
17 being used in various projectile type of
18 applications.
19 Q. Can you explain what you mean by
20 "media references"?
21 A. Yes. Printouts of advertisements for
22 products for superabsorbent polymer projects

1 associated with projectile launcher type of devices.
2 Q. Do you know if those printouts were
3 exhibits?
4 A. I believe they were.
5 Q. You mentioned that you had a copy of
6 Dr. Reitman's report, as well as her testimony.
7 Are you referring to her deposition
8 transcript?
9 A. Deposition transcript in these
10 proceedings.
11 Q. And you mentioned Dr. Kudrowitz's
12 testimony.
13 Were you referring to his deposition
14 transcript in these proceedings?
15 A. Yes, I was.
16 Q. You also mentioned that you had some
17 exhibits that were attached to Dr. Kudrowitz's
18 testimony.
19 Do you know which exhibits those were?
20 A. I'm not sure if these exhibits were
21 specifically attached to his testimony, but things I
22 recall being already marked as exhibits included the

1 three patents you brought up earlier, a scientific
2 article or two that he referenced in his
3 declaration.
4 And as I already said, I think that
5 some of the media printouts related to
6 superabsorbent polymer-type products were already
7 marked as exhibits, as well.
8 Q. You also mentioned scientific
9 references that you cite throughout your
10 declaration; correct?
11 A. Yes.
12 Q. Did you review any scientific
13 references that are not cited in your declaration?
14 A. Probably. That's often how I approach
15 my work. I will review a body of scientific work
16 and decide what is relevant to the questions I'm
17 being asked to evaluate.
18 Q. Beyond the materials that we've
19 discussed so far, did you consider anything else in
20 developing your opinions and preparing your
21 declaration?
22 A. I just can't tell you every single

1 document necessarily, but I'm not leaving anything
2 out on purpose. I think that these exhibit lists
3 are inclusive of and beyond what I've reviewed.
4 Q. "Inclusive of and beyond," can you
5 explain what you mean by that?
6 A. Yes. The list of exhibits I was
7 provided this morning that we discussed, contains
8 more items than I reviewed.
9 Q. Or stated another way, there's some
10 items on the exhibit list that you did not review?
11 A. Yes.
12 Q. And you have two exhibit lists with
13 you; correct?
14 A. Yes.
15 Q. One of them is the exhibit list from
16 the petitioner; is that accurate?
17 A. Yes.
18 Q. And you've reviewed that?
19 A. I looked through the list this
20 morning.
21 Q. And there are some items on that list
22 that you did not consider?

1 A. Correct.
2 Q. And the other exhibit list is the
3 patent owner's exhibit list; is that accurate?
4 A. Yes.
5 Q. And you've reviewed that?
6 A. I looked through it this morning.
7 Q. And there are some items on the patent
8 owner's exhibit list that you did not consider?
9 A. Correct.
10 Q. You previously mentioned that you will
11 typically review a body of scientific work and
12 decide what is relevant to the questions that you're
13 being asked to evaluate.
14 Do you remember that testimony?
15 A. Yes.
16 Q. What is your process for reviewing a
17 body of scientific work?
18 A. It's an iterative process where I look
19 first at the scope and the questions that I'm trying
20 to evaluate or answer, and then I will look within
21 my own library of articles. I will look at
22 resources, such as Google Scholar, Medline, physics

1 literature repositories, or any updated literature
2 or any additional literature that might be relevant.
3 And then I will review a smaller body
4 of literature that I think might be relevant, and
5 upon understanding that better, I will further down
6 select for what becomes my cited literature within a
7 given report or declaration.
8 Q. And what is your process for reviewing
9 a particular piece of scientific literature?
10 A. I don't think that has one answer.
11 Looking at general subject matter, sometimes I'm
12 looking for a very specific value for something,
13 some quantity that's been measured, and then I would
14 zoom out and look at the whole study to see if it's
15 relevant or reliable. So it varies.
16 Q. And if a piece of literature refers to
17 other works, is it part of your process to explore
18 and review the cited works?
19 A. I do sometimes use the cited
20 literature within one paper to guide me to
21 additional literature.
22 Q. And do you sometimes use the cited

1 literature as a way to inform your understanding of
2 the original work that you're reviewing?
3 A. It depends on how they used that
4 literature. I will consider the citations
5 independently. Sometimes they inform each other.
6 Q. Okay. Please turn to paragraph 3 of
7 your declaration. Take a moment to refresh yourself
8 on that paragraph, and you can let me know when
9 you're done with that.
10 (Document review.)
11 THE WITNESS: Okay.
12 BY MR. DARBY:
13 Q. Are you aware that the '282 patent and
14 the '683 patent were the subject of another
15 proceeding and investigation by the ITC, the United
16 States International Trade Commission?
17 A. I understand that some or all, I don't
18 know exactly which patents, were involved in a
19 separate proceeding.
20 Q. And that separate proceeding was an
21 investigation at the ITC; correct?
22 A. I heard that word, "ITC." I'm not

1 familiar with those proceedings.
2 Q. You use that word in paragraph 3 of
3 your declaration, don't you, "ITC"?
4 A. Yes, and so that is the limit of my
5 understanding.
6 Q. And you were not involved in the ITC
7 investigation; correct?
8 A. Correct.
9 Q. And during the preparation of your
10 declaration and your opinions, did anyone provide
11 you any documents or materials from the ITC
12 investigation, to your knowledge?
13 A. I don't know that I can say. I mean,
14 not specifically unless they were being used in both
15 proceedings. So I guess I can't answer that in
16 reverse.
17 Q. Okay. Please turn to paragraphs 24
18 through 25 of your declaration and take a moment to
19 refresh yourself on that and you can let me know
20 when you're done.
21 (Document review.)
22 THE WITNESS: Okay.

1 BY MR. DARBY:
2 Q. Paragraph 24 begins with the phrase,
3 "In the ITC case."
4 Do you see that?
5 A. I do.
6 Q. And do you understand that to be
7 referring to the ITC investigation?
8 A. I do.
9 Q. There's a quote in this paragraph. Do
10 you know what document this quote comes from?
11 A. Not specifically. I've seen it
12 restated in a number of documents.
13 Q. Did you ever ask to see any documents
14 or materials from the ITC investigation?
15 A. No, not specifically.
16 Q. Did you ever ask to see any documents
17 or information and were told that you could not
18 review those materials?
19 A. No.
20 MR. DARBY: Okay. Why don't we take a
21 ten-minute break here.
22 THE REPORTER: Okay. We're off the

1 record. The time is 10:54 a.m.
2 (Recess from the record.)
3 THE REPORTER: We're back on the
4 record.
5 BY MR. DARBY:
6 Q. Dr. Courtney, welcome back.
7 A. Thank you.
8 Q. Just to confirm, did you talk to
9 anyone during the break about the substance of your
10 testimony today?
11 A. No.
12 Q. Okay. Did you talk to anyone during
13 the break at all?
14 A. Yes.
15 Q. Who did you talk to?
16 A. Mr. Comack.
17 MR. COMACK: Guilty.
18 BY MR. DARBY:
19 Q. And what did you guys talk about?
20 A. We talked about -- he took these lists
21 of exhibits and had an assistant make a copy,
22 apparently. And we talked about a bike race.

1 MR. COMACK: Yes. So, Kenneth, I'm
2 going to e-mail you a copy of the exhibits
3 that she -- I'm sorry, the exhibit lists, and
4 then if you want to use them, you'll do as
5 you see fit.
6 MR. DARBY: Okay. Thank you.
7 BY MR. DARBY:
8 Q. So going back to the petitioner and
9 patent owner exhibit lists from these proceedings --
10 and, again, we'll attach those to this deposition
11 transcript as Appendix A and Appendix B --
12 Dr. Courtney, you testified before the break that
13 each of these two exhibit lists include some
14 exhibits that you did not consider in preparing your
15 declaration; correct?
16 A. Yes.
17 Q. And to your knowledge, did
18 petitioners' counsel ever offer those not-considered
19 exhibits to you?
20 A. I don't think I declined anything that
21 was offered to me, if that makes sense.
22 Maybe you can ask the question again.

1 Q. Let me try again.
2 To your knowledge, did petitioners'
3 counsel ever offer those not-considered exhibits
4 from exhibit lists from the patent owner/petitioner
5 to you?
6 A. I think the answer is no. We have
7 talked about the limited review that I did of the
8 patents themselves, for example, that I did review
9 them but I didn't rely on them. I did not refuse
10 any document that was offered to me.
11 Q. Okay. And you also didn't ask
12 petitioners' counsel for any of those not-considered
13 exhibits; right?
14 A. I believe that's true, or it was
15 provided to me. I mean, I'm not aware of any
16 requests that I made that were not answered.
17 Q. Just to summarize, to the best of your
18 knowledge, the not-considered exhibits from the
19 petitioners' exhibit lists and the patent owner's
20 exhibit lists were never offered to you, and you
21 never asked for them; is that fair?
22 A. I think that's fair.

1 Q. Okay. Please turn to paragraphs 42
2 through 43 of your declaration. Take a moment to
3 refresh yourself on those paragraphs, and you can
4 let me know when you're done.
5 (Document review.)
6 THE WITNESS: Okay.
7 BY MR. DARBY:
8 Q. And within paragraphs 42 through 43 of
9 your declaration, you explain that deformability and
10 frangibility are factors that affect the management
11 of a projectile's pre-impact kinetic energy upon
12 impact; correct?
13 A. Yes.
14 Q. And you further explain in
15 paragraphs 42 through 43 that some of the kinetic
16 energy at impact is absorbed by the projectile
17 itself through deformation and/or fragmentation so
18 that less of the pre-impact kinetic energy is
19 transferred to the target; correct?
20 A. If that occurs, such as with the
21 example that was being discussed here were SAP
22 projectiles where that does occur.

1 Q. And if you put yourself in the shoes
2 of someone back in 2010 at the time the Spin Master
3 patents analyzing a given projectile, how would that
4 person determine how much kinetic energy is absorbed
5 through deformation and/or fragmentation of that
6 projectile?
7 A. How would they quantify it? The best
8 way for a POSITA to quantify it would be through
9 experiment at that point.
10 Q. And what kind of experiments would
11 such a person conduct?
12 A. There could be a variety of ways to do
13 it, including having an impact surface of interest
14 that they would measure the reaction force as a
15 function of time, undergoing various projectiles
16 shot at various velocities.
17 You could use high-speed camera to
18 document the nature of deformation, and there are
19 things you can do with that visual data to quantify
20 the deformation and the amount of energy absorbed.
21 So there are various approaches.
22 Q. Can you think of any other ways beyond

1 experiments to determine how much kinetic energy is
2 absorbed through deformation and/or fragmentation of
3 a projectile?
4 A. Yes, but your question was -- well,
5 you said prior to 2010, and the answer there is
6 still yes. Those were the main ways to quantify it
7 from the perspective of a POSITA. That's separate
8 from understanding the concept and having an
9 expectation that energy would be shared among
10 various mechanisms of managing that energy.
11 Q. How much kinetic energy do Spitballs
12 absorb through deformation and/or fragmentation?
13 A. That would depend on the surface that
14 they're contacting and the velocity at which they
15 were going. As the description -- the layman's
16 description is at low velocities they bounce, and at
17 higher velocities they both deform and they explode
18 into mushy parts. So those are two different
19 mechanisms of absorbing kinetic energy.
20 Q. And how much kinetic energy is
21 absorbed when Spitballs bounce?
22 A. I have not calculated that.

1 Q. And how much kinetic energy do
2 Spitballs absorb when they explode?
3 A. More, but I have not calculated that
4 either. Both of those would not necessarily have a
5 single answer. It would depend on the velocity at
6 which it was traveling pre-impact, as well as the
7 surface it contacted.
8 Q. For a given piece of deformable and
9 frangible ammunition or projectile, is there an
10 upper limit to the amount of kinetic energy it can
11 absorb by deformation and fragmentation?
12 A. Well, the upper limit would clearly be
13 the pre-impact kinetic energy it possessed. So you
14 can't go beyond that because energy is conserved.
15 Presumably, if contact is made, by Newton's
16 third law, there would be some amount of kinetic
17 energy and force that the contacted surface would
18 experience.
19 It could be -- it's certainly not the
20 entire amount. We know that because we see energy
21 being dissipated in the compressible -- in the
22 deformable, excuse me, and frangible SAP. So it's a

1 fraction.
2 Q. Just to be clear for the record, when
3 you say "SAP," you're referring to the acronym S-A-P
4 for superabsorbent polymer; is that correct?
5 A. Yes, thank you. And specifically, I'm
6 thinking of a spherical launch projectile made from
7 that type of material.
8 Q. Beyond the fact that a projectile
9 cannot absorb more than it's pre-impact kinetic
10 energy, what other limitations are there on the
11 amount of kinetic energy that a projectile can
12 absorb?
13 A. I mentioned one in my previous answer,
14 that if it makes any contact with another surface,
15 by Newton's third law, which one expression of that
16 is that if an object exerts force on another object,
17 then the equal and opposite force is exerted the
18 other way. So by making contact with any target,
19 the target has some non-zero amount of energy
20 applied to it.
21 Q. Are there any other limitations?
22 A. For a given projectile, there could

1 be. Those are the theoretical limitations.
2 Q. You said "for a given projectile,
3 there could be."
4 Can you provide some examples?
5 A. There could be what, please?
6 Q. I'm asking for examples. So let me
7 just restate the question.
8 Consider a Spitball, as described in
9 the Spitballs' reference.
10 A. Okay.
11 Q. What limitations are there on the
12 amount of kinetic energy a Spitball can absorb?
13 A. We've talked about the amount that it
14 can absorb cannot exceed the initial amount of
15 energy that it had. We talked about if it makes
16 contact with another surface, some of that energy is
17 being transferred to that surface.
18 There are regimes in which Spitballs
19 bounce, and there are regimes in which Spitballs
20 both deform and then explode into mushy parts. That
21 term "explode into mushy parts," which is not a
22 technical term, but it refers to fracture surfaces

1 being generated. And every time a fracture surface
2 is generated, it's absorbing kinetic energy.
3 So if it's not exploding into mushy
4 parts, if additional parts are not deformed, that
5 limits how much kinetic energy is absorbed.
6 Q. Does the amount of absorbed kinetic
7 energy scale with increasing amount of pre-impact
8 kinetic energy?
9 A. Yes, meaning if one increases, the
10 other will also increase.
11 Q. Indefinitely?
12 Sorry, you may have provided an
13 answer, and I didn't catch it.
14 A. I said "no."
15 Q. So when will the amount of absorbed
16 kinetic energy no longer increase with increasing
17 pre-impact kinetic energy?
18 A. When all the mechanisms for energy
19 absorption have been spent, so to speak, have been
20 deployed.
21 Q. So at some point the relative amount
22 of absorbed kinetic energy will decrease as the

1 pre-impact kinetic energy continues to rise; is that
2 fair?
3 A. So we haven't talked about relative
4 amount, and I don't have an answer for you with
5 regard to relative amount. With regard to the
6 behavior of the SAP projectiles, once they reach a
7 certain velocity, and that would include the
8 velocity at which they're typically launched rather
9 than just letting them fall on a table and bounce,
10 for example, but any time they're beginning to
11 explode into mushy parts, at higher velocities
12 you're going to start to see additional and smaller
13 fragments created with that impact, indicating more
14 energy being absorbed.
15 Now, something that you may have
16 observed in some of the materials that have been
17 produced or by experience, I don't know. But these
18 mushy parts do not stop moving. They all have
19 energy in addition to being broken off, and those
20 are traveling in various directions.
21 So each little fragment of a SAP,
22 which is still a SAP, has kinetic energy. And so

1 there may be subsequent impacts, or they may just,
2 with air resistance, you know, slow down and fall to
3 the ground. So that is energy dissipation right
4 there that is not limited, per se. However much
5 energy is impacted to those fragments can just get
6 used up as they travel through the air and fall.
7 I believe that's discussed later in my
8 declaration. The two paragraphs that we've been
9 discussing, 42 and 43, discuss two mechanisms of
10 energy absorption, but that third part about there
11 being fragments that retain some kinetic energy is
12 discussed to some extent later on.
13 Q. Okay. Please turn in your declaration
14 to that paragraphs 18 through 20 and take a minute
15 and just refresh yourself on that material. Let me
16 know when you're done.
17 (Document review.)
18 THE WITNESS: Okay.
19 BY MR. DARBY:
20 Q. In these paragraphs, you have a
21 discussion about the three Spin Master patents; is
22 that fair?

1 A. Yes.
2 Q. Okay. Please take out Exhibit 1001
3 from your case binder marked IPR2023-01348. That
4 should be the '282 patent. And let me know when you
5 have it.
6 (Exhibit 1001, No Bates Numbers, '282
7 Patent, received and marked.)
8 THE WITNESS: Exhibit 1001 appears to
9 be a ten-page document of Patent '282.
10 BY MR. DARBY:
11 Q. Okay. Please also take out
12 Exhibit 1001 from your case binder marked
13 IPR2023-01339. That should be the '683 patent. Let
14 me know when you have it.
15 (Exhibit 1001, No Bates Numbers, '683
16 Patent, received and marked.)
17 THE WITNESS: Before I remove this, it
18 appears to be an 11-page document, and I'm a
19 little bit concerned about getting these two
20 documents confused as to which binder they
21 came from.
22 MR. COMACK: Is there any reason why

1 she can't leave it in her binder, in other
2 words?
3 MR. DARBY: Oh, thank you for
4 clarifying.
5 BY MR. DARBY:
6 Q. No, I'm happy for you to leave them in
7 the binder.
8 A. Okay. Thank you. Then I have that.
9 Q. Okay. As long as you're able to
10 access them and review them; is that fair?
11 A. Yes. Yes.
12 Q. Going forward, any exhibits, if I say
13 take them out, I'm happy for you to leave them in
14 the binder.
15 A. Thank you.
16 Q. Okay. And you recognize these
17 documents as the '282 patent and the '683 patent;
18 correct?
19 A. Yes.
20 Q. And you reviewed these patents in
21 preparing your declaration; correct?
22 A. I reviewed them in the process, yes.

1 Q. And did you review them in preparation
2 for today's deposition?
3 A. Yes, not in as much detail, just to
4 refamiliarize myself.
5 Q. Approximately how much time did you
6 spend reviewing the '282 patent and '683 patent
7 combined?
8 A. Fifteen minutes, maybe, for today.
9 Q. Approximately how much time did you
10 spend reviewing the '282 patent and the '683 patent
11 while preparing your declaration?
12 A. I don't know. I would assume it was
13 longer, possibly up to an hour, since it was the
14 first time I had reviewed them.
15 Q. Okay. And are you prepared to answer
16 questions about the '282 patent and '683 patent
17 today?
18 A. I don't know. The scope of work that
19 I was asked to do didn't involve evaluating the
20 patents themselves. So the material that I've
21 included in my declaration is consistent with what I
22 said earlier, that these patents provided me a

1 context to understand why Dr. Kudrowitz was
2 providing a declaration and testimony in this
3 matter.
4 Q. Are you prepared to answer questions
5 about the '282 patent and '683 patent today, to the
6 extent that you reviewed and understand my questions
7 about them?
8 A. If I understand your questions, if I
9 have an answer, I can answer.
10 Q. Okay. If you don't know, you can just
11 tell me you don't know. That's a fine answer, as
12 well.
13 Okay. Please flip to the last page of
14 the '282 patent and the last page of the '683
15 patent, and let me know when you're there on both
16 documents.
17 A. Okay.
18 Q. Okay. Do you recognize where the
19 patent claims are in both of these documents, the
20 '282 patent and the '683 patent?
21 A. I see a series of numbered paragraphs
22 that are preceded by the phrase, "What is claimed

1 is." So that's what I would expect to be the
2 claims.
3 Q. Okay. I'll represent to you that
4 those are the claims.
5 And did you read these claims?
6 A. I read through them, yes.
7 Q. Okay. Please now take as much time as
8 you need to just refresh your recollection on them.
9 You can let me know when you're done.
10 (Document review.)
11 THE WITNESS: Okay.
12 BY MR. DARBY:
13 Q. In preparing your declaration, did
14 anyone inform you that the parties in these three
15 IPR proceedings have applied specific definitions
16 called "constructions" to some of the terms used in
17 the claims of the '282 patent and the '683 patent?
18 A. I'm not familiar with that language.
19 I'm familiar that there are certain definitions
20 contained within each patent.
21 We have gone over the two similar
22 definitions of a person of ordinary skill in the

1 art, or a POSITA, that I understood. I don't know
2 where that fits into your question.
3 Q. Thank you. I'm referring specifically
4 to the terms, the words, that are used in these
5 claims.
6 Are you aware of any special
7 definitions for specific words that appear in the
8 claims of the '282 patent and the '683 patent?
9 A. I have seen definitions applied to
10 soft projectiles, as referring to superabsorbent
11 polymer, or SAP, projectiles. I see in the claims
12 that there are numbers that I believe refer back to
13 drawings of devices and so that is not a verbal
14 definition, but it's an indication of what those
15 terms are referring to.
16 Q. You referred to the word
17 "superabsorbent polymers."
18 Are you aware of any special
19 definitions of the term "superabsorbent polymer"?
20 A. A superabsorbent polymer is a type of
21 material. So I am not aware of a more specific
22 definition than that. And a range of compositions

1 of such a polymer were indicated. That was more the
2 area of Dr. Reitman's testimony discussing if there
3 are various ways that such projectiles could be
4 formed and still be considered a superabsorbent
5 polymer, or SAP.
6 Q. Did you provide any opinions in these
7 IPR proceedings about what is or is not a
8 superabsorbent polymer?
9 A. Only by reference that I'm relying on
10 Dr. Reitman's testimony in that regard and with
11 regard to the chemistry of that material.
12 Q. You are not a chemist; correct?
13 A. Correct.
14 Q. And so you're relying completely on
15 Dr. Reitman's testimony about what is or is not a
16 superabsorbent polymer; is that fair?
17 A. Almost. I have a reference that is
18 cited in my declaration that refers to some
19 mechanical testing of superabsorbent polymers, and
20 that was a reference that I identified because I was
21 interested in the mechanical response to loading of
22 those polymers.

1 And so what I saw in that article was
2 consistent with what I understand from Dr. Reitman.
3 So I selected that particular article, but I am
4 relying on Dr. Reitman for the definition.
5 Q. And just to connect the dots between
6 your prior testimony, you didn't discuss that
7 document or any other document in this case with
8 Dr. Reitman; did you?
9 A. No.
10 Q. And the document we're talking about
11 here is Exhibit 1046; is that accurate?
12 A. That's correct. It's an article whose
13 first author last name is Tanaka, T-A-N-A-K-A,
14 published in 2003.
15 Q. Okay. Please turn to paragraph 44 of
16 your declaration, Exhibit 1037. Take a moment to
17 refresh yourself on that paragraph, and you can let
18 me know when you're done.
19 A. Which paragraphs, please?
20 Q. Paragraph 44.
21 A. If you give me a moment, I'm going to
22 return the '282 patent document that I had removed

1 back into its binder.
2 (Document review.)
3 THE WITNESS: Okay.
4 BY MR. DARBY:
5 Q. In paragraph 44, you are citing and
6 relying an exhibit numbered 1044; correct?
7 A. Correct. That's an article by an
8 author of the last name Berger, B-E-R-G-E-R,
9 published in 1979.
10 Q. Okay. Please go ahead and get that
11 document, Exhibit 1044, in front of you. You can
12 pull it from any of the case binders. It's the same
13 in all three.
14 (Exhibit 1044, No Bates Numbers,
15 System for Assessing Eye Injury Potential of
16 Propelled Objections by Robert E. Berger,
17 received and marked.)
18 THE WITNESS: Okay. I have it.
19 BY MR. DARBY:
20 Q. And do you recognize this document as
21 the Exhibit 1044 that you rely on and cite in
22 paragraph 44 of your declaration?

1 A. I do.
2 Q. Did you review Exhibit 1044 in
3 preparation for today's deposition?
4 A. I don't recall reviewing it again.
5 Q. Okay. But are you prepared to answer
6 questions about Exhibit 1044 today?
7 A. Yes.
8 Q. To help with navigation, when we
9 discuss Exhibit 1044, I'm going to use page numbers,
10 the page numbers 1 through 11 that are at the very
11 bottom of the page.
12 So, for example, page 1 -- when I
13 refer to page 1, I'd be talking about the cover
14 page; is that fair?
15 A. I see. Thank you.
16 Q. What is the title of Exhibit 1044?
17 A. "System for Assessing Eye Injury
18 Potential of Propelled Objects."
19 Q. And how did you obtain Exhibit 1044?
20 A. Through a literature research, such as
21 we discussed at the beginning of today's deposition.
22 Q. Do you recall the specific source?

1 A. No, it either would have been
2 referenced in another article that I had, or I found
3 it through Google Scholar, using search terms of
4 interest.
5 Q. Do you know if you had to pay for this
6 document, or if there was any kind of subscription
7 service or anything like that?
8 A. I don't recall. I do -- I have a
9 library service at Exponent that I do request
10 documents that I don't have that I need to pay for,
11 and I just don't recall if I did that for this
12 particular one or not.
13 Q. Would you agree that the cover page of
14 Exhibit 1044 identifies the Journal of Research of
15 the National Bureau of Standards?
16 A. Yes.
17 Q. Are you familiar with the Journal of
18 Research of the National Bureau of Standards?
19 A. I was not.
20 Q. Are you now?
21 A. I'm not familiar with the journal in
22 general. I see that's where it came from.

1 Q. Who's the author of Exhibit 1044?
2 A. Robert, middle initial E., last name
3 Berger, B-E-R-G-E-R.
4 Q. Are you familiar with Robert Berger?
5 A. No.
6 Q. Have you read any of his other work?
7 A. Not that I recall.
8 Q. You see on the cover page where it
9 reads, "Center of Consumer Product Technology,
10 National Bureau of Standards"?
11 A. I do.
12 Q. Are you familiar with the Center for
13 Consumer Product Technology at the National Bureau
14 of Standards?
15 A. No, I'm not sure it exists in that
16 particular form anymore. It seems to be
17 self-explanatory.
18 Q. Can you summarize what Exhibit 1044
19 describes?
20 A. Yes. Mr. Berger presents the purpose
21 of this study was to help him present a test system
22 that he was proposing as a standardized way to

1 evaluate injury risk due to propelled objects, and
2 in particular injury risk to the eye. So the
3 primary purpose was to present his test procedure,
4 and in so doing, he tests a number of kinds of
5 objects and presents the results of that testing.
6 Q. And did you review the testing results
7 and conclusions from Mr. Berger?
8 A. I did.
9 Q. Do you agree with them?
10 A. I neither agree nor disagree. It's a
11 set of data that he provided. And so I did
12 understand what he was presenting, and it makes
13 sense with what I knew about, in particular, the
14 deformable elongated, as he called them, projectiles
15 that he was testing, the manner in which they
16 deformed and what the results of that deformation
17 was on -- I believe it was force that he was
18 measuring, but that is a reflection of the energy
19 absorbed.
20 So I agree with that. That is
21 consistent with basic principles of physics and what
22 I would have expected.

1 Q. So just to clarify, there's no reason
2 that you would have to disagree regarding anything
3 that's in this Exhibit 1044 by Mr. Robert Berger; is
4 that fair?
5 A. I don't know if I can say anything,
6 but in general, I think it's a reasonable
7 representation of what he did and the results that
8 he obtained.
9 Q. And in your view, there's no reason to
10 believe that his results and data are unreliable?
11 MR. COMACK: Objection as to form.
12 THE WITNESS: Not that I know of.
13 They are what they are. And I'm not aware of
14 any reason that they are unreliable, given
15 the methods that he was using.
16 BY MR. DARBY:
17 Q. Okay. Please turn to page 9 of
18 Exhibit 1044, and take a moment to familiarize
19 yourself with the content on the right-hand column
20 of that page.
21 (Document review.)
22 THE WITNESS: Okay.

1 BY MR. DARBY:
2 Q. And just so we're on the same page,
3 the right-hand column on page 9 of Exhibit 1044
4 includes a paragraph of text, Table 2 and Figure 20;
5 is that accurate?
6 A. Yes.
7 Q. What does Table 2 on page 9 show?
8 A. Table 2 shows a list of types of
9 projectiles that Mr. Berger tested. The second
10 column includes a verbal -- not a verbal, a
11 narrative description of that projectile. The next
12 column is the force that was measured due to impact.
13 The time in milliseconds has to do with the contact
14 duration.
15 And then B is Newton's per
16 millisecond, that is a measure of impulse or it's
17 the area under the forces versus time curve, which
18 are displayed. He measured those using an
19 oscilloscope, which are traces of force versus time,
20 which are depicted -- examples are depicted in
21 Figure 20.
22 Q. You were mentioning the columns of

1 Table 2. Do you see the first column of Table 2
2 that says "Toy ID"?
3 A. Yes.
4 Q. Is it your understanding that that's a
5 numerical identifier for the types of toys that were
6 tested and that are described in the second column
7 of Table 2?
8 A. I believe they are a shorthand
9 notation for what's in Column 2. I don't know --
10 those seem to be numbers that were assigned by
11 Mr. Berger in his own, you know, internal system.
12 Q. Okay. You mentioned that Figure 20
13 shows oscilloscope traces of the toy projectiles
14 described in Table 2; right?
15 A. Some of them. After each letter
16 reference -- there's a half a dozen, and they refer
17 back to some of those in Table 2.
18 Q. And would you agree that the
19 identifiers -- the numerical identifiers in the
20 oscilloscope traces of Figure 20 corresponded to the
21 toy IDs in Table 2?
22 A. Yes.

1 Q. So I'm just going to go through each
2 of those with you and ask you a series of questions.
3 Do you agree that Figure 20a
4 corresponds to toy ID 13 in Table 2?
5 A. Yes.
6 Q. And toy ID 13 in Table 2 is the ping
7 pong ball shooter; correct?
8 A. Yes.
9 Q. Do you agree that Figure 20b
10 corresponds to toy ID 50A in Table 2?
11 A. Yes.
12 Q. And toy ID 50A in Table 2 is the toy
13 warrior shooting a fist; correct?
14 A. Yes.
15 Q. Do you agree that Figure 20c
16 corresponds to toy ID 33 in Table 2?
17 A. Yes.
18 Q. And toy ID 33 in Table 2 is the toy
19 rifle, shooting a small rubbery bullet; correct?
20 A. A small rubbery bullet, yes.
21 Q. Do you agree that Figure 20d
22 corresponds to toy ID 49 in Table 2?

1 A. Yes.
2 Q. And toy ID 49 in Table 2 is a dart gun
3 with suction cups; correct?
4 A. Yes.
5 Q. And do you agree that Figure 20e
6 corresponds to toy ID 47 in Table 2?
7 A. Yes.
8 Q. And toy ID 47 in Table 2 is another
9 dart gun with suction cups; correct?
10 A. It is a dart gun with suction cups.
11 He doesn't really provide detail when he has the
12 same -- the same written description as to what the
13 differences may or may not have been.
14 Q. In other words, there's more than one
15 dart gun with suction cups. They have different
16 toy IDs in Table 2, but were not given any further
17 description about them; is that accurate?
18 A. That's what it looks like.
19 Q. Okay. And do you agree that
20 Figure 20f corresponds to toy ID 44A in Table 2?
21 A. Yes.
22 Q. And toy ID 44A in Table 2 is the

1 flexible planes with rubber band launching
2 mechanism; correct?
3 A. Yes.
4 Q. Looking back at the paragraph of text
5 above Table 2 on page 9 in Exhibit 1044, I want to
6 focus your attention on the last sentence of that
7 paragraph. It extends from page 9 to page 10. And
8 it starts with "Many projectiles," and it goes on
9 after that.
10 Do you see it?
11 A. I'm there.
12 Q. Okay. Can you read that complete
13 sentence in its entirety out loud for the record?
14 A. "Many projectiles which are nearly
15 rigid and which have regular geometries respond in a
16 manner similar to that of the test missiles and
17 steel balls: the force increases for a time and then
18 decreases, as in figures 20a, b and c. Others
19 have" -- whoops, that's it.
20 Q. Okay. And we established earlier that
21 Figure 20a corresponds to the ping pong ball shooter
22 in Table 2, Figure 20b corresponds to the toy

1 warrior shooting a fist in Table 2, and Figure 20c
2 corresponds to the toy rifle shooting a small
3 rubbery bullet in Table 2; right?
4 A. Correct.
5 Q. So when the sentence you just read
6 aloud refers to projectiles which are nearly rigid,
7 do you agree that this sentence is referring to, for
8 example, the ping pong ball shooter, the toy warrior
9 shooting a fist, and the toy rifle shooting a small
10 rubbery bullet?
11 A. The author is saying that those three
12 things had similarly rigid properties, yeah.
13 Q. Okay. On page 10 of Exhibit 1044, I
14 now want to focus your attention on the next
15 sentence that starts "Others have more peculiar
16 responses," and it goes on.
17 Do you see that?
18 A. Yes.
19 Q. Okay. Can you please read that
20 sentence in its entirety out loud for the record?
21 A. "Others have more peculiar responses:
22 the double peaked traces of figures 20d and e are

1 typical of the responses from darts with suction
2 cups."
3 Q. And we established earlier that
4 Figure 20d and Figure 20e are referring to the dart
5 guns with suction cups labeled as toy ID Nos. 47 and
6 44A in Table 2; correct?
7 A. No, d refers to toy ID 49, and e
8 refers to 47.
9 Q. Good catch. Let me ask the question
10 again to clarify. Thank you.
11 We established earlier that Figure 20d
12 and Figure 20e are referring to the dart guns with
13 suction cups labeled as toy IDs Nos. 47 and 49 in
14 Table 2; correct?
15 A. Yes, in the other order. 49 is d, and
16 47 is e.
17 Q. So when the sentence you just read
18 aloud refers to darts with suction cups, it is
19 referring to the dart guns with suction cups that
20 are labeled as toy ID Nos. 47 and 49 in Table 2;
21 right?
22 A. Yes.

1 Q. Staying on page 10 of Exhibit 1044, I
2 now want to focus your attention on a later sentence
3 in the same paragraph that starts, "Figure 20f is an
4 example of a completely flexible missile," and it
5 goes on.
6 Do you see that?
7 A. Yes.
8 Q. Okay. Can you read that sentence in
9 its entirety out loud for the record?
10 A. "Figure 20f is an example of a
11 completely flexible missile, which tends to bend on
12 impact."
13 Q. And we established earlier that
14 Figure 20f is referring to the flexible planes with
15 rubber band launching mechanism labeled as toy ID
16 No. 42A in Table 2; correct?
17 A. Yes.
18 Q. So when the sentence you just read
19 aloud refers to a "completely flexible missile," it
20 is referring to the flexible planes with rubber band
21 launching mechanism labeled as toy ID 44A in
22 Table 2; right?

1 A. Yes, I think I just answered that.
2 Was that just a more specific question?
3 Q. Yes.
4 A. Okay.
5 Q. Please turn to page 8 of Exhibit 1044,
6 and take a minute to refresh yourself with the
7 material on that page. You can let me know when
8 you're finished.
9 (Document review.)
10 THE WITNESS: Okay.
11 BY MR. DARBY:
12 Q. Do you agree that page 8 of
13 Exhibit 1044 refers to an injury parameter called
14 Parameter A?
15 A. There are three that are discussed on
16 this page. One is called A, one is A subscript M,
17 and one is B.
18 Q. And what does Parameter A represent,
19 in your opinion?
20 A. Well, it's not my opinion; but
21 Mr. Berger defines Parameter A as a mathematical
22 parameter computed as the force at a given time

1 divided by that time raised to the 0.8 power. So
2 it's an instrument. A itself doesn't necessarily
3 have a physical meaning. It's a mathematical
4 coefficient.
5 Q. And is it fair to say that higher
6 values of Parameter A are associated with higher
7 injury risk?
8 A. That's what his Table 1 would suggest,
9 that as -- actually, I take that back.
10 Yes, the values in Table 1 where he is
11 assigning a value of the metric A, if you will, and
12 he's got four levels of injury identified there in
13 decreasing order of severity, and the corresponding
14 values of A that he is presenting decrease
15 accordingly.
16 So, yes, it would appear that a higher
17 value of A is associated with a higher risk of -- or
18 risk, I should say, of a more severe injury, really.
19 Q. Okay. And you mentioned another
20 injury parameter called Parameter B that's mentioned
21 on page 8 of Exhibit 1044 --
22 A. Yes.

1 Q. -- correct?
2 And what does Parameter B represent?
3 A. It's another metric that, according to
4 the author, is just easier to extract from test
5 data. He says, quote, B is recommended as simpler
6 to compute. And so he was investigating the utility
7 of that parameter, as well.
8 Q. And like Parameter A, would you agree
9 that higher values of Parameter B are associated
10 with risk of higher degree injuries?
11 A. The author doesn't state that
12 specifically, but he shows in Figure 18 a graph
13 comparing values for Parameter B to values for
14 Parameter A. And when A goes up, B goes up. So the
15 fact that they both go up together would infer that
16 a higher value for B would suggest a higher risk of
17 injury, as well.
18 Q. And does Table 1 support what you just
19 said, as well?
20 A. It does.
21 Q. What does Table 1 on page 8 of
22 Exhibit 1044 show?

1 A. The title of Table 1 is Values of
2 Injury Parameters, A, A sub M, and B. And it shows
3 the values for these metrics that Mr. Berger is
4 presenting as being associated with likely injuries
5 listed in Column 1.
6 Q. And what are the types of injuries
7 listed in Column 1?
8 A. He refers the reader back to his
9 Figure 2, and those are -- there's a safety factor
10 that listed, which is not actually an injury. There
11 is chamber angle damage, peripheral damage, and
12 perforation, are the levels of injury that he chose.
13 Q. And what is a perforation injury?
14 A. "Perforation" means that a projectile
15 has passed through the layer of whatever tissue
16 you're considering that's being injured, whether
17 that be the skin or the eye. There are various
18 layers. You could have a perforation of one or more
19 layers of the globe of the eye.
20 Q. And what is a peripheral injury?
21 A. That's not a term that has continued
22 to be used in the eye injury literature, but I think

1 if you look at his anatomical diagram of Figure 1,
2 that means somewhere in the periphery or the edges
3 of the exposed globe of the eye, and that would be
4 distinct from a penetrating injury.
5 Q. Is a peripheral injury more or less
6 severe than a perforation injury?
7 A. That depends on how you consider
8 severity, and he has not defined that here. He has
9 used "perforation" as a more severe injury. And I
10 would say, generally, I would tend to agree with
11 that.
12 Q. What is a chamber angle injury?
13 A. Again, that's a term that I believe
14 Mr. Berger has assigned rather than being something
15 that's regularly used in at least the current
16 literature. And I think that has to do with --
17 around the periphery of the eye, there are muscles
18 that hold the eye in place and that guide its
19 movement.
20 And so I would consider a -- a chamber
21 angle damage to be involving one of those structures
22 toward the corners of the eye.

1 Q. And in the context of Mr. Berger's
2 work in Exhibit 1044, is a chamber angle injury more
3 or less severe than a peripheral injury?
4 A. Well, he intimates, he suggests that
5 it's less severe, and what he's really doing is
6 saying that those type of injuries can occur at a
7 lower value of his metrics than the other injuries.
8 Q. And in the context of Mr. Berger's
9 work in Exhibit 1044, is a chamber angle injury more
10 or less severe than a perforation injury?
11 A. The way that he lists them in his
12 table would suggest that it's a less severe injury,
13 in his categorization.
14 Q. You mentioned that Column 1 of Table 1
15 on page 8 of Exhibit 1044 also mentions a safety
16 factor.
17 Do you recall that?
18 A. Yes. And I get that from referring
19 back to Figure 2, where that SF is spelled out.
20 Q. And in the context of Mr. Berger's
21 work in Exhibit 1044, what does that safety factor
22 represent?

1 A. He defines the safety factor in his
2 article as being the threshold for clinically
3 detectable contusion injury.
4 Q. So below the threshold represented by
5 safety factor 2 in Mr. Berger's view, clinically
6 detectable contusion injuries would not occur?
7 A. Would be unlikely.
8 Q. Okay. Please turn back to page 10 of
9 Exhibit 1044, and review the material starting with
10 the last paragraph of the left-hand column in
11 Figure 22, which is also on that page.
12 (Document review.)
13 THE WITNESS: Okay.
14 BY MR. DARBY:
15 Q. What does Figure 22 of Exhibit 1044
16 show, in your opinion?
17 A. It shows a number of things. He has
18 repeated information from Figure 2 regarding risk or
19 tolerance curves, is what he calls them, related to
20 each of the levels of injury that he has defined.
21 And then superimposed on that graph is his
22 experimental results for the projectiles he tested.

1 Q. You mentioned toler- -- withdrawn.
2 You mentioned tolerance curves. And
3 do you agree with me that there are four tolerance
4 curves on Figure 22?
5 A. Yes, although he has used a dashed
6 line for that line he's calling the safety factor.
7 So that's -- I'm not sure where that comes from, but
8 he is presenting that, yes.
9 Q. Okay. And do you see the perforation
10 tolerance curve in Figure 22?
11 A. I do.
12 Q. And do you agree with me that anything
13 beneath and to the right of the perforation
14 tolerance curve would not be likely to cause a
15 perforation injury?
16 A. I would say it would be unlikely. One
17 thing that Mr. Berger does not present are, like,
18 95 percent confidence intervals for ways that today
19 we would include the uncertainty in the results.
20 So I would agree that below that line
21 labeled "perforation," it would be unlikely to
22 occur, but I wouldn't take that -- there isn't a

1 certain value above which perforation will occur and
2 below which perforation will never occur as a single
3 value.
4 Q. Just to take a step back, we were
5 talking about Figure 22, and it shows these four
6 tolerance curves. There are also plotted data
7 points on Figure 2.
8 And do you agree with me that those
9 plotted data points include the numerical toy IDs
10 from Table 2?
11 A. I agree that's what they represent.
12 Q. Looking at the peripheral damage
13 tolerance curve in Figure 22, would you agree that
14 anything beneath the peripheral damage tolerance
15 curve is not likely or unlikely to cause peripheral
16 damage?
17 A. I think I've already stated my
18 limitations on these coverings in general, but I do
19 think that's what Mr. Berger is intending to show.
20 Q. Subject to the limitations that you've
21 mentioned before, the chamber angle damage tolerance
22 curve, would you agree that any data points beneath

1 that tolerance curve are not likely or unlikely to
2 cause chamber angle damage?
3 A. With those same limitations, I agree.
4 Q. With those same limitations, now
5 referring to the safety factor curve in Figure 22,
6 would you agree with me that anything beneath that
7 safety factor tolerance curve is unlikely or not
8 likely to cause clinically detectable contusion
9 damage?
10 A. I agree that's what Mr. Berger is
11 presenting, yes, with that line.
12 Q. Okay. I want to focus your attention
13 specifically on the chamber angle damage tolerance
14 curve in Figure 2. I'm going to ask you a series of
15 questions about that.
16 MR. COMACK: And, Kenneth, I don't
17 want to interrupt your flow. I don't know
18 how much longer you have on this line, but
19 we've been going for about an hour and
20 ten minutes.
21 And so if it's going to be a while, I
22 suggest we break and subject to Dr. Courtney

1 being okay with it; or if you're wrapping up
2 and she's okay with it, I would suggest to
3 continue.
4 BY MR. DARBY:
5 Q. Dr. Courtney, if you're able to
6 continue, I have another series of questions here
7 about this topic, and then we can wrap and take a
8 break, if that's okay.
9 A. "This topic" meaning Exhibit 1044?
10 Q. That's right.
11 A. Okay. Sounds good.
12 MR. COMACK: Thanks, Kenneth.
13 BY MR. DARBY:
14 Q. Okay. I want to focus your attention
15 specifically on Figure 22 on page 10 of Exhibit 1044
16 and the chamber angle damage tolerance curve.
17 Do you see that?
18 A. Yes.
19 Q. Okay. I also want you to find toy ID
20 No. 33, which we established earlier as the toy
21 rifle shooting a small rubbery bullet and toy ID 49,
22 which we established earlier as a dart gun with

1 suction cups.
2 Do you see these two toy ID numbers in
3 Figure 22?
4 A. I do.
5 Q. Which of toy ID 33 and toy ID 49 is
6 more of an injury risk to cause chamber angle damage
7 based on Figure 22?
8 A. Based on that figure, 49 had a higher
9 value of nondimensional maximum force and was closer
10 to that tolerance curve or chamber angle damage.
11 Q. So then would you conclude that toy
12 ID 49 is more likely to cause chamber angle damage?
13 A. I can only conclude that that is what
14 his tests show for his test setup.
15 Q. Okay. Please now identify toy ID 20
16 and toy ID 50A on Figure 22. That's 50-A.
17 Do you see those?
18 A. I do.
19 Q. And which of toy ID 20 and toy ID 50A
20 is more of an injury risk to cause chamber angle
21 damage based on Figure 22?
22 A. I'm not sure I can say. They both

1 fall below the tolerance curve, and they have
2 different times to maximum force. So there's --
3 they're both below the curve. I'm not sure that you
4 could -- would increase one without increasing the
5 other. So the best I can say is they're both below
6 the curve for chamber angle damage.
7 Q. Would you agree that toy ID 50A is
8 also below the safety factor tolerance curve?
9 A. Yes.
10 Q. So would you agree that, based on
11 Mr. Berger's test, toy ID 50A is unlikely to cause
12 clinically detectable contusion damage?
13 A. Under the test conditions, yes.
14 Q. And do you agree that toy ID 20 is
15 above the safety factor tolerance curve in
16 Figure 22?
17 A. Yes.
18 Q. So would you agree that toy ID 20 is
19 more likely than toy ID 50A to cause clinically
20 detectable contusion damage?
21 A. Yes.
22 Q. Okay. Can you please now identify toy

1 ID 15 and toy ID 25 on Figure 22.
2 A. Okay.
3 Q. And which of toy ID 15 and toy ID 25
4 is more of an injury risk to cause chamber angle
5 damage based on Figure 22?
6 A. They're both below that tolerance
7 curve as presented. So they're both unlikely to
8 result in chamber angle damage.
9 Q. And do you agree that toy ID 25 is
10 below the safety factor tolerance curve?
11 A. Yes.
12 Q. And do you agree that toy ID 15 is
13 above the safety factor tolerance curve?
14 A. Yes.
15 Q. So would you agree that Figure 2
16 indicates toy ID 15 is more likely than toy ID 25 to
17 cause clinically detectable contusion damage?
18 A. In Figure 22, yes.
19 Q. Okay. Please now identify toy ID 44A
20 and toy ID 22 on Figure 22.
21 A. 44A and which one? What was the
22 comparison for 44A, please?

1 Q. Bear with me one moment.
2 Okay. Let me try again. Please
3 identify toy ID 44A and toy ID 48 in Figure 22.
4 Do you see those?
5 A. Yes.
6 Q. And which of toy ID 44A and toy ID 48
7 is more of an injury risk to cause chamber angle
8 damage based on Figure 22?
9 A. That one -- they're both below the
10 curve. That one, I feel a little better about
11 saying that 44A was closer to causing chamber angle
12 damage because the time to maximum force for those
13 two items is similar.
14 Q. And do you agree that toy ID 44A is
15 above the safety factor tolerance curve?
16 A. Yes.
17 Q. And do you agree that toy ID 48 is
18 below the safety factor tolerance curve?
19 A. 48 is below, yes.
20 Q. So would you agree that toy ID 44A is
21 more likely to cause clinically detectable contusion
22 damage than toy ID 48, based on Figure 22?

1 A. I do, between those two comparisons.
2 MR. DARBY: Okay. Let's take a break.
3 THE REPORTER: We're off the record.
4 (Recess from the record.)
5 THE REPORTER: We're back on the
6 record.
7 BY MR. DARBY:
8 Q. Okay. Dr. Courtney, welcome back.
9 Just to confirm, did you speak with anybody about
10 the substance of your testimony during the break?
11 A. No.
12 Q. Did you speak to anybody at all during
13 the break?
14 A. I just spoke to Mr. Comack. We
15 started talking about lunch options.
16 Q. Very good. Okay.
17 I'm going to ask you to keep
18 Exhibit 1044 in front of you. I have a few more
19 questions on this exhibit. I want to go back to
20 Table 2.
21 A. Okay.
22 Q. Do you recall your earlier testimony

1 that in the context of Mr. Berger's work in
2 Exhibit 1044, that the toy ID 13, ping pong ball
3 shooter, was viewed as a projectile that behaved as
4 a rigid or nearly rigid object?
5 A. Yes.
6 Q. Okay. Please take a look at toy
7 ID 22, machine gun plastic bullet.
8 A. I see that.
9 Q. And in your view, would this type of
10 projectile also behave as a rigid or nearly rigid
11 object?
12 A. It depends on the velocity. I noted
13 that all of these projectiles were not launched from
14 their launching device. They were all launched from
15 a device that Mr. Berger constructed and imparted a
16 similar -- some kind of input. So they each
17 actually had difficult velocities at which they
18 traveled, depending on how heavy they were.
19 And so it doesn't seem like he was in
20 any regime where any of his projectiles were
21 damaged, so to speak, or, like you talk about the
22 ping pong ball, they were never crushed or anything

1 like that.
2 So he does -- I don't think he
3 specifically calls out the plastic bullets, but
4 either way. He doesn't call it out as being
5 deformable or rigid.
6 Q. Okay. Do you agree that toy ID 33,
7 and I believe we discussed this one before, the
8 rifle shooting a small rubbery bullet, is
9 characterized by Mr. Berger as a projectile that
10 behaves as a rigid or nearly rigid object?
11 A. I agree he does that.
12 Q. And what would you expect to be more
13 rigid, the ping pong ball shooter projectile or the
14 small rubbery bullet projectile?
15 A. Well, rigidity is a structural
16 property, and I don't know. I mean, if it's a solid
17 rubbery bullet, it's never going to crush in the
18 same way as a ping pong ball. So I'm not sure how
19 to answer that.
20 I need to correct something.
21 Q. Sure.
22 A. When I described Mr. Berger using a

1 system that he constructed for testing, he did do
2 that, but I believe the specific projectiles
3 presented in Table 2 were launched utilizing their
4 respective launcher devices.
5 Q. Okay. That's fair. Thank you.
6 Okay. Let's move on. Please take
7 your declaration back out, and turn to paragraph 46.
8 Let me know once you've had a chance to refresh
9 yourself on that paragraph.
10 (Document review.)
11 THE WITNESS: Okay. I have the
12 declaration. What paragraphs?
13 BY MR. DARBY:
14 Q. Paragraph 46, please.
15 A. Okay.
16 Q. In paragraph 46, you're citing and
17 relying on Exhibit 1045; correct?
18 A. In this particular instance, 1045,
19 relying on it is a stretch. 1045 is an example of
20 the kind of thing I'm discussing in paragraph 46.
21 Q. How do you distinguish between relying
22 on the exhibit and providing it as an example?

1 A. I'm describing in paragraph 4 -- in
2 paragraph 46, I'm describing an example that's a
3 little bit outside of the specific context called --
4 and discuss a kind of projectile called a frangible
5 bullet.
6 This is something I already know from
7 my training and experience, but I realize it might
8 not be familiar to others. And so I've provided the
9 paper that's identified as Exhibit 1045 as an
10 example documenting the nature of that kind of
11 projectile.
12 Q. Okay. Can you take out Exhibit 1045
13 from one of your case binders? It should be the
14 same in all three. And by "take out," I just mean
15 to pull it in front of you.
16 (Exhibit 1045, No Bates Numbers, Hard
17 Target Performance Testing of Non-lead,
18 Frangible Ammunition by Eric Samuel Oglesby,
19 received and marked.)
20 THE WITNESS: Okay.
21 BY MR. DARBY:
22 Q. And do you recognize the document in

1 front of you as Exhibit 1045 that you cite in
2 paragraph 46 of your declaration?
3 A. I do.
4 Q. And how much time did you spend
5 reviewing Exhibit 1045 in preparation for today's
6 deposition?
7 A. Very little. I confirmed that -- I
8 was familiar with it from before, and it provides an
9 example of the injury potential of -- in this case,
10 a powder-fired firearm projectile. The injury
11 potential being reduced when that bullet is
12 frangible, when it breaks into small pieces.
13 The analogy being that the Spitballs
14 SAP projectile breaks into little pieces, as well.
15 And that was really the only reason for citing this
16 paper.
17 Q. Okay. Are you prepared to answer
18 questions about Exhibit 1045 today?
19 A. Possibly. I just told you the extent
20 to which -- why I used it and the extent to which I
21 relied upon it. It illustrates the basic principle
22 of physics that generating fractured surfaces is a

1 mechanism of absorbing kinetic energy in a
2 projectile, and it illustrates an embodiment of
3 that.
4 Q. Okay. Did you read and review the
5 entirety of Exhibit 1045 while preparing your
6 opinions that are expressed in your declaration?
7 A. I think I didn't review it this time.
8 Like I said, I'm familiar with it. So I looked
9 through it to remind myself.
10 Q. And during your review, to regain your
11 familiarity with the document, did you find
12 Exhibit 1045 to contain any material that is
13 inconsistent with your opinions in these
14 proceedings?
15 A. No, because what I relied upon it for
16 was to demonstrate that kinetic energy is absorbed
17 through the fracture of -- one way to absorb kinetic
18 energy is through the fracture of the projectile,
19 which contributes to reduction and injury potential.
20 Q. Okay. What is the title of
21 Exhibit 1045?
22 A. "Hard Target Performance Testing of

1 Non-lead Frangible Ammunition."
2 Q. And where did you find this document?
3 A. This one was already in my library. I
4 probably originally found it through a
5 Google Scholar search some time ago.
6 Q. When you say your library, what are
7 you referring to?
8 A. Just articles that I have obtained for
9 other reasons in the past and have kept, you know,
10 in -- for reference, for future reference, not
11 retained initially for the purpose of this
12 retention.
13 Q. Do you recall what work you were doing
14 that led to your discovery of Exhibit 1045?
15 A. No. And it may not even have been
16 litigation. It's an area I have been doing research
17 in powder-fired firearm ballistics for a long time.
18 Q. Who's the author of Exhibit 1045?
19 A. Eric, with just a C, Samuel Oglesby.
20 Q. And are you familiar with Eric Samuel
21 Oglesby?
22 A. No.

1 Q. Have you read or considered any of his
2 other work?
3 A. I don't think so.
4 Q. Can you summarize what Exhibit 1045
5 describes?
6 A. This exhibit is Mr. Oglesby's master
7 thesis work conducted when he was a student at the
8 University of Tennessee in Knoxville. It was
9 published in 2003, and it describes the results of a
10 bunch of ammunition testing.
11 Q. Okay. Please turn to page 27. And,
12 again, I'm using the pagination at the very bottom
13 of the page. And let me know when you're there.
14 A. Yes, I'm there.
15 Q. Okay. Do you see the heading
16 "Discussion of Frangibility"?
17 A. I do.
18 Q. Okay. Take a moment to familiarize
19 yourself with the content of the first paragraph
20 under that heading which extends from page 27 to
21 page 28.
22 (Document review.)

1 THE WITNESS: Okay.
2 BY MR. DARBY:
3 Q. What is a frangible projectile?
4 A. In the context of this thesis, he's
5 talking about frangible bullets fired from a
6 powder-powered firearm. And "frangible" means that
7 upon impact, the bullet fractures into multiple
8 pieces.
9 Q. And what happens to the multiple
10 pieces upon impact?
11 A. It depends upon the impact target.
12 Mr. Oglesby, I believe, was just considering
13 metallic-type targets.
14 Q. What is back splatter in the context
15 of frangible projectiles?
16 A. Back splatter is when the kinetic
17 energy of one of the fragments and the direction of
18 travel takes it in a direction away from the target.
19 It continues moving, but in a direction away from
20 the target. And that doesn't necessarily mean
21 180 degrees away. It just means away.
22 Q. And the paragraph that I directed you

1 to on page 27 and 28 of Exhibit 1045, do you see the
2 sentence that starts "Another concern is back
3 splatter"?
4 A. Yes.
5 Q. Can you read that sentence and the
6 next sentence out loud for the record, please?
7 A. "Another concern is back splatter from
8 the breakup of the projectile after impact. If the
9 bullet's particles are of significant size, the
10 shooter can be in danger of being struck at various
11 points on the body by numerous fragments."
12 Q. So is it fair to say that these
13 sentences are expressing that fragments from back
14 splatter of a frangible projectile could impact the
15 shooter or perhaps someone else in the environment?
16 A. He's discussing factors that need to
17 be considered in -- in designing an appropriate
18 frangible round. And so he's -- this is a list of
19 considerations as he undergoes his testing of
20 various designs of bullets.
21 So he's saying that that is a concern.
22 There are different ways to address that concern.

1 And then he -- in discussing particles, he goes on
2 to then talk about, you know, making sure particles
3 are small enough to reduce that risk.
4 Q. And by "risk," you're talking about
5 the risk of someone being impacted by a fragment?
6 A. Well, someone or some thing. He goes
7 on to describe other surfaces that you wouldn't want
8 really damaged either, which I did in my
9 declaration, as well.
10 And, again, these are metallic
11 projectiles traveling at a thousand-ish feet per
12 second if it's from a pistol and, you know, up to
13 3,000 feet per second if it's from a rifle. So
14 it's -- those fragments could still have a
15 significant amount of kinetic energy even though
16 it's far less than the original amount of the intact
17 projectile before impact.
18 Q. And I think you said this earlier, but
19 the fragments that are part of the back splatter
20 produced by frangible projectile carry away some of
21 the kinetic energy.
22 And so the concern here is that those

1 fragments and their kinetic energy could come into
2 contact with a person or thing in the environment;
3 is that fair?
4 A. That is the concern, yes.
5 MR. DARBY: Okay. I'm going to
6 suggest that we take a lunch break here.
7 THE REPORTER: We're off the record.
8 (Luncheon recess from the record.)
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1 A F T E R N O O N S E S S I O N
2 DR. AMY COURTNEY,
3 having been previously sworn, resumed the
4 stand and testified further as follows:
5 EXAMINATION (Cont'd.)
6 BY MR. DARBY:
7 THE REPORTER: We're back on the
8 record.
9 BY MR. DARBY:
10 Q. Okay. Welcome back, Dr. Courtney.
11 And just to confirm, did you speak with anybody
12 about the substance of your testimony during the
13 break?
14 A. No.
15 Q. Did you speak with anyone during the
16 break?
17 A. Yes, Mr. George, Ken George, joined
18 Mr. Comack and I during part of lunch. We just
19 talked about lunch.
20 Q. Okay. Nothing about the substance of
21 the testimony?
22 A. No.

1 Q. Did you review any documents during
2 the break?
3 A. Just now, the last few minutes, I was
4 looking again at the last exhibit we were talking
5 about in case you were going to go back to it.
6 Q. And which exhibit was that?
7 A. 1045.
8 Q. Okay. I am going to go back to an
9 exhibit, but I'm actually going to go back to
10 Exhibit 1044.
11 Can you pull that one back up?
12 A. Okay.
13 Q. Okay. And this is the study by
14 Mr. Berger; correct?
15 A. Yes.
16 Q. All right. Do you remember that we
17 were discussing Figure 22?
18 A. We did discuss Figure 22.
19 Q. Okay. There were a few questions that
20 I want to ask you about Figure 22 considering --
21 excuse me, continuing our prior discussion.
22 Please identify toy ID 44A and toy

1 ID 50A on Figure 22. Do you see those?
2 A. I do.
3 Q. And do you agree that toy ID 50A is
4 below the safety factor tolerance curve?
5 A. I agree.
6 Q. Do you agree that toy 44A is above the
7 safety factor tolerance curve?
8 A. I agree.
9 Q. And do you agree that toy ID 44A is
10 more likely to result in a clinically detectable
11 contusion injury than toy ID 50A based on Figure 22?
12 (The reporter seeks clarification.)
13 BY MR. DARBY:
14 Q. Do you agree that toy ID 44A is more
15 likely to result in a clinically detectable
16 contusion damage than toy ID 50A?
17 A. I agree based on the definition
18 contained in this paper that we talked about
19 earlier.
20 Q. Okay. Please now --
21 A. Based on the definition of "safety
22 factor 2."

1 Q. Okay. Please now identify toy ID 44A
2 and toy ID 33 on Figure 22.
3 Do you see those?
4 A. I do.
5 Q. And do you agree that toy ID 33 is
6 below the safety factor tolerance curve?
7 A. I do.
8 Q. And do you agree that toy ID 44A is
9 above the safety factor tolerance curve?
10 A. I do.
11 Q. And do you agree that toy ID 44A is
12 more likely to result in a clinically detectable
13 contusion injury than toy ID 33, based on Figure 22?
14 A. Yes, based on the definition of
15 "safety factor 2" in this document.
16 Q. Okay. Please turn to paragraph 72 of
17 your declaration, and take a moment to refresh
18 yourself on this paragraph. You can let me know
19 when you're done.
20 (Document review.)
21 THE WITNESS: Okay.
22

1 BY MR. DARBY:
2 Q. And in paragraph 22, you were citing
3 and relying on Exhibit 1033; is that correct?
4 A. Yes.
5 Q. Okay. Please pull out Exhibit 1033
6 from one of the case binders. It should be the same
7 in all three.
8 (Exhibit 1033, No Bates Numbers, Ball
9 bearing (BB) gun injuries by Tsui Chi Leung
10 and Tang Yiu Hang, received and marked.)
11 THE WITNESS: Okay.
12 BY MR. DARBY:
13 Q. And do you recognize the document in
14 front of you as the Exhibit 1033 that you rely on
15 and cite in paragraph 72 of your declaration?
16 A. Yes.
17 Q. Did you review Exhibit 1033 in
18 preparation for today's deposition?
19 A. Yes.
20 Q. And how much time did you spend
21 reviewing --
22 A. Five or ten minutes.

1 Q. And are you prepared to answer
2 questions about Exhibit 1033 today?
3 A. Yes.
4 Q. What is the title of Exhibit 1033?
5 A. "Ball bearing (BB) gun injuries."
6 Q. And where did you find this document?
7 A. This would have been through a
8 Google Scholar search.
9 Q. Do you recall the specific search
10 terms you used to find this document?
11 A. No, I think I was starting with
12 airsoft, but that doesn't appear here. So it took
13 me a little while to figure out that they were
14 really talking about a similar type of projectile,
15 plastic ball bearings. So it was a process of just
16 refining that search once some initial findings came
17 out.
18 Q. And who is the author of Exhibit 1033?
19 A. There are three authors. The first
20 author's last name is Tsui, spelled T-S-U-I.
21 Q. And are you familiar with any of the
22 three authors listed on Exhibit 1033?

1 A. No.
2 Q. Do you recall if you had to go through
3 any pay walls or any subscription services to obtain
4 this document?
5 A. I don't recall.
6 Q. Is this the type of document that you
7 would rely on in conducting analysis regarding the
8 injury risk of a particular projectile?
9 A. I would call it more of a secondary
10 reference. As I was gathering information about the
11 types of injury that could result, their frequency,
12 the age of people that were involved, and that sort
13 of information, this came up as a particular case
14 study of a particular type of injury. And then it
15 had some other information about it that was
16 interesting to me.
17 Q. In conducting an analysis regarding
18 the injury risk of a piece of ammunition, is this
19 the kind of document that you would typically rely
20 on?
21 A. Not as a first reference, because it's
22 really not discussing injury risk. Again, it's

1 describing characteristics of different projectiles
2 and presenting a case study of a type of injury. So
3 it demonstrates a type of injury that occurs or can
4 occur with plastic airsoft projectiles.
5 Q. Okay. Please turn to page 2 of
6 Exhibit 1033, and take a moment to familiarize
7 yourself with the content under the heading that
8 reads "Discussion."
9 (Document review.)
10 THE WITNESS: Okay.
11 BY MR. DARBY:
12 Q. Do you see on the left-hand column
13 where it says, "BB guns have been used for over a
14 century"?
15 A. Yes.
16 Q. Okay. And then if you look over on
17 the right-hand column, do you see where it says,
18 Airsoft guns are a relatively new type of BB gun,
19 and they shoot less harmful plastic pellets and have
20 lower power than traditional BB guns?
21 A. That's parts of two consecutive
22 sentences. I do see that.

1 Q. Can you read the sentence -- both
2 sentences out loud for the record in their entirety?
3 A. "Airsoft guns are a relatively new
4 type of BB gun developed just 30 years ago in Japan.
5 Airsoft guns shoot relatively less harmful plastic
6 pellets and have lower power than the traditional BB
7 guns."
8 Q. Do you agree that this document, and
9 particularly the sentences that you've just read,
10 identify airsoft guns as a subset of the overall
11 category of BB guns that would also include, for
12 example, traditional BB guns?
13 A. I don't know what you mean by
14 "category." They have similarities and differences.
15 Q. Do you agree that there are multiple
16 different types of BB guns?
17 MR. COMACK: Objection as to form.
18 THE WITNESS: What do you mean by
19 "types of BB guns"?
20 BY MR. DARBY:
21 Q. What kind of BB guns are you aware of?
22 A. They can come in forms similar to

1 powder-fired firearms, meaning there are pistols
2 that shoot metal BBs. There are rifles that shoot
3 metal BBs.
4 They are air powered, but the source
5 of that air -- compressed air might come from manul
6 input from the shooter, or it could come from
7 compressed air. And within that, there are
8 different specific designs and manufacturers.
9 When I refer to "BBs," I do mean the
10 metallic spherical projectiles. And in this
11 article, and I have seen it in articles from other
12 countries, as well, they also call airsoft
13 ammunition -- they refer to that as BBs, even though
14 it's plastic. And so you just have to read to
15 understand that they're referring to airsoft.
16 Q. Okay. And when this document is
17 saying that BB guns have been used for over a
18 century and airsoft guns are a relatively new type
19 of BB gun, wouldn't you draw an inference that this
20 document is referencing more than just airsoft, but
21 also other types of BB guns that are older?
22 MR. COMACK: Objection as to form.

1 THE WITNESS: They reference BB guns,
2 such as the Red Ryder, with metal spherical
3 projectiles in a historical sense. And
4 they're introducing airsoft as a different
5 thing that is used -- they use the term war
6 game.
7 You know, I would differentiate that
8 airsoft is actually thought of, as is
9 paintball, as projectiles that people shoot
10 at each other in various context. And while
11 people might act badly with other firearms, a
12 traditional BB gun is not anticipated or
13 intended for that kind of use.
14 BY MR. DARBY:
15 Q. Okay. And can we agree that this
16 document refers to airsoft guns as a specific type
17 of BB gun?
18 A. We can agree that they use that term
19 "BB" to apply to airsoft projectiles, as well.
20 Q. As well as other types of projectiles?
21 MR. COMACK: Objection as to form.
22 THE WITNESS: I think they only apply

1 the term "BB" to the historical metal
2 spherical projectiles, as well. I don't
3 think they apply the term "BB" to a variety
4 of projectiles.
5 Was that your question?
6 BY MR. DARBY:
7 Q. Let me rephrase.
8 Is it your understanding that when
9 this document uses the word "BB," it's referring to
10 something other than airsoft ammunition?
11 A. In the beginning of the introduction
12 and the discussion, they are also looking
13 historically at BB guns that shoot small round metal
14 spherical projectiles. And so throughout most of
15 the article, they're referring to airsoft, but you
16 have to look at the context somewhat to know what
17 they're referring to at a given point in the
18 article.
19 Q. Can you turn to page 3 of
20 Exhibit 1033? In the --
21 A. I'm there.
22 Q. Oh, excuse me. In the left-hand

1 column, the first full paragraph, do you see the
2 third sentence that starts with "Although most BB
3 guns," and it goes on?
4 A. I see that sentence.
5 Q. Okay. Can you read that sentence and
6 the sentence that follows it out loud for the
7 record?
8 A. "Although most BB guns fire
9 low-velocity missiles, some can still shoot to
10 penetrate the abdomen, thorax, facial sinuses and
11 even the cranium."
12 The next sentence, as well?
13 Q. Yes, ma'am.
14 A. "A pellet with a velocity of 45 meters
15 per second can penetrate human skin and a velocity
16 reaching 60 meters per second can fracture bone."
17 Q. Okay. And would you agree with me
18 that these sentences do not reference airsoft guns
19 specifically, or airsoft ammunition?
20 A. They define what it refers to in the
21 first sentence, which is a ball-shaped pellet as the
22 ammunition.

1 Q. And is your understanding that these
2 sentences are talking about airsoft ammunition?
3 A. I think it includes airsoft
4 ammunition. That first sentence is a bit more
5 inclusive.
6 Q. Do you agree that the first sentence
7 you read does not include the word "airsoft"?
8 A. Yes.
9 Q. Do you agree that the second sentence
10 that you read does not include the word "airsoft"?
11 A. Yes.
12 Q. So would you agree that these
13 sentences do not specifically refer to airsoft?
14 A. I think the first sentence makes it
15 inclusive of airsoft. This is their own definition
16 that a BB-related injury is a gunshot wound from a
17 pistol or rifle that fires a ball pellet.
18 Q. Do you see the reference numbers that
19 follow the first sentence that you read refers to
20 references 6 through 8?
21 A. I do.
22 Q. Did you read those documents to see

1 how they might inform your understanding of that
2 sentence?
3 A. I did not. But I felt that I
4 understood that because the authors here have
5 provided language regarding what they mean when
6 they're using the term "BB." So I was just going
7 along with their definition for my understanding of
8 the article. I'm not adopting their language,
9 per se, or opining on it.
10 Q. Do you agree that this document is
11 pointing to references 6 through 8 as support for
12 the notion that BB guns can penetrate the abdomen,
13 thorax, facial sinuses, and even the cranium?
14 A. I do.
15 Q. Okay. And how would your opinion of
16 the steps change if you discovered that references 6
17 through 8 do not say anything about airsoft
18 ammunition?
19 A. Well, I don't really have an opinion.
20 I'm just interpreting what the authors mean. And
21 even though the references they cite might -- I
22 don't know, they might just have to do with

1 traditional BBs. I believe the authors in their
2 first sentence are trying to use that as support for
3 their own premise that small ball pellets can cause
4 these types of injuries if they are at sufficient
5 velocity.
6 Q. What about the second sentence that
7 starts with "A pellet," do you see the reference
8 No. 9 at the end of that sentence?
9 A. I see the sentence that starts with "A
10 pellet," yes, and it references a number 9 in their
11 list of references.
12 Q. And did you read that reference to
13 inform your interpretation of this sentence?
14 A. No.
15 Q. And is your interpretation of this
16 sentence that it applies to airsoft?
17 A. It's my interpretation that the
18 authors are including it as a basis for expecting
19 that a BB gun, as they're defining it, which fires a
20 ball pellet, could potentially produce that kind of
21 injury. I'm not opining on that. I'm just, again,
22 describing how I believe these authors are using

1 those references.
2 Q. Would it change your opinion about how
3 the authors are viewing the references if you
4 examined reference 9 and found that it does not
5 mention airsoft?
6 A. Not at all. Because the very first
7 sentence of the next paragraph is, "Most BB pellets"
8 and, again, in the first sentence of the preceding
9 paragraph, they're referencing a ball pellet. In
10 the following paragraph, they begin, "Most BB
11 pellets are made of plastic."
12 So I think it is their, just what
13 they're doing at this point in the article is
14 supporting their own expectation that such injuries
15 could happen with a plastic, quote, BB pellet,
16 unquote, which they are using to describe airsoft
17 pellets.
18 Q. But you yourself don't know whether
19 these sentences are accurate or not, this is just
20 your interpretation of what the authors think?
21 MR. COMACK: Objection as to form.
22 THE WITNESS: I think the authors are

1 just laying a foundation for their
2 expectation. Again, this is a case study.
3 So in a sense, they're working backwards from
4 what they observed in this patient. And
5 they've done some research.
6 They've found these articles, and they
7 seem to be laying out in their Discussion
8 section, Oh, we had these articles showing
9 the types of injuries that they describe, and
10 then they are making the connection to what
11 they're observing in this patient and
12 discussing it further.
13 It's really an observational thing.
14 It's not about a quantity active injury
15 quantitative injury risk.
16 BY MR. DARBY:
17 Q. Is it your opinion that the authors
18 have observed these type of injuries occurring with
19 airsoft guns?
20 A. This paper only presents a specific
21 case study where the patient has one injury that
22 they're focused on. I don't know what else these

1 authors may have seen.
2 Q. And you didn't investigate what
3 evidence they might be relying on because you didn't
4 review references 6 through 9; is that accurate?
5 MR. COMACK: Objection as to form.
6 THE WITNESS: I don't think that's
7 accurate. It's their patient. So they are
8 relying on their own medical care of -- well,
9 I shouldn't say that it's their patient.
10 They are relying on these medical
11 findings for this patient. So that's really
12 their reliance. We have this. They're
13 diagnosing it. They're characterizing this
14 injury.
15 In the discussion they're trying to
16 broaden their understanding of would this
17 injury have been expected to happen, and so
18 they're reaching into probably -- I don't
19 know, but probably, if it's older literature,
20 it could be metal BBs.
21 But they are clearly drawing the
22 connection to, Oh, that's what we're seeing,

1 and indeed it can happen this way.
2 And if I may say one more thing, the
3 corresponding author, who is the first
4 author, is listed as being part of an
5 emergency department in a hospital.
6 So that does -- is consistent with my
7 understanding that these were medical
8 providers, and they were trying to develop an
9 understanding of this injury.
10 BY MR. DARBY:
11 Q. If you look at Table 1 on page 3 of
12 Exhibit 1033.
13 A. Yes.
14 Q. Do you see where there's a designation
15 of airsoft gun (spring-type) and another designation
16 of airsoft gun (pneumatic-type)?
17 A. Yes.
18 Q. And do you see the kinetic energy
19 levels associated with those two types of airsoft
20 guns?
21 A. Yes.
22 Q. Can you tell me what they are?

1 A. The range of kinetic energies listed
2 for spring-type airsoft guns is 0.681 through 1.124.
3 The range of kinetic energy for airsoft gun
4 pneumatic-type is 0.681 through 1.850. The units
5 for all of those numbers is joules, or just
6 capital J.
7 Q. Do you have any reason to believe that
8 an airsoft gun ammunition with those energy levels
9 could penetrate a human abdomen?
10 A. That's not very specific. In this
11 particular case, it penetrated the skin and became
12 lodged beneath the skin. So if you're talking about
13 the skin of the abdomen, yes.
14 If you're talking about the
15 musculature under the skin and before the abdominal
16 cavity, it is not my experience or familiarity with
17 the epidemiologic literature that airsoft pellets
18 are likely to do that. But that's not from this
19 article.
20 MR. DARBY: Okay. Let's take a
21 ten-minute break. I might be about done.
22 MR. COMACK: All right. Thank you.

1 THE REPORTER: We're off the record.
2 (Recess from the record.)
3 THE REPORTER: We're back on the
4 record.
5 BY MR. DARBY:
6 Q. Okay. Dr. Courtney, just to confirm,
7 did you talk to anybody about the substance of your
8 testimony during the break?
9 A. No.
10 Q. Okay. Dr. Courtney, thank you for
11 your time.
12 MR. DARBY: I have no further
13 questions on cross, subject to recross, if
14 there is redirect.
15 MR. COMACK: Dr. Courtney, I have a
16 few questions. I don't think it will be more
17 than five to ten minutes.
18 THE WITNESS: Okay.
19 EXAMINATION
20 BY MR. COMACK:
21 Q. And just before I start, did I talk to
22 you about any questions that I might be asking you?

1 A. No.
2 Q. Okay. And I meant during the last
3 break --
4 A. Not at all.
5 Q. -- or today during the deposition.
6 No?
7 A. No.
8 Q. Let's take a look at Exhibit 1044 in
9 your declaration. You can choose whichever one you
10 want.
11 A. Okay.
12 Q. Does Exhibit 1044 discuss projectiles
13 made from superabsorbent polymers?
14 A. No.
15 Q. Does this article discuss projectiles
16 that exploded the mushy parts on impact?
17 (The reporter seeks clarification.)
18 BY MR. COMACK:
19 Q. Does this article discuss projectiles
20 that explode into mushy parts on impact?
21 A. No, my impression was that none of
22 these projectiles separated into multiple pieces at

1 all.
2 Q. Now let's go to your declaration. But
3 keep that open because I'm going to ask you a
4 question about Exhibit 1044, but I also need you to
5 look at your declaration, which is Exhibit 1037. If
6 you give me a moment to get there.
7 Okay. Are you in paragraph 44? Can
8 you turn to that?
9 A. Okay. I'm at paragraph 44 of my
10 declaration.
11 Q. Okay. I'm just going to read that
12 paragraph to you.
13 It says, Quantitative measurements
14 demonstrating that a deformable tip on a launched
15 toy projectile reduced the peak force and transfer
16 of kinetic energy to the target surface were
17 published in the scientific literature at least as
18 early as 1979 (through the physics principle -- I'm
19 sorry (though the physics principle involved go back
20 to the time of Isaac Newton). And there you cite
21 Exhibit 1044.
22 Do you see that?

1 A. I see that.
2 Q. And then you go on in the next
3 sentence to say, "In this early research assessing
4 the eye injury potential of propelled objects,
5 Berger observed further that a 'completely flexible
6 missile' would bend on impact, and the energy
7 expended in bending was no longer available to be
8 applied to the target, thus reducing the maximum
9 force compared to a similar but rigid projectile."
10 Do you see that?
11 A. I see that.
12 Q. And then you cite Exhibit 1044,
13 page 17; correct?
14 A. Yes. And that would be page 17 within
15 the article itself.
16 Q. Right. So I went to page 17 of the
17 article, and I didn't see that language. And I just
18 wanted to ask you if you've made a mistake. And so
19 can you turn to page 18, please? And feel free to
20 look at 17, as well.
21 In the left-hand column -- give me one
22 minute. Yes, okay, the left-hand column, maybe six

1 or seven lines down, there's a sentence that starts
2 "Figure 20f."
3 Do you see that?
4 A. Yes, and you are correct. So the
5 paragraph that contains that information begins on
6 page 17, but the part that I quote and reference is
7 within that paragraph on page 18. That's the
8 inherent page 18 of the article.
9 Q. Okay. So you're correct in your
10 declaration, then, to refer to page 18 instead of
11 page 17 of Exhibit 1044, when you talk about it in
12 paragraph 44; is that correct?
13 A. Yes, I was not aware of that
14 previously. So thank you.
15 Q. All right. So that sentence says,
16 "Figure 20f is an example of a completely flexible
17 missile, which tends to bend on impact"; correct?
18 A. Yes.
19 Q. And then below that, there's a
20 sentence that says, quote -- you have to go to the
21 last sentence in that paragraph.
22 It says, "The energy expended in

1 bending is no longer available for deforming the
2 pad, hence the resulting maximum force is less than
3 it would be if the missile were rigid."
4 Do you see that?
5 A. Correct. And here the pad refers to
6 the target he was using.
7 Q. Okay. Is this -- is this passage
8 comparing a completely flexible missile to a rigid
9 missile?
10 A. Yes.
11 Q. What conclusion do you draw from this
12 comparison?
13 A. That the flexibility of the missile
14 was a mechanism for managing the kinetic energy and
15 reducing the kinetic energy that was applied to the
16 target, as I said in paragraph 44.
17 Q. Thank you.
18 Let's go to Exhibit 1033 from your
19 declaration -- that you said in your declaration.
20 A. Okay.
21 Q. Do you recall Mr. Darby asking you
22 about this exhibit?

1 A. Yes, this is the article by Tsui,
2 T-S-U-I.
3 Q. Take a look at the very first page.
4 The right-hand column, there's a heading that says
5 "Case."
6 Do you see that?
7 A. Yes.
8 Q. I'm going to read you what it says.
9 It says --
10 MR. DARBY: Objection -- objection,
11 out of scope.
12 BY MR. COMACK:
13 Q. It says, "A 15-year-old boy presented
14 to a local emergency department (ED) in
15 February 2010 for a painful swelling on the nose for
16 one week. He participated in a war game before the
17 onset of symptom. He recalled that he received
18 shootings over his face for several times during the
19 game and he suspected that the painful swelling was
20 related to the game."
21 Do you see that?
22 A. I see that.

1 Q. Okay. And then if you go to the last
2 sentence on that paragraph, it says, "There was no
3 discharge from the nodule and the surrounding skin
4 was normal with no sign of inflammation (Figure 1)."
5 Do you see that?
6 A. I see that.
7 Q. Now, if you could turn to the next
8 page. In the left-hand column, page 2 of 4, it
9 shows Figure 1.
10 Do you see that?
11 A. Yes.
12 Q. Is that the Figure 1 that was
13 referenced in the passage we read on the prior page?
14 A. Yes.
15 Q. And what does Figure 1 show to you?
16 MR. DARBY: Objection, out of scope.
17 Counsel, this is not material that was
18 addressed during the cross.
19 MR. COMACK: Oh, no, it was. It's
20 going to the point that you were making about
21 the passage on the next page. You had asked
22 him -- you had asked Dr. Courtney about BB

1 guns and whether this article relates to
2 airsoft or metal BB guns, and I'm exploring
3 that topic with her since you've opened the
4 door on that.
5 MR. DARBY: Right. We did not talk
6 about Figure 1 or whatever you're going into
7 at this point, nor did we talk about the text
8 that you just read aloud into the
9 declaration. And that's also not cited in
10 the declaration, I don't believe, or quoted
11 in the declaration.
12 MR. COMACK: I'm just -- she's citing
13 the article, and I'm entitled to explore it.
14 If you want to object, you can object, but
15 I'm going to continue with my questioning.
16 BY MR. COMACK:
17 Q. Okay. So, Dr. Courtney --
18 MR. COMACK: I'm sorry, Eileen, can
19 you read back the last question? I lost
20 where I was.
21 (Record read.)
22

1 BY MR. COMACK:
2 Q. And you can answer.
3 A. I would rely on the figure caption
4 that says it's showing two things on this patient's
5 face, one being they use the word "erythematous
6 nodule," which means a reddish-color nodule, where
7 the BB pellet was embedded. And they're comparing
8 it to the appearance of an acne wound that is not
9 from a BB.
10 Q. Okay. And underneath the image, the
11 caption in Figure 1, it says, "(A) The erythematous
12 nodule where the BB pellet was embedded."
13 Do you see that?
14 A. Yes.
15 Q. Now, let's go back to the prior page,
16 page 1 of Exhibit 1033, last sentence, it says, "An
17 ultrasound examination was performed in the ED."
18 Do you see that?
19 A. I'm not there yet.
20 Q. Okay. So go to the very bottom of the
21 right-hand column.
22 A. Yes.

Q. The very last --

A. Oh, I see. I see.

Q. It starts, "An ultrasound examination was," and then on the next page, it says, "performed in the ED."

Do you see that?

A. Yes.

Q. And then if you go to the -- you skip the next sentence and you jump to the one right after it. It says, "A foreign body of size 6 milliliter in diameter was revealed just underneath the skin. The foreign body was spherical in shape and composing of a hyper-echoic surface with a hyper-echoic center. Reverberation artifacts were also observed in Figure 2. These features were compatible with a BB gun pellet."

Do you see that?

A. Yes.

Q. Okay. Now, on the same page there's a Figure 2 in the right-hand column.

Do you see that?

A. Yes.

1 Q. Is that Figure 2 the figure that the
2 passage in the left-hand column on page 2 is
3 referring to that we just read?
4 A. Yes, it's a still image from an
5 ultrasound scan.
6 Q. And if you could just read the caption
7 underneath -- you know, that goes with Figure 2 in
8 the right-hand column.
9 A. Ultrasound scan of the erythematous --
10 excuse me, erythro -- erythromatous nodule showing a
11 hyper-echoic surface with a hypo-echoic centre.
12 Reverberation artifacts are also observed [sic].
13 Q. And what do you understand Figure 2 to
14 be showing?
15 A. An example still image of what they
16 observed in their ultrasound scan of what turned out
17 to be a B -- what they're calling a BB pellet.
18 Q. So just to be clear, is Figure 2 an
19 ultra -- ultrasound scan of the patient shown in
20 Figure 1?
21 A. Yes.
22 Q. Is that ultra [sic] scan made in

1 area A in Figure 1?
2 A. Yes.
3 Q. Now, if we can go to the very next
4 sentence, staying on page 2 of 4, where it says,
5 "The patient received local wound exploration and
6 the BB gun pellet was removed from Figure 3. The
7 wound was treated with daily dressing and healed one
8 week later uneventfully."
9 Do you see that?
10 A. Yes.
11 Q. And then if you look at the right-hand
12 column, there's a Figure 3.
13 A. Yes.
14 Q. How does that Figure 3 correlate to
15 the passage I just read you on page 2?
16 A. They're identifying the spherical
17 object depicted in Figure 3 as being the BB gun
18 pellet removed from the wound.
19 Q. Based on the image shown, do you have
20 an understanding of what type of BB gun pellet is
21 shown in Figure 3?
22 A. It is consistent with an airsoft

1 pellet.
2 Q. And why do you say that?
3 A. It -- well, they reported it
4 6 milliliters in diameter, and it's white. And they
5 describe it as being -- well, it doesn't appear to
6 be metallic, I guess is all I'm saying. And the
7 ultrasound scan confirms that it wasn't metallic
8 also.
9 Q. Okay. If we could turn to page 3 of
10 4.
11 A. Yeah.
12 Q. I'm going to ask you about the passage
13 that Mr. Darby read to you, and so it's the first
14 full paragraph.
15 A. Okay.
16 Q. A BB gun -- I'm sorry, on the left
17 column. It says, A BB gun-related injury could be
18 defined as a gunshot wound from a pistol or rifle
19 that fires a ball pellet. Air compression is
20 operated by a spring or pump action mechanism; or by
21 a carbon dioxide cartridge. Although most BB guns
22 fire low-velocity missiles, some can still shoot to

1 penetrate the abdomen, thorax, facial sinuses and
2 even the cranium. A pellet with a velocity of
3 45 meters per second can penetrate the human skin
4 and a velocity reaching 60 meters per second can
5 fracture the bone.
6 Do you see that?
7 A. I see that.
8 Q. Now, if we go back to Figure 2 on the
9 prior page, does that show a pellet that has
10 penetrated the human skin?
11 A. It penetrated the skin and became
12 lodged beneath the skin.
13 MR. COMACK: I have nothing further at
14 this time.
15 MR. DARBY: Okay. I'm going to object
16 and move to strike the entirety of the
17 discussion regarding Exhibit 1033. And I'll
18 need a few minutes to determine if I want to
19 do a recross.
20 MR. COMACK: Okay. I just want to
21 respond to that. I obviously oppose that
22 objection, and will object to any arguments

1 you make based on that objection that this
2 article doesn't relate to airsoft.
3 Okay. Should we go off the record?
4 MR. DARBY: Yeah, off the record.
5 THE REPORTER: We're off the record.
6 (Recess from the record.)
7 THE REPORTER: Okay. Back on the
8 record.
9 FURTHER EXAMINATION
10 BY MR. DARBY
11 Q. Okay. Dr. Courtney, welcome back.
12 Just to confirm, did you speak with anybody about
13 the subject matter of your testimony today during
14 the break?
15 A. No, we discussed reading and signing
16 and that -- I mean, so that's related, but that's
17 all.
18 Q. Okay. Counsel on redirect asked you
19 some questions about Exhibit 1033.
20 Do you remember that?
21 A. Yes.
22 Q. Okay. I'm going to ask you some

1 questions about that exhibit, as well. So if you
2 can just get it out, and let me know when you have
3 it handy.
4 A. Okay.
5 Q. Okay. And part of the questioning
6 just now was relating to the details under the
7 heading "Case" that appears on page 1 and page 2 of
8 Exhibit 1033.
9 Do you recall that?
10 A. Yes.
11 Q. And do you agree that these are the
12 details under the heading "Case" from a 15-year-old
13 boy who was shot with a BB pellet?
14 A. Well, as we discussed earlier, the
15 authors are including airsoft pellets under that
16 heading. And so they describe their identification
17 of the projectile, their extraction of the
18 projectile, the fact that it did not have metallic
19 qualities in the ultrasound imaging, and that it
20 turned out to be this white spherical pellet
21 consistent with airsoft.
22 Q. Okay. Can we just call it the

1 projectile? So we don't have to bicker about
2 whether it's a --
3 A. Yes.
4 Q. -- airsoft or a metal? Okay.
5 And do you see in the case details any
6 indication of the mass of this projectile?
7 A. Not in that section, no.
8 Q. Do you see any details in this section
9 regarding the velocity at which the projectile was
10 fired?
11 A. No.
12 Q. Do you see any details in this section
13 regarding the kinetic energy or muzzle energy of the
14 projectile?
15 A. No.
16 Q. Are you aware of those details
17 anywhere in this document?
18 A. Not of this specific projectile. They
19 do report ranges that we discussed earlier today in
20 Table 1.
21 MR. DARBY: Okay. No further
22 questions.

1 MR. COMACK: I have no questions,
2 either. I think we're done.
3 THE REPORTER: Okay. We are off the
4 record. The examination concluded at
5 3:03 p.m.
6 (Examination concluded. Off the
7 record at 3:03 p.m.)
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1 STATE OF NEW YORK)
ss:
2 COUNTY OF WESTCHESTER)
I, EILEEN MULVENNA, CSR/RMR/CRR/RDR, a
3 Certified Court Reporter, Registered Merit Reporter, Certified Realtime Reporter, Registered Diplomate
4 Reporter, and Notary Public in and for the State of New York, do hereby certify:
5 That I reported the taking of the deposition of the witness, DR. AMY COURTNEY,
6 commencing on the 10th day of April, 2025, at the hour of 9:58 a.m.
7 That prior to being examined, the witness was duly sworn by me to testify to the truth, the
8 whole truth, and nothing but the truth.
That I thereafter transcribed my said
9 shorthand notes into typewriting and that the typewritten transcript of said deposition is a
10 complete, true and accurate transcription of my said shorthand notes taken down at said time, and
11 that a request has been made to review the transcript.
12 I further certify that I am not a relative
13 or employee of an attorney or counsel of any of the
14 parties, nor a relative or employee of any attorney
15 or counsel involved in said action, nor a person
16 financially interested in the action.
17 IN WITNESS WHEREOF, I have hereunto
18 set my signature this 10th day of April, 2025.
19
20
21
22 EILEEN MULVENNA, CSR/RMR/CRR

1 Dr. Amy Courtney, c/o
2 Amster, Rothstein & Ebenstein LLP
3 405 Lexington Avenue
4 New York, New York 10174
5
6 Case: Prime Time Toys LLC, et al. v. Spin Master, Inc.
7 Date of deposition: April 10, 2025
8 Deponent: Dr. Amy Courtney
9
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