

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

3D Systems Corporation et al.,

Petitioner

v.

Intrepid Automation, Inc.,
Patent Owner.

Inter Partes Review (IPR) Proceeding Number: 2025-01242
U.S. Patent No. 11,338,511

Exhibit Number: **Exhibit 1034 for Petitioner**

Exhibit Title: Deposition Transcript of David Rosen, Ph.D. dated May 26,
2026, with errata

Date of Filing: June 15, 2026

Filed By: Petitioner 3D Systems Corporation et al.,

Description of Exhibit: Deposition Transcript of David Rosen, Ph.D. dated
May 26, 2026, with errata cited in Petitioner's Reply of U.S. Patent No.
11,338,511



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Transcript of David Rosen, Ph.D.

Date: May 26, 2026

Case: 3D Systems Corporation, et al. -v- Intrepid Automation, Inc. (PTAB)

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Transcript of David Rosen, Ph.D.
Conducted on May 26, 2026

1 (1 to 4)

1 UNITED STATES PATENT AND TRADEMARK OFFICE 2 BEFORE THE PATENT TRIAL AND APPEAL BOARD 3 ----- 4 3D SYSTEMS CORPORATION AND 3D SYSTEMS, INC., 5 Petitioner, 6 7 v. 8 9 INTREPID AUTOMATION, INC., 10 Patent Owner. 11 ----- 12 IPR2025-01241 13 U.S. Patent No. 11,014,310 14 -and- 15 IPR2025-01242 16 U.S. Patent No. 11,338,511 17 ----- 18 19 REMOTE DEPOSITION of DAVID ROSEN, Ph.D. 20 Tuesday, May 26, 2026 21 5:03 p.m. CST 22	3 1 The deposition of DAVID ROSEN, Ph.D., held 2 remotely pursuant to notice before Michelle M. 3 Yohler, CSR, RMR, CRR, a certified shorthand 4 reporter, CSR No. 84-4531. 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22
2 1 Job No.: 633059 2 Pages: 1 - 106 3 Reported By: Michelle M. Yohler, CSR, RMR, CRR 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22	4 1 A P P E A R A N C E S 2 3 ON BEHALF OF THE PETITIONER: 4 MR. BEN ROXBOROUGH 5 MAYNARD NEXSEN PC 6 1700 North Lincoln Street, Suite 17 7 Denver, Colorado 80203 8 broxborough@maynardnexsen.com 9 -and- 10 JOHN ZIMMER, Ph.D. 11 MAYNARD NEXSEN PC 12 227 West Trade Street, Suite 2300 13 Charlotte, North Carolina 28202 14 704.339.0304 15 jzimmer@maynardnexsen.com 16 17 18 19 20 21 22 (Continued)

Transcript of David Rosen, Ph.D.
Conducted on May 26, 2026

2 (5 to 8)

5 1 A P P E A R A N C E S C O N T I N U E D 2 3 O N B E H A L F O F T H E P A T E N T O W N E R : 4 M R . N A T H A N P . S P O R T E L 5 M I L L E R , J O H N S O N , S N E L L & C U M M I S K E Y , P . L . C . 6 4 5 O t t a w a A v e n u e S W , S u i t e 1 1 0 0 7 G r a n d R a p i d s , M i c h i g a n 4 9 0 0 7 8 6 1 6 . 8 3 1 . 1 7 0 0 9 s p o r t e l n @ m i l l e r j o h n s o n . c o m 10 11 12 A L S O P R E S E N T : 13 M r . K y S h a n k l i n , T e c h n i c i a n 14 15 16 17 18 19 20 21 22	7 1 E X H I B I T S 2 N o . 8 J u l y 1 6 t h , 2 0 2 5 D e c l a r a t i o n o f 3 Y o n g C h e n , P h . D 1 5 4 N o . 9 M a r c h 1 9 , 2 0 2 6 D e c l a r a t i o n o f 5 D a v i d R o s e n , P h . D . i n I P R 6 2 0 2 5 - 1 2 4 1 1 5 7 N o . 1 0 M a r c h 1 9 , 2 0 2 6 D e c l a r a t i o n o f 8 D a v i d R o s e n , P h . D . i n I P R 9 2 0 2 5 - 1 2 4 2 1 5 10 N o . 1 1 I n t r e p i d ' s R e s p o n s e i n 11 I P R 2 0 2 5 - 0 1 2 4 1 1 5 12 N o . 1 2 I n t r e p i d ' s R e s p o n s e i n 13 I P R 2 0 2 5 - 0 1 2 4 2 1 5 14 N o . 1 3 L i n k e d I n P r o f i l e o f B e n W y n n e 1 6 15 N o . 1 4 S h k o l n i k R e f e r e n c e - P a t e n t ' 1 4 2 1 6 16 N o . 1 5 I n t e r n a t i o n a l P a t e n t A p p l i c a t i o n 17 W O 2 0 1 7 / 1 5 4 5 6 4 A 1 1 6 18 N o . 1 6 P a t e n t A p p l i c a t i o n P u b l i c a t i o n 19 N u m b e r 2 0 1 7 / 0 1 2 6 7 9 1 7 20 21 22
6 1 E X A M I N A T I O N S 2 W I T N E S S P A G E 3 D A V I D R O S E N , P H . D . 4 B y M r . R o x b o r o u g h 8 5 B y M r . S p o r t e l 1 0 0 6 7 8 E X H I B I T S 9 E X H I B I T S P A G E 10 N o . 1 M a r c h 1 0 t h , 2 0 2 6 T r a n s c r i p t o f 11 Y o n g C h e n , P h . D 1 1 12 N o . 2 N o t i c e o f D e p o s i t i o n o f D r . D a v i d 13 R o s e n 1 1 14 N o . 3 ' 3 0 1 P a t e n t 1 3 15 N o . 4 ' 5 1 1 P a t e n t 1 3 16 N o . 5 P e t i t i o n f o r I n t e r P a r t e s R e v i e w 17 i n I P R 2 0 2 5 - 0 1 2 4 1 1 4 18 N o . 6 P e t i t i o n f o r I n t e r P a r t e s R e v i e w 19 I P R 2 0 2 5 - 0 1 2 4 2 1 4 20 N o . 7 J u l y 3 , 2 0 2 5 D e c l a r a t i o n o f Y o n g 21 C h e n , P h . D 1 4 22 (C o n t i n u e d)	8 1 P R O C E E D I N G S 2 (W H E R E U P O N , t h e w i t n e s s w a s d u l y s w o r n .) 3 M R . R O X B O R O U G H : B e n R o x b o r o u g h f r o m 4 M a y n a r d N e x s e n f o r p e t i t i o n e r , 3 D S y s t e m s , a n d 5 w i t h m e i s J o h n Z i m m e r . 6 M R . S P O R T E L : N a t h a n S p o r t e l o n b e h a l f o f 7 p a t e n t o w n e r , I n t r e p i d A u t o m a t i o n . 8 D A V I D R O S E N , P h . D . , 9 c a l l e d a s a w i t n e s s h e r e i n , h a v i n g b e e n f i r s t d u l y 10 s w o r n , w a s e x a m i n e d a n d t e s t i f i e d a s f o l l o w s : 11 E X A M I N A T I O N 12 B Y M R . R O X B O R O U G H : 13 Q D r . R o s e n , m y n a m e i s B e n R o x b o r o u g h . 14 T h a n k y o u a g a i n f o r b e i n g h e r e . I r e p r e s e n t 15 3 D S y s t e m s i n t h e I P R s a g a i n s t I n t r e p i d , b e i n g I P R 16 n u m b e r s I P R 2 0 2 5 - 0 1 2 4 1 a n d I P R 2 0 2 5 - 0 1 2 4 2 . 17 I ' m h e r e t o d a y t o a s k y o u q u e s t i o n s a b o u t 18 b o t h y o u r d e c l a r a t i o n s r e l e v a n t t o t h e ' 3 0 1 p a t e n t 19 a n d t h e ' 5 1 1 p a t e n t . 20 I t h i n k i t ' s b e s t w e s o r t o f s e t g r o u n d 21 r u l e s . I ' m n o t s u r e h o w m u c h e x p e r i e n c e y o u ' v e 22 h a d w i t h d e p o s i t i o n s b e f o r e , b u t I t e n d t o r e p e a t

Transcript of David Rosen, Ph.D.
Conducted on May 26, 2026

3 (9 to 12)

9 1 these ground rules regardless of past experience. 2 And they're really pretty much predicated 3 on common sense, and that is: Please give verbal 4 answers. The nodding or shaking of a head just 5 isn't going to be picked up by Michelle on the 6 transcript, and so we need a clean yes-or-no 7 answer; if that's fair. 8 We -- 9 A Yes. 10 Q We agree not to interrupt each other or 11 talk over each other, which, again, hopefully is 12 fair to you. It's fair to me. 13 A Okay. Yes. 14 Q And if you don't understand a question -- 15 what we'll do is have a break after, say, 45 to 16 50 minutes. Mindful it's early morning for you, 17 it's 4:00 p.m. here for me in Colorado, but folks 18 on the East Coast also, so we've got the full 19 spectrum. 20 The key thing, though, is if you don't 21 understand a question, let me know, but if you 22 answer something, I'm going to assume that you do	11 1 MR. ROXBOROUGH: Neither party will object 2 to the admissibility of this transcript because 3 the deposition is taken outside of the United 4 States; and by that I mean Dr. Rosen is currently 5 located outside the United States. 6 MR. SPORTEL: Agreed. 7 MR. ROXBOROUGH: And given the 8 substantially similar subject matter between the 9 challenged patents, the parties agree that this 10 deposition will be applicable and usable in both 11 IPR proceedings, that is IPR 2025-01241 and 12 IPR 2025-01242. 13 I'd like to enter two exhibits into the 14 record. Exhibit 1 being the deposition transcript 15 of Dr. Yong Chen dated March 10th, 2026. 16 (WHEREUPON, Rosen Deposition Exhibit No. 1 17 was marked for identification.) 18 MR. ROXBOROUGH: And Exhibit 2, the 19 deposition notices in IPR 2025-01241 and 20 IPR 2025-01242, both dated May 13th, 2026. 21 (WHEREUPON, Rosen Deposition Exhibit No. 2 22 was marked for identification.)
10 1 know the answer. So that's an important ground 2 rule. 3 And, just to be sure, is there any reason 4 you can't testify fully and accurately today? 5 A No. No, I'm ready to go. 6 Q Great. Dr. Rosen, we also addressed some 7 stipulations in the previous deposition of 8 Dr. Chen. 9 MR. ROXBOROUGH: And, Nathan, I assume 10 that Jeff has given the heads-up on these, but I 11 think it's best we put them into the record that 12 the parties agree that all the stipulations, and 13 accommodations afforded to Intrepid during 14 Dr. Chen's deposition would equally apply to 15 today's deposition, and these have been agreed to. 16 And I'll just -- the three primary 17 stipulations were, Nathan, I guess if you could 18 respond to these, that would be best: Neither 19 party will object to the admissibility of this 20 transcript based on the proceeding taking place 21 remotely? 22 MR. SPORTEL: Agreed.	12 1 BY MR. ROXBOROUGH: 2 Q Dr. Rosen, I want to turn to your 3 preparation for -- relating to your declarations. 4 In terms of your preparation, what documents did 5 you review today? 6 A Well, the documents include both the 7 Intrepid patents in '301/'511, Dr. Chen's 8 declarations, the transcript of Dr. Chen's 9 deposition. Let's see... 10 My declarations, if I didn't say that. 11 Q Yes. 12 A That is about it. 13 Q Certainly. And did you speak to anyone -- 14 A (Indiscernible.) 15 Q -- did you speak to anyone other than your 16 attorney in preparing for today's deposition? 17 A I did not. 18 Q Did you bring any documents with you -- or 19 maybe I phrased it -- we can truncate this. I 20 understand from Jeff and Nathan that you have a 21 binder of documents, but those binder of documents 22 are actually on a second monitor; is that correct?

Transcript of David Rosen, Ph.D.
Conducted on May 26, 2026

4 (13 to 16)

13 1 A That is correct, yes. 2 Q Right. There was probably two or three 3 documents you didn't mention just then, and that 4 included the prior art. 5 Just so we've got it on the record, I'm 6 going to read -- 7 A Yes. 8 Q -- the documents -- and that's -- 9 A Go ahead. 10 Q That's fine, but I think I'm just going to 11 read everything into the record so we've got it 12 and can refer to it during the deposition itself. 13 And so I'd like to enter Exhibit 3, being 14 U.S. Patent Number, 11,014,301. This will be 15 called the '301 Patent. 16 (WHEREUPON, Rosen Deposition Exhibit No. 3 17 was marked for identification.) 18 MR. ROXBOROUGH: Exhibit 4, U.S. Patent 19 Number 11,338,511. This will be called the '511 20 patent. 21 (WHEREUPON, Rosen Deposition Exhibit No. 4 22 was marked for identification.)	15 1 (WHEREUPON, Rosen Deposition Exhibit No. 8 2 was marked for identification.) 3 MR. ROXBOROUGH: Exhibit 9, Dr. David 4 Rosen's declaration in IPR 2025-1241 dated 5 March 19, 2026. 6 (WHEREUPON, Rosen Deposition Exhibit No. 9 7 was marked for identification.) 8 MR. ROXBOROUGH: Exhibit 10, Dr. Rosen's 9 declaration in IPR 2025-01242 dated same date. 10 (WHEREUPON, Rosen Deposition Exhibit 11 No. 10 was marked for identification.) 12 MR. ROXBOROUGH: Exhibit 11, Intrepid's 13 response in IPR 01241. 14 (WHEREUPON, Rosen Deposition Exhibit 15 No. 11 was marked for identification.) 16 MR. ROXBOROUGH: Exhibit 12, Intrepid's 17 response in IPR 2025-01242. 18 (WHEREUPON, Rosen Deposition Exhibit 19 No. 12 was marked for identification.) 20 MR. ROXBOROUGH: Exhibit 13, Ben Wynne's, 21 CEO of Intrepid, LinkedIn biography profile. 22
14 1 BY MR. ROXBOROUGH: 2 Q And, Dr. Rosen, I'll sometimes use the 3 phrase "patents-in-suit," and when I use that 4 phrase that will be in reference to both the '301 5 and the '511 patent. 6 MR. ROXBOROUGH: I'd like to enter 7 Exhibit 5 being the petition in IPR 2025-01241 8 dated July 8th, 2025. 9 (WHEREUPON, Rosen Deposition Exhibit No. 5 10 was marked for identification.) 11 MR. ROXBOROUGH: Exhibit 6, the petition 12 in IPR 2025-01242 dated July 18, 2025. 13 (WHEREUPON, Rosen Deposition Exhibit No. 6 14 was marked for identification.) 15 MR. ROXBOROUGH: Exhibit 7, Dr. Yong 16 Chen's declaration in IPR 2025-1241 dated July 3, 17 2025. 18 (WHEREUPON, Rosen Deposition Exhibit No. 7 19 was marked for identification.) 20 MR. ROXBOROUGH: Exhibit 8, Dr. Yong 21 Chen's declaration in IPR 2025-1242 dated 22 July 16th, 2025.	16 1 (WHEREUPON, Rosen Deposition Exhibit 2 No. 13 was marked for identification.) 3 MR. ROXBOROUGH: Exhibit 14, U.S. Patent 4 Number 8,666,142. 5 BY MR. ROXBOROUGH: 6 Q And I'll refer to that as the Shkolnik 7 patent, Dr. Rosen's, the '142 patent as Shkolnik, 8 that's one of the prior art references. 9 (WHEREUPON, Rosen Deposition Exhibit 10 No. 14 was marked for identification.) 11 MR. ROXBOROUGH: Exhibit 15 is an 12 International Patent Application WO 2017/154564 A1 13 translated to English and including declaration of 14 Eric Vance, the translator. And I'll refer to 15 that as the Sekine reference. 16 (WHEREUPON, Rosen Deposition Exhibit 17 No. 15 was marked for identification.) 18 MR. ROXBOROUGH: And Exhibit 16, U.S. 19 Patent Application Publication Number 2017/012679. 20 And that will be referred to as the Greene -- as 21 the Greene exhibit. 22

17 1 (WHEREUPON, Rosen Deposition Exhibit 2 No. 16 was marked for identification.) 3 MR. ROXBOROUGH: There's a long list 4 there, but that is it in terms of the record and 5 the exhibits that are in the record. There should 6 be 16 in total. 7 Ky, would you be able to confirm that 8 there's 16 at your end. 9 THE TECHNICIAN: Confirmed, and there's 16 10 in the chat as well. 11 MR. ROXBOROUGH: Thank you very much. 12 BY MR. ROXBOROUGH: 13 Q Dr. Rosen, I'd like to turn to your 14 education and employment. And, just for the 15 record, if you could state your full name, current 16 position, and employer. 17 A David William Rosen. I'm a principal 18 scientist at A*STAR, the Agency for Science, 19 Technology and Research in Singapore. 20 Q And you presently reside in Singapore, I 21 take it? 22 A I currently reside in Singapore, yes.	19 1 A I don't think so. And I'm hedging there a 2 little bit. So we actually had a long 3 relationship with 3D Systems. We had an industry 4 consortium at Georgia Tech; 3D Systems was a 5 founding member of that. But all of the -- we 6 basically ran on donations, and so 3D Systems 7 would make annual donations to us, but I don't 8 think there was ever a contract in place. 9 Q I see. And so there was a relationship of 10 some sort, there was collaboration between 11 3D Systems and Georgia Tech? 12 A Right. 13 Q And during your tenure, did that -- did 14 that collaboration ever come to an end during your 15 tenure at geometric -- at -- yeah, at Georgia 16 Tech? 17 A Yeah, we disbanded the industry consortium 18 about 2005. 19 Q And what was the primary reason for that 20 disbanding? 21 A A lack of industry interest in 22 participating in the consortium.
18 1 Q At a high level, can you describe your 2 educational background over the last 20 years? 3 A Well, so I've got bachelor's, master's, 4 and Ph.D. degrees. They're more than 20 years 5 old. 6 Q Sure. 7 A But for the -- most of the last 20 years, 8 I was a professor at Georgia Tech in mechanical 9 engineering, and about three and a half, almost 10 four years ago, I moved to Singapore to take this 11 job at A*STAR. 12 Q And since 2015 in particular, who have 13 been your primary employers? 14 A Georgia Tech and A*STAR and Singapore 15 University of Technology and Design. I was there 16 two years full-time and on a leave of absence from 17 Georgia Tech. 18 Q And during your career, have you ever been 19 employed by 3D Systems? 20 A I have not, no. 21 Q Have you ever engaged in a contract with 22 3D Systems?	20 1 Q Dr. Rosen, how many articles, papers, and 2 presentations have you published on additive 3 manufacturing? 4 A In terms of journal articles, probably 5 about 100; conference papers, maybe 100, 120; 6 presentations 150, 200, something in that range. 7 Q And how many times have you served as an 8 expert witness in patent cases, if at all? 9 A I think this is about the sixth or seventh 10 time I've served. 11 Q And have you ever worked on any patent 12 litigation cases as an expert or consultant 13 involving similar technology to the 14 patents-in-suit; i.e. the '301 and '511? 15 I say "similar technology," so it may 16 include the '301 and the '511, but it could be 17 broader than that. 18 MR. SPORTEL: Object to form. 19 THE WITNESS: Nathan, I'm sorry, did you 20 say something? 21 MR. SPORTEL: I just said object to form. 22 Sorry.

21 1 THE WITNESS: Okay. 2 BY MR. ROXBOROUGH: 3 Q You can answer the question. Or I can 4 repeat the question, Dr. Rosen. 5 A No, you don't need to. The short answer 6 is no. The patents that I was involved with, some 7 of them dealt with additive manufacturing but not 8 this particular technology at all. 9 Q And can you give me an example of two of 10 the most recent cases where you were an expert? 11 A Let's see here. My computer's a little 12 slow. 13 I'm just trying to get my mind on what 14 this is about. Yeah, two of them were what we 15 call material extrusion kind of technology, FDM, 16 deposition modeling, and so, you know, Stratasys 17 invented that technology. 18 Two of the more recent ones were related 19 to, again, that material extrusion technology. 20 Q And can you remember the specific parties 21 that were involved in those proceedings, 22 Dr. Rosen?	23 1 Dr. Rosen, but how many papers, patents, and 2 presentations have you specifically applied that 3 directly relate to the '301 patent and the 4 '511 patent? 5 And when I say that, I'm talking primarily 6 about the four filters that we'll get to in more 7 detail shortly, but you mentioned that, you know, 8 there's 100 articles, 120 papers, and 150 9 presentations, 200 presentations; if you narrowed 10 that scope down specifically and tailored it more 11 closely to the filters in this case, how many 12 articles, papers, and presentations would have you 13 drafted? 14 MR. SPORTEL: Object to form. 15 BY MR. ROXBOROUGH: 16 Q You can answer the question, Dr. Rosen. 17 A So I think zero would be the answer on the 18 specifics in terms of the digital filters. 19 In terms of the broader technology of, 20 let's call it, mask projection, stereolithography 21 or, you know, vat photopolymerization with mask 22 projection, let's see, we probably had, like, 10
22 1 A Let's see. So, yeah, Markforged was one 2 of them. I don't know who the -- oh, yeah, 3 Continuous Composites. So those were the two 4 litigants: Markforged and Continuous Composites. 5 And then the other one involved 6 Stratasys -- oh, no, sorry. I was never -- that 7 one never took off. 8 The one before that -- so one of the other 9 technologies that I -- sorry. So, yeah, in terms 10 of serving as an expert witness, the other one was 11 on basically the design of lattice structures. 12 They would have been fabricated by additive 13 manufacturing, but I don't think that was terribly 14 important. But it was -- 15 Q I just need the -- the parties involved in 16 the litigation rather than the concepts. 17 A Yeah, so the parties were Waldemar Link 18 GmbH and Lima Corporation. 19 Q And you prepared and drafted expert 20 reports in both cases, correct? 21 A Yes, I did. 22 Q This question's a little bit more refined,	24 1 journal papers and maybe in the same order of 2 conference papers and presentations -- maybe a few 3 more presentations. Let's say 15 presentations 4 and 15 conference papers. 5 Q And is there a journal article that comes 6 to mind that would be the closest or a good 7 example if there was a specific name of one of 8 those articles that comes to mind? 9 A Yeah, so I would say the two papers that 10 we published back in the 2000s, 2006 or 2007, that 11 dealt with projection -- we did some early work 12 there on modeling of the mask projection process. 13 And so -- I'm just looking... 14 Yeah. Yeah. "Composition Zone Approach 15 to Avoid Z Errors in Mask Projection 16 Stereolithography Builds" would be the title of 17 one. 18 Q That was the 2006 paper? 19 A Yeah, that particular -- yeah, that one 20 was published in 2006. 21 Q And the 2007 paper? You mentioned there 22 was another?

25 1 A "Process Planning Method for Mask 2 Projection Micro Stereolithography" is the title 3 of that one. 4 Q Sure. In terms of, I guess, your 5 compensation for today, Dr. Rosen, I just wanted 6 to confirm, are you being paid today or -- for 7 your opinions to date? 8 A I will be paid today -- for today's time, 9 yeah. 10 Q And how many hours would you -- and that's 11 on an hourly rate, Dr. Rosen? 12 A Yes, that's what the arrangement is. 13 Q And what is that rate? 14 A I get \$300 an hour. 15 Q And is your income from this case or cases 16 dependent on the outcome of the proceedings? 17 A It is not. 18 Q Dr. Rosen, I want to look at just -- 19 address the scope of your opinion. Would you 20 agree that your opinions are limited to what is in 21 your declaration or declarations? 22 A I'm sorry. Is my opinion	27 1 Q Dr. Rosen's, in terms of the legal 2 principles upon which your declaration is based, I 3 want to turn to the concepts of anticipation and 4 obviousness. 5 And for anticipation, you understand that 6 a single prior art reference must disclose each 7 and every element of the claim in that reference, 8 correct? 9 A Correct. 10 Q In other words, if a patent discloses 11 elements A through D, then the prior art reference 12 must disclose each and every element, correct? 13 A Yes. Yes. 14 Q And this includes whether one skilled in 15 the art would reasonably understand from the prior 16 art reference that each and every element was 17 disclosed in that single reference? 18 A Yes. 19 Q And the elements do not need to be 20 described in the same or very same words as the 21 patent, of the '301 patent or the '511 patent, 22 correct?
26 1 relate -- limited -- 2 Q Limited. 3 A -- to what's in the declaration? 4 Like, I -- you're assuming I would have 5 opinions about things that I didn't put in the 6 declaration regarding this -- I'm not quite sure I 7 understand the intention -- 8 Q Well, maybe I'll put it in a different 9 way. 10 I guess, had you sought to challenge 11 Dr. Chen's opinions, you would have stated -- you 12 would have stated those opinions in your 13 declaration, correct? 14 A Yes, that's correct. 15 Q And when preparing your declarations, you 16 didn't conduct any independent experiments, 17 correct? 18 A That's correct. 19 Q And you relied solely on the materials 20 provided by counsel, number one, and your ordinary 21 knowledge of a person skilled in the art, correct? 22 A Correct.	28 1 A Correct. 2 Q For obviousness, Dr. Rosen, you understand 3 that the skilled artisan may use more than one 4 prior art reference to supply each and every 5 element of the patent, correct? 6 A Sorry. Can you ask that again? 7 Q Sure. Sure. So we're moving from 8 anticipation to the concept of obviousness. 9 And you understand that the skilled 10 artisan may use one or more prior art references 11 to supply each and every element of the patent? 12 A Yes. 13 Q That is, the skilled artisan can combine 14 known elements to invalidate a claim if a person 15 of ordinary skill in the art would have been 16 motivated to combine those elements, right? 17 A And that motivation, Dr. Rosen, can be 18 drawn from several factors, but one factor is 19 known problems; for example -- and I can pull it 20 up if you would like, but you may recall this 21 paragraph from Paragraph 36 of your declarations 22 where you state -- and, again, what I'm addressing

29 1 here is the motivation. 2 And in Paragraph 36 of your declaration, 3 you stated that the motivation can be drawn from 4 any problem known in the field, can provide a 5 reason for combining the prior art in the manner 6 claimed. 7 That is what you said, correct? 8 MR. SPORTEL: Counsel, I'm so sorry to 9 interrupt. Which declaration is this? Is this 10 the one directed to the '511 or the '301? 11 MR. ROXBOROUGH: The '301, and it's 12 Paragraph 36. And we can pull that up. 13 BY MR. ROXBOROUGH: 14 Q Unless you've got it there, Dr. Rosen. 15 A Yeah, I've got it here. 16 It says: "I further understand that in an 17 obviousness analysis, neither the motivation nor 18 the purpose of the patentee dictates. Rather, any 19 problem known in the field can provide a reason 20 for combining the prior art in the manner 21 claimed." 22 Yes, I just read that from my declaration.	31 1 MR. ROXBOROUGH: If we could pull up the 2 '301 patent and turn to claim 1, Ky. 3 THE TECHNICIAN: Stand by. 4 MR. ROXBOROUGH: You can turn effectively 5 to the last page where claim 1 is based. 6 Can we highlight from the word "gamma 7 adjustment," which is in line 60. 8 BY MR. ROXBOROUGH: 9 Q Dr. Rosen, is that -- I can see it on my 10 screen. It's still quite small, but is that -- 11 we're on the same page? 12 And when I talk about filters or the 13 filters -- the broad brushes that I just spoke 14 of -- 15 A Right. 16 Q -- I wanted to read these four filters -- 17 MR. ROXBOROUGH: Actually, if we can go up 18 one, Ky. 19 BY MR. ROXBOROUGH: 20 Q And I'll start at the word "an irradiance 21 mask," one of the filters is -- you would agree, 22 Dr. Rosen, that one of the filters is an
30 1 Q And, Dr. Rosen, when you prepared your 2 opinion, you did so from the perspective of a 3 person of ordinary skill in the art, correct? 4 A Correct. 5 Let me qualify that answer. Let me 6 qualify that answer. I also wrote the declaration 7 from the perspective of someone with many years of 8 experience in the additive manufacturing industry 9 and with this kind of technology. So my level of 10 understanding exceeds, I think, you know, someone 11 that you would call of ordinary skill in the art. 12 Q I see. Dr. Rosen, I'll turn to the 13 patents-in-suit. And you'd largely agree that 14 this case -- I'm using broad brushes here, but 15 you'd largely agree that this case is about four 16 filters referenced in the '301 patent and the 17 '511 patent, correct? 18 A Broadly, yes. Yes. 19 Q And you talk about filters in your 20 declaration, those filters in your declaration, 21 correct? 22 A Correct.	32 1 irradiance mask configured to normalize 2 irradiance, correct? 3 A Correct. 4 Q And I won't read it all, but the second 5 filter is the gamma adjustment mask, correct? 6 A Correct. 7 Q And the third is a warp correction filter 8 configuring to provide geometric correction, 9 correct? 10 A Correct. 11 Q And the fourth is an edge blending bar at 12 one or more sub-images, right? 13 A Correct. 14 Q You'd agree -- strike that. 15 Dr. Rosen, I'll be using these four terms 16 in shorthand, "normalize irradiance," "gamma 17 adjustment," "warp correction," and "edge 18 blending" primarily in relation to the 19 '301 patent. We can pull it up, but you would 20 agree that these same four filters are in the 21 '511 patent, correct? 22 A Correct.

33 1 Q And so when I use these four filters with 2 respect to the '301 and the '511 patent, 3 Dr. Rosen's, they'll generally apply to both 4 patents, as will your answers, unless I state 5 otherwise. 6 But, as I said before, if you need 7 clarification, if you want to be looking at the 8 '511 patent to be triply sure or doubly sure, we 9 can definitely do that, but there's certainly 10 a lot of commonality between these two patents. 11 MR. ROXBOROUGH: But if we could go to 12 Dr. Rosen's declaration and, particularly, 13 Paragraph 44, Ky, which is Exhibit 9. 14 BY MR. ROXBOROUGH: 15 Q Dr. Rosen, you can see here -- and before 16 we talk specifically about the four filters: The 17 gamma adjustment, normalizing irradiance, warp 18 correction, and edge blending, I wanted to get a 19 better understanding of how a pattern generator 20 works, and Paragraph 44 of your declaration sheds 21 some light on that. 22 And I'll just quote at least the first two	35 1 the micromirror would basically be projecting 2 light in a different direction, which would not 3 then become part of the pattern. 4 And so, yeah, the DMD is a -- primarily 5 it's that -- it's that silicon microprocessor-like 6 chip with that array of micromirrors, plus there 7 will be other control electronics around that. 8 Q Certainly. That's helpful. And so when 9 you speak of these mirrors, they're flipping, as 10 you say. 11 A Yes. 12 Q And they're projecting light onto a resin 13 surface; would that be correct? 14 A Yes. 15 Q And each of the mirrors -- in terms of the 16 control, each of the mirrors can be individually 17 controlled; is that correct? 18 A That is correct. 19 Q And you control them by moving them 20 physically or mechanically; the flip that you 21 speak of? 22 A Yes.
34 1 or three sentences, and we can read the full 2 paragraph together as well, but in this paragraph 3 you state: "The pattern generator is a key 4 component in the system; it may be a digital 5 micromirror device (DMD), an LCD screen, or other 6 type of device that can project a pattern." 7 You go on to the next sentence and address 8 Texas Instruments Company and an example there. 9 And then you note: "Regardless of the 10 specific pattern generation technology, the 11 projected pattern consists of an array of pixels 12 (short for picture elements) which are typically 13 square areas of projected light." 14 Dr. Rosen, what I'd like to know here is 15 what is a DMD physically, if you care to 16 elaborate? 17 A Yeah, a DMD is essentially a silicon chip 18 that contains an array -- a two-dimensional array 19 of micromirrors where each micromirror can flip 20 back and forth. In one position, that mirror 21 would project light straight ahead, that would 22 become part of the pattern; in the other position,	36 1 Q And it is by positioning those mirrors of 2 the DMD that we achieve a desired complete light 3 projection, the pattern from the DMD; is that 4 right? 5 A Yeah, that's correct. 6 Q And to be sure -- and thank you for the 7 description, but in terms of Paragraph 44, that 8 same paragraph is in the '511 declaration, 9 correct? And we can pull that up, but on my 10 review, it was Paragraph 44. 11 Would you like me to pull up Paragraph 44 12 of the '511 declaration? 13 A I don't need to see that same paragraph in 14 that declaration. 15 Q Great. There's going to be a bit of 16 that -- just as a sidebar between you and I, 17 there's going to be a bit of that during this 18 discussion, but I always want to be able to offer 19 you that opportunity, Dr. Rosen. But if you can 20 recall it, then that is fantastic. 21 When we move to -- 22 MR. ROXBOROUGH: And, Ky, if we can move

37 1 to Paragraphs 45, slowly, and 46 and 47. If we 2 can scroll down, please. 3 BY MR. ROXBOROUGH: 4 Q Here there's this -- we can read every 5 word if you would like, but seeing Paragraph 44 6 we're talking about pixels, the square pixels, 7 et cetera. 8 MR. ROXBOROUGH: We can keep scrolling 9 down. 10 BY MR. ROXBOROUGH: 11 Q You can see in Paragraph 46: "One 12 approach to enable fabrication"; 47, the optical 13 system; and then 48, we turn to the '301 patent; 14 and then Paragraph 49, we speak to the '301 patent 15 specifically. 16 Before I turn to Paragraph 49, Dr. Rosen, 17 just, again, to seek just a greater understanding 18 of your declaration, would you like to read those 19 paragraphs that we just flipped through before we 20 got to 49? 21 A I have them on my screen right here. 22 Q You're more than welcome to read them,	39 1 context of the '301 patent, Dr. Rosen, do I 2 correctly understand from your declarations that 3 when a DMD is used, then a digital filter 4 effectuates a desired end result, such as an 5 adjustment of light projection by causing the 6 additive manufacturing system to position the 7 mirrors in -- at the DMD in a certain way? 8 A I think I followed that question, and I -- 9 I believe that's correct. 10 Q Okay. And if -- and to be sure, 11 Dr. Rosen, these same paragraphs -- i.e., 44 to 12 49 -- are in the '511 declaration, correct? And, 13 again, we can certainly go to those paragraphs if 14 need be, but is there any reason for you to 15 disbelieve that those paragraphs are in the '511 16 declaration? 17 A I just checked and they are. 18 Q Great. Thank you. 19 Dr. Rosen, I can see the time -- I want to 20 turn to the skilled artisan, but just to let you 21 know, there will probably be a few questions on 22 that and then we can turn to -- we can have
38 1 just if you wanted that context. I can appreciate 2 that we just flipped from 44 to 49. 3 You just let me know when you've had a 4 chance to read those paragraphs. 5 A I've read them. 6 Q So you can see in Paragraph 49 the second 7 sentence. Here I'm just trying to get a better 8 understanding of digital filters and the projected 9 image generally, a bit like how we've just sort of 10 fleshed out the DMD. 11 But here you can see in the second 12 sentence: "In the '301 patent, a stack or set of 13 four types of digital filters are applied to a 14 projected image containing a cross-section. These 15 digital filters adjust the light from projectors, 16 such that when the light impinges on the resin, 17 the resin solidifies in the desired manner." 18 You can see that sentence? 19 A Yes. 20 Q And in the context, again, just 21 understanding these digital filters and this 22 sentence, or these sentences in particular, in the	40 1 probably a five to ten-minute break. So I just 2 wanted to give you the heads-up on that. 3 But I wanted to turn a little bit more to 4 the skilled artisan and just your understanding of 5 the legal construct as much as, you know, the 6 factual construct, which is those who are involved 7 in patent proceedings. 8 But in understanding these concepts that 9 we have just discussed, the four filters, the 10 digital filters, et cetera, you'd agree that they 11 are understood from the perspective of a skilled 12 artisan, correct? 13 A Understood from the perspective of a 14 skilled artisan? 15 I think a skilled artisan could read the 16 '301 patent and the '511 patent and understand 17 what is meant by a digital filter. 18 Q And specifically the digital filters, the 19 gamma adjustment, warp correction, normalizing 20 irradiance, and the edge blending, correct? 21 A Yes, I think they could understand those 22 four types of digital filters.

Transcript of David Rosen, Ph.D.
Conducted on May 26, 2026

11 (41 to 44)

41 1 Q And my question was -- that was my 2 question in part, but even more specifically, in 3 terms of how a skilled artisan -- strike that. 4 If we go to the next question. 5 MR. ROXBOROUGH: If we could pull up 6 Exhibit 9 of Dr. Rosen's declaration. 7 THE TECHNICIAN: Stand by. 8 MR. ROXBOROUGH: Which is Exhibit 9. 9 Sorry, the paragraph I'm looking for is 38 and 39. 10 Thank you. Sorry, Ky. I realized we've got it up 11 on the screen. 12 That's it. Thanks. 13 BY MR. ROXBOROUGH: 14 Q Dr. Rosen, you can see here in 15 Paragraph 38, you summarize the -- a person of 16 ordinary skill in the art who is the skilled 17 artisan. And then the third line, specifically 18 the person would have had a master's degree in 19 mechanical engineering, industrial engineering, 20 optics, or a similar field with coursework or 21 industry experience in additive manufacturing; or 22 a bachelor's degree with a subset of that	43 1 opportunity to become familiar with it, but it's a 2 LinkedIn profile of Intrepid CEO Ben Wynne who is 3 also the lead inventor on the '301 and '511 4 patents and -- 5 MR. SPORTEL: Counsel, I'm sorry to 6 interrupt. You can ask your question. I'm going 7 to put an objection that Intrepid thinks this is 8 irrelevant, and we're going to object to this 9 exhibit. 10 But feel free to continue your questions. 11 MR. ROXBOROUGH: Certainly. I'd like to 12 give Dr. Rosen a chance to read the document. 13 BY MR. ROXBOROUGH: 14 Q And so, Dr. Rosen, if you could become 15 familiar with it and just read the second page and 16 then ask the technician, Mr. Ky Shanklin, to move. 17 Would you like any further time, 18 Dr. Rosen, to review that document? 19 A If I need more time, I'll ask for it as 20 you ask me questions. 21 Q Certainly. As we walk through it, you can 22 see that Dr. -- that Mr. Wynne's qualifications
42 1 coursework and two to three years of additive 2 manufacturing. 3 Dr. Rosen, you'd agree that that 4 definition largely conforms with Dr. Chen's 5 summary of a skilled artisan, correct? And we can 6 pull up -- 7 A It's not necessary. Yeah, I agree. I 8 basically took his definition and adopted it. 9 Q Certainly. And you'd agree that Dr. Chen 10 is a skilled artisan? 11 A I would. 12 Q And in terms of your qualifications, 13 Dr. Rosen, you've touched on this, but it's fair 14 to say that your qualifications and experience 15 would far exceed this definition, correct? 16 A Correct. 17 MR. ROXBOROUGH: If we could pull up 18 Exhibit 13, being a LinkedIn profile of lead 19 inventor Ben Wynne. It's Exhibit 13. 20 BY MR. ROXBOROUGH: 21 Q Dr. Rosen, you wouldn't have seen this 22 document before, so I want to give you every	44 1 are in computer science from the University of 2 Bristol, graduating in 2006? You saw that? 3 A I did. 4 Q And, presumably, Dr. Rosen, for him to be 5 a skilled artisan in this field, he would have 6 received his experience in additive manufacturing 7 from the company or the companies, 3D Systems and 8 HP, correct? 9 A That's where he was working for much of 10 his career, so, yeah, if he had experience in 11 additive manufacturing, it would have been from 12 those companies. 13 Q And, Dr. Rosen, you said earlier, and you 14 agreed, that you've understood the terms the core 15 four filters -- normalizing irradiance, warp 16 correction, gamma adjustment, and edge 17 blending -- through the lens of a skilled artisan; 18 that is, the claims are not viewed in a vacuum, 19 but they are through the lens and contextual 20 knowledge of the skilled artisan, correct? 21 A The skilled artisan would use their 22 experience and knowledge from that experience that

45 1 understand the digital filters. 2 Q Yes. No, we agree with that proposition. 3 And, Dr. Rosen, I think -- I think that might be a 4 good time for a break. I can see we've just come 5 up on 4:50. The sun is starting to strain through 6 my window. I'll close my blinds. 7 And we might come back in ten minutes, if 8 that's convenient? 9 MR. ROXBOROUGH: Nathan, if that's 10 convenient for you? 11 MR. SPORTEL: Perfect. 12 MR. ROXBOROUGH: Off record. 13 (WHEREUPON, a recess was had.) 14 BY MR. ROXBOROUGH: 15 Q We're back on record, Dr. Rosen. Next I 16 want to turn to how you've understood the terms. 17 MR. ROXBOROUGH: And if we can pull up 18 Paragraph 24 of Dr. Rosen's declaration, Ky. 19 BY MR. ROXBOROUGH: 20 Q And, Dr. Rosen, you can see here that it's 21 fair to say that you've applied the ordinary and 22 customary meaning or the plain and ordinary	47 1 A Correct. 2 Q And you understand that the skilled 3 artisan should only interpret a claim more 4 narrowly than the ordinary meaning under two 5 circumstances. 6 And those circumstances are: One, when a 7 patentee sets out a definition and acts as its own 8 lexicographer; or, two, when the patentee disavows 9 the full scope of a claim term either in the 10 specification or during the prosecution history, 11 right? 12 A Sorry. Your question, is it referring to 13 a specific paragraph in my -- in my declaration, 14 or are you just talking more generally about the 15 principle? 16 Q I am speaking more generally about the 17 principles. These specific axioms were in 18 Dr. Chen's declaration. And we can pull those up, 19 but essentially he said, and he understood -- I'll 20 read it again because this is -- I think this is 21 important. I'll just read the question again. 22 And you understand that a skilled artisan
46 1 meaning when understanding the core terms of the 2 claims, correct? 3 A Correct. I do go on to describe a little 4 bit more, but yeah. 5 Q Yes. And we may get to that shortly. 6 What I -- 7 A Sorry. Yes. Yes. Go ahead. 8 Q Yes. What I plan to do with the next few 9 questions is just confirming the legal principles 10 upon which you apply to understand rather than the 11 actual, but we will get to, I think, what you 12 mentioned just now. 13 A Okay. 14 Q And that same understanding, the ordinary 15 and customary meaning, has been applied in the 16 '511 declaration, correct? 17 A Correct. 18 Q And you understand that when applying the 19 ordinary and customary meaning, you read the 20 claims in light of the specification, but you 21 don't import what is described in the 22 specification into the claim meaning, correct?	48 1 should only interpret a claim more narrowly than 2 the ordinary meaning under two circumstances: One 3 when a patentee sets out a definition and acts as 4 its own lexicographer; or, two, when a patentee 5 disavows the full scope of the claim term either 6 in the specification or during the prosecution 7 history. 8 And you -- 9 A Okay. Yeah. Yeah, I agree. I 10 understand. 11 Q You feel -- yes. And so my question -- my 12 follow-on question from that is: None of the 13 phrases, Dr. Rosen -- again, we'll call them the 14 big four -- are defined in the specification, 15 correct? 16 A Sorry. You said none of the four filters 17 are defined in the '301 and the '511 patent? 18 Q Yes, none of them are defined. So to 19 narrow, to narrow, the ordinary and customary 20 meaning of those terms. 21 A Oh. I would say from, what I recall, the 22 descriptions in the patents are consistent with

49 1 how someone would understand them, someone -- 2 Q Certainly. 3 A -- with ordinary skill would understand 4 them. 5 Q No, and that's fair. Because we do read 6 the specification, we read the claims in light of 7 the specification, which is consistent with your 8 consistent verbiage now; would that be fair to 9 say? 10 A Yes. Yes. 11 Q But, critically, we don't import the exact 12 words across if we don't -- if we're applying the 13 ordinary and customary meaning. 14 And, Dr. Rosen, there's no disavow in the 15 prosecution history, is there, for those big four 16 terms to mean something other than the ordinary 17 and customary meaning, correct? 18 A I don't know. I haven't studied the 19 prosecution history. 20 Q You've read obviously the patents, 21 correct? 22 A Yes.	51 1 When we seek to understand -- i.e. when 2 the skilled artisan seeks to understand -- the 3 phrase in the claim language "an irradiance mask 4 configured to normalize irradiance," there's no 5 express language that limits or restricts the 6 phrase "normalize irradiance" in the claim 7 language, correct? 8 MR. SPORTEL: Object to form. 9 BY THE WITNESS: 10 A I agree with that, yeah. 11 BY MR. ROXBOROUGH: 12 Q For example -- and this may shed a bit 13 more light on where I'm directing my question. 14 For example if the claim said: "An 15 irradiance mask configured to normalize irradiance 16 across only half of the image," that phrase 17 "across only half of the image" would be 18 restrictive, correct, on the plain and ordinary 19 meaning? 20 MR. SPORTEL: Object to form. 21 BY THE WITNESS: 22 A Correct.
50 1 Q And when we seek to -- I want to hone in 2 on the first of those four terms. When we seek to 3 understand the phrase in the claim language -- 4 MR. ROXBOROUGH: And, Ky, if we could 5 bring up the '301 patent, which is Exhibit 3. And 6 if we could turn to the bottom of that. And if we 7 could turn to claim 1 right at the bottom 8 underneath "stack of filters" and highlight the 9 phrase "irradiance mask," which is above line 59. 10 Perfect. 11 BY MR. ROXBOROUGH: 12 Q Dr. Rosen, when we seek to understand the 13 phrase in the claim language "an irradiance mask 14 configured to normalize irradiance," there's no 15 express language that limits or restricts the 16 phrase "normalize the irradiance" in the claim 17 language, correct? 18 MR. SPORTEL: Object to form. 19 BY THE WITNESS: 20 A Sorry. Can you ask that question again? 21 BY MR. ROXBOROUGH: 22 Q Certainly. I'll ask the question again.	52 1 BY MR. ROXBOROUGH: 2 Q Thank you, Dr. Rosen. 3 MR. ROXBOROUGH: If we could pull up 4 Exhibit 5, Ky, which is Intrepid's response to the 5 '301 patent. 6 BY MR. ROXBOROUGH: 7 Q And, Dr. Rosen, you've read the responses 8 upon which your declaration was based, correct? 9 A Correct. 10 MR. ROXBOROUGH: If we could turn to 11 Page 5, Ky. 12 Sorry, not PDF Page 5, the page numbering 13 at the bottom of the actual document. 14 Let me just make sure. This is the 15 '301 patent petition. It should be -- humble 16 apologies, Ky, but we should be looking at 17 Exhibit 11. My humble apologies. 18 BY MR. ROXBOROUGH: 19 Q Dr. Rosen, just a take a moment to read 20 the paragraph starting with "specification" down 21 to the footnotes. If you take a moment, and let 22 me know when you've read that passage.

53 1 A Okay. I have read the paragraph. 2 Q You can see four lines up from the bottom 3 of that paragraph, it's stated that: "Normalizing 4 irradiance should be given its plain and ordinary 5 meaning, which is: Causing the image to have a 6 uniform irradiance range across the entire image." 7 And then it cites to your declaration, 8 which we can turn to should you wish to do so, but 9 my question is this: Do you agree with this 10 proposition on Page 5? 11 A The proposition being that: The patent 12 owner believes that normalizing irradiance should 13 be given its plain and ordinary meaning, which is 14 that meaning that's quoted there? 15 Q Yes. Do you agree with that proposition? 16 A Yes, I agree. 17 Q And so this is how you taking the mantle 18 of the skilled artisan, this is how you understand 19 the ordinary and customary meaning of the phrase 20 "normalizing irradiance," right? 21 A Yes. 22 Q In breaking this phrase down just a little	55 1 '511 patents is drawn from your own knowledge, 2 which we've discussed before, as well as the 3 specification, correct? 4 A Correct. 5 Q In particular, the term "uniform" is also 6 referenced in the specification to shed light on 7 the notion that irradiance is being applied across 8 the entire image, correct? 9 A In the patents, the term is applied both 10 to the entire image as well as sub-images. 11 MR. ROXBOROUGH: If we could pull up the 12 '301 patent, which is Exhibit 3, I'd like to turn 13 to Example 1. Exhibit 3, Example 1, which is in 14 column 23. 15 BY MR. ROXBOROUGH: 16 Q Dr. Rosen, if you could take a moment to 17 read Example 1, and let me know when you've 18 completed that review. 19 A Okay. I've read it. 20 Q In this example, Dr. Rosen, when the 21 patent uses the term "uniformly across an image," 22 that would mean each and every pixel in the image,
54 1 bit further, you consider the word "uniform" as 2 one way of understanding the term "normalizing 3 irradiance"? 4 A Okay. The term is "uniform irradiance 5 range." I don't think you can separate it any 6 more than that. 7 Q The word "uniform" is not in the expressed 8 claim language, correct? 9 A No. 10 Q But it's fair to say that you've 11 understood the concept of normalizing irradiance 12 with reference to the word "uniform," correct? 13 A Correct. 14 Q And you would say this concept of uniform 15 is important to your understanding the term 16 normalizing irradiance? 17 A Yes. 18 Q And, really, that is one of the goals to 19 account for the non-uniformities across the image 20 is to make them uniform, correct? 21 A Correct. 22 Q And that understanding of the '301 and	56 1 correct? 2 A Yes. 3 MR. ROXBOROUGH: And if we could pull up 4 claim 1 in Exhibit 3, Ky, if you could just look 5 down. 6 BY MR. ROXBOROUGH: 7 Q I'd like to look at the phrase "an 8 irradiance mask configured" again. 9 And here, Dr. Rosen, even though the words 10 "entire image" are not expressly stated in 11 claim 1, you still understand the phrase 12 "normalize irradiance" to mean causing the image 13 to have uniform irradiance across the entire image 14 based on its ordinary and customary meaning, 15 correct? 16 A Yes. Correct. 17 Q And, hypothetically, if you saw the phrase 18 "normalizing irradiance" in a university textbook 19 addressing additive manufacturing as being applied 20 to an image, you would still understand that to 21 mean irradiance is being applied to the entire 22 image, correct?

57 1 MR. SPORTEL: Object to form. 2 BY THE WITNESS: 3 A I would -- I would interpret that as 4 saying that the irradiance is uniform across the 5 entire image. 6 BY MR. ROXBOROUGH: 7 Q Yes. Especially if there was no further 8 limiting language. And, again, it's a 9 hypothetical, so I want to contextualize it in 10 that space. 11 I mean, when you see the norm -- the term 12 or the phrase "normalize irradiance," you, as a 13 skilled artisan, would know what it means, 14 correct? 15 A Yes. 16 Q And you'd know what it would mean at the 17 time of the priority date, correct? Which is -- 18 A Yes. 19 Q -- July 18 -- sorry, July 30 -- let's get 20 this correct. 21 July 30, 2018, is the priority date. 22 A Yes, I think that is the understanding of	59 1 MR. ROXBOROUGH: If we can highlight the 2 phrase "warp correction," which is in line 65. 3 BY MR. ROXBOROUGH: 4 Q If you saw the phrase "warp correction" in 5 a university textbook, would you -- you would 6 understand the term to mean what is similarly 7 described in the '301 patent here, right? 8 MR. SPORTEL: Object to form. 9 BY THE WITNESS: 10 A Yeah, I think that's a little too vague. 11 In general, I think -- what I recall of the 12 '301 patent, I agree with their descriptions of 13 what a warp correction filter is and what it does. 14 BY MR. ROXBOROUGH: 15 Q Well, perhaps if we -- before I go to the 16 specification, which does shed light -- that don't 17 import, it sheds light, before we do that, there 18 is a little bit more verbiage here: "Warp 19 correction filter configured to provide geometric 20 correction." Is it fair to say that that is the 21 purpose of warp correction; i.e. to provide 22 geometric correction?
58 1 that term. 2 Q Yes. And there's no different -- and it's 3 no different to your understanding of the term 4 between the '301 and '511 patents, correct? 5 A They're essentially the same, yes. 6 Q And you'd also agree that the phrase and 7 concept of normalizing irradiance would be 8 well-known to the skilled artisan at the priority 9 date of the patents? 10 A I think they would understand the term 11 "normalize irradiance." 12 Q To understand the term, would they have to 13 understand the concept? 14 A Oh, sure. Yes. Yes. 15 Q Turning back to the terms referenced in 16 claim 1. 17 MR. ROXBOROUGH: If we could pull up the 18 '301 patent, Exhibit 3. Which is actually what 19 we've got on the screen. My humble apologies. 20 BY MR. ROXBOROUGH: 21 Q If you saw the phrase "warp correction" in 22 a university textbook --	60 1 A Yes. 2 Q And that would be, dare I say, well-known 3 at the time of the priority date, that goal and 4 that purpose? 5 A Yes, I believe so. 6 Q If we could just turn to column -- 7 actually, let's strike that. We'll come back to 8 column 8 in a second. 9 I want to move to the term "warp 10 correction" while we're on this screen and -- 11 sorry, "edge blending," which is the point below 12 it. And here, Dr. Rosen, the way that edge 13 blending is framed would you agree that the 14 concept of edge blending here as framed would be 15 well-known of the priority date? 16 A I honestly don't know because the -- let 17 me just stop there. I don't know. 18 Q Okay. 19 MR. ROXBOROUGH: If we can turn to 20 column 8, line 55, where there is some description 21 of edge blending. 22

61 1 BY MR. ROXBOROUGH: 2 Q And we'll pull that up on the screen, 3 Dr. Rosen. 4 MR. ROXBOROUGH: Column 8, line 55, Ky. 5 BY MR. ROXBOROUGH: 6 Q Perhaps if we could just take a moment to 7 read all the way down to the bottom of that 8 paragraph, Dr. Rosen, and if you could let me know 9 when you've got to the end of that column. 10 A Okay. I've read that. 11 Q You'd agree that here they're talking 12 about the edge blending filter in the system? 13 A Correct. 14 Q And if we go down to the line 59 the word 15 "edge" is right at the end of that sentence. 16 MR. ROXBOROUGH: It's right at the edge, 17 Ky, "edge." 18 BY MR. ROXBOROUGH: 19 Q You can see that sentence: "Edge blending 20 allows the top left, right, and/or bottom edges to 21 be faded out according to a chosen blending 22 function."	63 1 composite image containing an array of sub-image, 2 edge blending can enable the data at the 3 perimeters of adjacent projected sub-images to be 4 faded out so that the transition between the 5 adjacent sub-images can be made less notable. 6 It's that phrase of "fading out so that 7 the transition between the adjacent sub-images can 8 be made less noticeable," would you agree that was 9 a known concept before the priority date? 10 A I would agree that it was a known concept 11 for those artisans who have experience with 12 multiple projection kind of systems. 13 Q Such as the skilled artisans in this case? 14 A No. 15 Q Okay. 16 MR. ROXBOROUGH: If we can move to 17 Exhibit 9, which is the Shkolnik reference -- 18 sorry, it is the Rosen declaration. 19 BY MR. ROXBOROUGH: 20 Q And I'd like to shift gears to Ground 1, 21 Dr. Rosen. 22 A Okay.
62 1 That concept there, would you agree or 2 disagree -- would you agree that that concept sums 3 up the concept of edge blending of what's 4 happening here with the edge blending filter? 5 A I think that's one of the purposes of the 6 edge blending filter. 7 Q Certainly. Yeah, certainly. 8 And would you agree that that concept that 9 we've just underlined -- and I'll read it into the 10 record: "Edge blending allows the top, left, 11 right, and/or bottom edges to be faded out 12 according to a chosen blending function," would 13 you agree that that concept is -- was well-known 14 at the time of the priority date? 15 A I would not. 16 Q You would not? 17 A No. 18 Q And if we move on, you can see the phrase 19 "in a composite image containing an array of 20 sub-images" -- actually, strike that -- no, do not 21 strike that. 22 I'm going to continue to read on: "In a	64 1 MR. ROXBOROUGH: And specifically I'd like 2 to go to -- move to Paragraph 62 of the Rosen 3 declaration, Ky. 4 BY MR. ROXBOROUGH: 5 Q And here, Dr. Rosen, you can see in your 6 declaration, and in the equivalent paragraph of 7 '511 declaration, you opine that: "Shkolnik does 8 not disclose an irradiance normalization filter as 9 described here. Shkolnik discusses intensity 10 compensation or intensity adjustment." 11 You can see that phrase? 12 A Yes. 13 Q I want to take a closer look at the phrase 14 "intensity compensation" and break that phrase 15 down and get a better understanding -- or your 16 understanding of that phrase. 17 Specifically in -- if we look more closely 18 at the word "compensation," do you equate that 19 word "compensation" with "normalization"? 20 A No. 21 Q Dr. Rosen in the context of additive 22 manufacturing, would a skilled artisan at the

65 1 priority date of both patents view the term 2 "compensate" and "normalize" to have equivalent 3 meanings? 4 A No. 5 Q So it's your opinion that the word 6 "compensate" can never mean normalizing in any 7 context? 8 A No, I didn't say that or intend that. 9 Compensation can take on a number of different 10 meanings, one of which is to normalize or make 11 things uniform. 12 Q So would there be a textbook that would 13 describe "compensate" to mean equivalent to 14 "normalize" in the context of additive 15 manufacturing? 16 MR. SPORTEL: Object to form. 17 BY THE WITNESS: 18 A Yeah, I -- I don't know. 19 BY MR. ROXBOROUGH: 20 Q Did any of your textbooks or articles ever 21 interchange the words? 22 I'll repeat the question: Did --	67 1 is line 22, it states: "Another example of 2 digital filter that can be used to adjust an image 3 is irradiance masking filter, where the filter 4 applies a normalizing irradiance mask to an image 5 (or each sub-image in a composite image) such that 6 the image or the composite image has a uniform 7 irradiance range (i.e. from zero exposure to 8 maximum exposure limit) across the area." 9 Would it be fair to say that the patent 10 here is talking about the normalization filter -- 11 the irradiance normalization filter? 12 A Yes, it is. 13 Q And then if we read on from the phrase 14 "for example," which is in line 29, 28: "For 15 example, the irradiance masking filters can be 16 used to normalize the irradiance non-uniformities 17 within the image projection system arising from 18 projector-based spacial energy non-uniformities. 19 You can see that phrase? 20 A Yes. 21 Q You'd agree that they're giving an example 22 of what an irradiance mask could be in -- within
66 1 A Yeah, no -- yeah. Go ahead. 2 Q Did any of your 100-plus, 200-plus, 3 300-plus articles ever equate the word 4 "compensate" to mean the same as "normalize"? 5 A I don't recall. It's possible that you 6 can find some references where my use of the term 7 "compensation" or "intensity compensation" or 8 "irradiance compensation" would be the same as 9 normalization. 10 Q Dr. Rosen, now I want to turn to -- I want 11 to take a closer look at Exhibit 3, which is the 12 '301 patent. 13 MR. ROXBOROUGH: And if we could turn to 14 column 11, Ky, and you can see at the line -- if 15 we pull that up higher, Ky, because we're going to 16 be scrolling down further. 17 That's good. Expand that whole paragraph 18 starting with "another example" down to "projected 19 over time," if we could expand that. 20 BY MR. ROXBOROUGH: 21 Q Dr. Rosen, when we look at this column in 22 particular, you can see that the first line, which	68 1 the scope of the claims, correct? 2 A Correct. 3 Q Now, if we move down to lines 47 to 49, 4 and you can see the phrase "in some embodiments." 5 MR. ROXBOROUGH: If we could scroll up a 6 little bit more so we've got the whole -- that's 7 it. 8 BY MR. ROXBOROUGH: 9 Q Dr. Rosen, you can see here column 11, 10 lines 47 to 49: "In some embodiments, the 11 irradiance mask filters enable control over the 12 energy across the build area to compensate for 13 non-uniformities in projector optics and/or 14 optical paths." 15 You can see that phrase? 16 A Yes. 17 Q And you've read these phrases before that 18 I've just mentioned, correct, Dr. Rosen? 19 A Correct. 20 Q And here, the '301 patent itself is using 21 the word "compensate" as equivalent to 22 "normalize," correct?

69 1 A Yeah, I think they're describing what they 2 mean by "normalize" in this case. 3 Q Yes. And it was your testimony a moment 4 earlier, if I understood it correctly -- and 5 please tell me if I didn't understand it 6 correctly -- but when I said moments ago that the 7 word "compensate" -- whether the word "compensate" 8 could mean the word "normalize," you disagreed 9 with me in the context of additive manufacturing, 10 but you didn't -- correct? 11 MR. SPORTEL: Object -- 12 BY THE WITNESS: 13 A I said -- 14 MR. SPORTEL: Mischaracterizes testimony. 15 BY THE WITNESS: 16 A Let me clarify -- 17 BY MR. ROXBOROUGH: 18 Q Certainly. 19 A -- "compensate" to me is a more general 20 term. 21 Q Yes. 22 A "Normalize" is more specific. So one type	71 1 word need not be present to mean the same thing 2 for disclosing a claim element, correct? 3 A Correct. 4 Q And the '301 patent treats "compensate" to 5 mean the word -- the equivalent to "normalize" 6 here, correct? 7 MR. SPORTEL: Object to form. 8 BY THE WITNESS: 9 A So the issue I'm really getting at here is 10 when we talk about compensation, you need to 11 understand what the objective of the compensation 12 is. In this case, the objective is to -- let's 13 see -- well, yeah, it is to compensate for 14 non-uniformities in the projector optics. That 15 is -- 16 BY MR. ROXBOROUGH: 17 Q Right. 18 A -- going to correct the non-uniformities 19 to make them uniform. So there's a stated 20 objective of the -- of the term "compensate" or 21 the concept of compensate in this case. 22 And so I can read that sentence and
70 1 of compensation is normalization. 2 Q I see. And you can see in this specific 3 example that using the word "compensate" 4 specifically described the irradiance filter, 5 correct? 6 A Yes. 7 Q And, Dr. Rosen's, is there any reason why 8 you didn't address the word "compensate" in your 9 declaration? 10 A Okay. I don't recall if I used the word 11 "compensate" in my declaration or not, but if I 12 didn't, it was probably because I prefer more 13 specific terms that have a narrower meaning 14 instead of a general term that could mean several 15 different things. 16 Q And to be sure, though, however, the 17 patent is using specifically the word "compensate" 18 in this example, correct? 19 A It is using the word "compensate," yes. 20 Q In patent parlance, you would agree that 21 the same word -- and we sort of addressed this 22 somewhat earlier in the transcript, that the same	72 1 interpret that as, okay, yes, they're talking 2 about irradiance normalization. 3 Q Right. Now, you provide -- it's fair to 4 say that you provided quite a bit of context 5 there. I want to go back to claim 1. 6 MR. ROXBOROUGH: If we could go back to 7 claim 1, Ky. 8 Now, if we go down to the phrase 9 "irradiance mask configured to normalize 10 irradiance." Can you highlight it, please, Ky. 11 BY MR. ROXBOROUGH: 12 Q We discussed before that the word such as 13 "entire" aren't here, but you would know what it 14 means, correct? 15 A Yes. 16 Q We said earlier that we would use the 17 words -- you know with your experience in this 18 field, extensive experience in this field, that if 19 you use the word "normalize irradiance," that it 20 would -- it would likely, if not all times, apply 21 to the word "entire," correct? 22 Let me rephrase that.

73 1 The word "entire" would be wrapped up in 2 the concept of normalizing irradiance, correct? 3 MR. SPORTEL: Object to form. 4 BY THE WITNESS: 5 A In the overall patent, they are fairly 6 careful to say the image or sub-images -- 7 BY MR. ROXBOROUGH: 8 Q Certainly. And -- 9 A -- and so the word "entire" could mean the 10 entire multi-projector image or one -- or the 11 entire sub-image. 12 Q Certainly. But, again, we discussed 13 earlier that when you looked at the word 14 "normalize irradiance," you would also consider 15 the word "uniformity" earlier, correct? 16 A To me that's what normalize irradiance 17 means, yes. 18 Q Even though the word "uniformity" isn't 19 there, you would know, as a skilled artisan, what 20 it means with respect to the word "uniformity," 21 correct? 22 A Yes.	75 1 "Shkolnik discusses intensity compensation or 2 intensity adjustment"? What was the purposes 3 of -- purposes of bringing those two phrases into 4 your declaration if you weren't disagreeing with 5 Dr. Chen's opinion? 6 A I said I didn't recall if Dr. Chen used 7 the -- or equated those two terms. 8 My point was to say that these are the 9 terms that Shkolnik is using -- 10 Q Yes. 11 A -- when he's talking about irradiance 12 control, and then I think I go further to talk 13 about my understanding of what Shkolnik was 14 talking about and trying to do. 15 Q I see. I'd like to turn to the other word 16 in the phrase, "intensity compensation," 17 Dr. Rosen. 18 A Okay. 19 Q And my question is: In the context of 20 additive manufacturing, would the word "intensity 21 compensation" ever mean normalized irradiance? 22 A It could mean normalized irradiance.
74 1 Q Okay. And you've read all of Dr. Chen's 2 declaration, correct, Dr. Rosen? 3 A Yes. 4 Q And Dr. Chen, a skilled artisan, opines 5 that the word "intensity compensation" means 6 normalize irradiance, correct? 7 A I don't recall. 8 Q In Paragraph 62 of your declaration -- 9 MR. ROXBOROUGH: If we can go back to 10 Paragraph 62 of the declaration, Ky. 11 BY MR. ROXBOROUGH: 12 Q Here, Dr. Rosen, it says: "In my opinion, 13 Shkolnik does not disclose an irradiance 14 normalization filter as described here. Shkolnik 15 discusses intensity compensation or intensity 16 adjustment." 17 Are you aware that Dr. Chen used the 18 phrase "intensity compensation" to mean irradiance 19 normalization? 20 A I don't recall those specifics. 21 Q So what -- looking more closely at this 22 sentence, what -- why did you use the phrase	76 1 Q And if we look at Paragraph 62 a bit 2 further down -- and I want to give you an 3 opportunity to read that full paragraph, 4 Dr. Rosen. 5 MR. ROXBOROUGH: So if we could make it a 6 little bit smaller so Dr. Rosen can read all the 7 way down to "voxel level" and then onto the next 8 page. If we could start from the top, 62. I want 9 to give Dr. Rosen a fair opportunity to read the 10 full paragraph. 11 BY THE WITNESS: 12 A Okay. Yeah. 13 BY MR. ROXBOROUGH: 14 Q Yeah, just seeing that second last 15 sentence -- or second last line after "Shkolnik 16 10:11-13," "It is also possible to vary both 17 irradiance (intensity) and exposure time." 18 Dr. Rosen, you'd agree that what you're 19 doing here in your declaration is equating the 20 word "irradiance" and "intensity," correct? 21 A Yes. 22 Q So, Dr. Rosen, I want to sum things up.

77 1 You agree that the '301 and '511 patents use the 2 terms "compensate" and "normalize" as equivalent 3 terms, correct? 4 MR. SPORTEL: Object to form. 5 BY THE WITNESS: 6 A Yeah. So -- how do I want to say this? 7 In the context of irradiance normalization, the 8 patents probably sometimes refer to irradiance -- 9 sorry, irradiance normalization as compensation. 10 Again, "compensation" is a more general 11 term; it can apply to irradiance normalization, it 12 can apply to gamma correction, it can apply to 13 lots of different things. 14 BY MR. ROXBOROUGH: 15 Q Yes. And you'd agree that it's possible 16 for the skilled artisan before the priority date 17 of the '301 and '511 patents could use the terms 18 "irradiance" and "intensity" as equivalent terms, 19 correct? 20 A Yes. 21 Q And you'd agree that Shkolnik used the 22 term "intensity compensation" in its disclosures?	79 1 three or four questions before we move to another 2 ground, and we can take another break shortly, 3 Dr. Rosen? 4 But if we could pull up Paragraph 78. And 5 I'm just going to read at least the first sentence 6 or two where you opine: "The '301 patent states 7 that the gamma adjustment mask provides resin 8 reactivity leveling and enables correct smoothing 9 (and/or antialiasing) of pixels by mapping the 10 pixel intensity range (e.g. 0 to 255) to the 11 minimum and maximum reactivity characteristics of 12 the pixel." 13 You can see that first sentence. You can 14 continue reading on, and just let me know when 15 you've read that entire passage from Paragraph 78. 16 Because I'm looking -- yes, if you could read 17 that, and let me know when you've got to that 18 point where you've completed that passage. 19 A Okay. Yes, I've read that. 20 Q You wouldn't disagree that you've put this 21 same paragraph in the '511 declaration at 22 Paragraph 78, would you?
78 1 A Yes. 2 Q And you're aware that a skilled artisan, 3 namely Dr. Chen, understood the term "intensity 4 compensation" to mean normalize irradiance, 5 correct? 6 MR. SPORTEL: Object to form. 7 BY THE WITNESS: 8 A Yeah, I don't -- I don't know. I don't 9 recall the specifics of his declarations. 10 BY MR. ROXBOROUGH: 11 Q So you didn't rebut -- you didn't refute 12 his contention that he opined that intensity 13 compensation means normalizing irradiance, 14 correct? 15 A I believe that's correct. I did not 16 refute that. 17 Q If we could move to gamma adjustment in 18 Shkolnik, Dr. Rosen. 19 MR. ROXBOROUGH: And if we could pull up 20 Paragraph 78 -- 21 BY MR. ROXBOROUGH: 22 Q Actually, maybe -- yeah, we've only got	80 1 A I believe it's the same in the '511 2 declaration. 3 Q And in the context of both patents, 4 Dr. Rosen, do I correctly understand -- what I'm 5 really trying to get at is your -- is an 6 understanding of your first sentence. That's 7 really -- and the quotation from Shkolnik from the 8 '301 patent. So I just want to give you that 9 preface, that, of this paragraph, I want to get a 10 better understanding of that first sentence. 11 And in the context of both patents, do I 12 correctly understand from your declaration that 13 mapping pixel intensity range to the minimum and 14 maximum reactivity characteristics results in the 15 desired antialiasing of the pixel? 16 A No, my intent was that that is what the 17 gamma adjustment mask is doing. 18 Q We might be on the same page. Because in 19 Paragraph 78 you're expressly stating that the 20 '301 patent states that the gamma adjustment mask 21 provides resin reactivity leveling and enables 22 correct smoothing and/or antialiasing.

Transcript of David Rosen, Ph.D.
Conducted on May 26, 2026

21 (81 to 84)

81 1 And so as I -- as I'm understanding that 2 quote, I look to -- yeah, I'll agree, I'm having 3 trouble understanding what you're saying following 4 this passage, Dr. Rosen. If you could shed some 5 light on that, I'd be grateful. 6 A Yeah, let me describe my intent here, and 7 then -- in general terms, and then if you want to 8 follow up, you can. 9 So the -- 10 Q Sure. 11 A -- gamma adjustment mask, you know, 12 provides that resin reactive leveling. You know, 13 fundamentally, it maps this pixel intensity range 14 or a grayscale range, zero to 255 for example, to 15 the minimum and maximum reactivity characteristics 16 of the -- 17 Q Yes. 18 A -- resin at the pixel. 19 Furthermore, gamma adjustment enables 20 correct smoothing and/or antialiasing. So, in 21 other words, gamma adjustment doesn't perform 22 smoothing or antialiasing, but it can be used for	83 1 it 8:52 your time? 2 THE WITNESS: It is 7:52, but the sun is 3 up, so we're doing okay. 4 MR. ROXBOROUGH: Okay. We'll come back in 5 10 minutes for everyone, and we'll take things 6 from there. 7 THE WITNESS: Sounds good. 8 (WHEREUPON, a recess was had.) 9 BY MR. ROXBOROUGH: 10 Q Dr. Rosen, I wanted to turn to Ground 2, 11 specifically Paragraph 111 to 112 of your 12 declaration. 13 MR. ROXBOROUGH: And, Ky, if we could 14 possibly bring that up. 15 BY MR. ROXBOROUGH: 16 Q And here, Dr. Rosen, just to orient 17 things, you can see that in Paragraph 112, you 18 agree that you state: "Sekine does not teach an 19 irradiance mask that normalizes irradiance"? It's 20 the first sentence of that paragraph, correct? 21 A Correct. 22 MR. ROXBOROUGH: And if we move down to
82 1 smoothing and antialiasing, but that -- 2 Q And just -- 3 (Unreportable cross-talk.) 4 BY MR. ROXBOROUGH: 5 Q And that's the desired effect, correct? 6 A No. No. These are -- the gamma 7 adjustment mask -- the gamma adjustment is doing 8 one thing, but you can then use that one thing, 9 that, you know, mapping between resin 10 characteristics and pixel intensity range, you can 11 use that for smoothing and antialiasing. 12 Q Sure. 13 A But that's a separate step. 14 Q Sure. 15 MR. ROXBOROUGH: Well, Dr. Rosen, we're 16 potentially halfway through this deposition, and I 17 think it's a good time for another break given 18 that we've just clicked over to 5:52. 19 So maybe we come back in 10 minutes? Say 20 2 minutes after -- sorry, 5:52 Colorado time. I 21 can only imagine what time -- I'm going to take a 22 guess, I speak with a lot of Aussie clients, so is	84 1 Paragraph 115, Ky. 2 BY MR. ROXBOROUGH: 3 Q In this paragraph, Dr. Rosen, you're 4 looking specifically at Paragraph 71 of the Sekine 5 reference. It didn't have columns, you might 6 recall, Sekine, it had specific paragraphs because 7 it was still an application. 8 And I think it might be best that we take 9 a moment to read Paragraph 115, and then we can 10 address the questions. 11 A Okay. I've read that. 12 Q Dr. Rosen, is this the -- actually, I'll 13 couch it: On my review, Dr. Rosen, this is the 14 only passage where you -- in your report, where 15 you address Paragraph 71 of Sekine. 16 MR. ROXBOROUGH: And I think actually, Ky, 17 just to provide some more context for Dr. Rosen, 18 can we narrow the screen and head up to -- past 19 Paragraph 112 just so he can contextualize where 20 he is. Can you make the screen smaller and go up 21 to Paragraph 112. 22 And if we go up to the heading, Ky, just

85 1 slowly. Keep going until you hit a heading. 2 BY MR. ROXBOROUGH: 3 Q You can see, Dr. Rosen, here -- I just 4 wanted to give you the context. Here, you'd agree 5 that you're addressing the element of "an 6 irradiance mask configured to normalize 7 irradiance" and whether Sekine addresses that 8 element? That's a fair summation of what we're 9 doing in these Paragraphs 111 through to 115, 10 correct? 11 A Correct. 12 Q And it's fair to say that the only 13 instance where you look at Paragraph 71 in this 14 specific section where you're addressing 15 normalized irradiance is in Paragraph 115, 16 correct? 17 A I believe that's true. 18 Q And we can go slowly if we can see a "71" 19 in those paragraphs. 20 MR. ROXBOROUGH: I'm going to slow you 21 down just a little, Ky. 22	87 1 BY MR. ROXBOROUGH: 2 Q And we can see there at Paragraph 135 we 3 come to an end. 4 In this section, Dr. Rosen, you'd agree 5 that Paragraph 115 is the only paragraph where you 6 address Paragraph 71 of Sekine? 7 A Correct. 8 MR. ROXBOROUGH: If we could go back to 9 Paragraph 115. 10 BY MR. ROXBOROUGH: 11 Q And, Dr. Rosen, these same paragraphs are 12 in the '511 declaration; i.e. Paragraph 71 is only 13 addressed in Paragraph -- I think it's 14 Paragraph 116. I think the numbering was just off 15 by one, but maybe if we -- if you wanted to look 16 on your screen to confirm that in the '511 -- 17 MR. ROXBOROUGH: You can hold there, Ky. 18 BY THE WITNESS: 19 A Right. It's Paragraph 116 in my '511 20 declaration. 21 BY MR. ROXBOROUGH: 22 Q You're able to --
86 1 BY MR. ROXBOROUGH: 2 Q We can see Paragraph 70, and then the 3 Paragraph 115 we were just discussing, and we can 4 see 71. 5 Paragraph 73 to 80. 6 MR. ROXBOROUGH: And then if we can keep 7 going down. 8 BY MR. ROXBOROUGH: 9 Q 76. Then we've got 73 to 77. 10 Paragraph 118, we've got Paragraph 77. 11 MR. ROXBOROUGH: We can keep going. We 12 can keep going, Ky. 13 BY MR. ROXBOROUGH: 14 Q I believe we're very close, Dr. Rosen. 15 You see Paragraphs 80 and 77 in 16 Paragraph 129. We've got Paragraph 70 and 17 Paragraph 80 in Paragraph 130. 18 And then we've got Paragraph 73 to 79 in 19 Paragraph 131. 20 MR. ROXBOROUGH: If we can keep going 21 down. 22	88 1 A -- it's the -- 2 Q -- confirm that? 3 A Yeah. 4 Q Excellent. 5 MR. ROXBOROUGH: If we can pull up 6 Exhibit 15, Ky, which is the Sekine reference. 7 And if we turn to Paragraph 71. 8 You're going to have to scroll down 9 probably three-quarters of the screen, Ky, because 10 we've got to move past the Japanese version. 11 BY MR. ROXBOROUGH: 12 Q Dr. Rosen, you can see Paragraph 71 is a 13 very lengthy paragraph. 14 MR. ROXBOROUGH: We can blow that up a 15 little bit more, Ky, I think. Because it's in 16 small font, I'm having trouble. 17 BY MR. ROXBOROUGH: 18 Q And, Dr. Rosen, if you could take a moment 19 to read Paragraph 71 in its entirety. 20 A Okay. 21 Q Dr. Rosen, can you see the sentence -- or 22 the word "thus" after the word "source 21"? It's

89 1 in the third line down, the word "thus." 2 MR. ROXBOROUGH: It's in that line, Ky, if 3 you go to the end of that line. And if you could 4 highlight that sentence all the way down, Ky. 5 BY MR. ROXBOROUGH: 6 Q I'm just going to read it into the record. 7 It says: "Thus, in the embodiment 3 measurements 8 of illumination distribution on the projection 9 plane TM of the projection TG are performed, and 10 the brightness gradation (duty ratio) of each 11 pixel in the plane of the image forming element 23 12 is controlled to make the illumination 13 distribution uniform." 14 Dr. Rosen, it's fair to say that nowhere 15 in Paragraph 115 of your declaration do you quote 16 this sentence or any of the words in it including 17 the word "uniform," correct? 18 A Correct. 19 Q And you address the next sentence starting 20 with "Furthermore," correct? 21 A I do quote that sentence, yes. 22 Q But not the one that precedes it, the	91 1 BY MR. ROXBOROUGH: 2 Q You can see just there in the third line, 3 Dr. Rosen, it expressly quotes "make the 4 illumination distribution uniform" in bold, 5 correct? 6 A Correct. 7 MR. ROXBOROUGH: If we could go back to 8 the other exhibit, the previous one, Ky. 9 BY MR. ROXBOROUGH: 10 Q And, Dr. Rosen -- 11 MR. ROXBOROUGH: As you're doing that, Ky, 12 the previous exhibit is Paragraph 71, Exhibit 15. 13 Perfect. 14 BY MR. ROXBOROUGH: 15 Q And you would agree, Dr. Rosen, that 16 Dr. Chen actually bolded the word "uniform," 17 correct? 18 A Correct. 19 Q And we can turn to it, but the word 20 "uniform" was also bolded in the petitions of 21 3D Systems. Is that something that you can drop 22 from memory? But I'm more than happy to pull
90 1 "thus embodiment" sentence including the word 2 "uniform," correct? 3 A Correct. 4 Q And you'd agree the sentence that I'm 5 talking about, the "thus embodiment" sentence, 6 also uses the phrase "each pixel," correct? 7 A Correct. 8 Q And we discussed earlier that the word 9 "uniform" is a core concept to the concept of 10 normalizing irradiance, correct? 11 A Correct. 12 Q And you're well aware that Dr. Chen, in 13 his '301 and '511 declarations, expressly quoted 14 this sentence ending with the phrase "control to 15 make illumination distribution uniform," correct? 16 A I don't recall. We could check that if 17 it's needed. 18 Q Certainly. We can certainly do that. 19 MR. ROXBOROUGH: If we can pull up 20 Exhibit 7. And if we can turn to Paragraph 229. 21 So Exhibit 7, the Chen declaration, Ky, 22 and if we can move to Paragraph 229.	92 1 those up, unless you -- unless you have any reason 2 to believe that I'm not making that representation 3 truthfully. 4 A I'm sure you're very truthful. 5 Q And, Dr. Rosen, just on that point, in 6 your declaration, you haven't addressed the 7 sentence starting with "thus" through to the 8 phrase "uniform," correct? 9 A That is correct. 10 Q Dr. Rosen, I want to turn back to 11 Paragraph 114 of your declaration. And we've got 12 to go up just one. 13 And you can see here -- and I'll just read 14 it into the record, Dr. Rosen: "Sekine does not 15 disclose any type of adjustment that provides for 16 uniform irradiance across an entire image. 17 Embodiment 3 of Sekine describes an approach to 18 controlling illuminance (irradiance)." 19 MR. ROXBOROUGH: You can stop there, Ky. 20 BY MR. ROXBOROUGH: 21 Q I just wanted to focus in on the word 22 "illuminance (irradiance)."

93 1 And, here, it's fair to say that you're -- 2 you're denoting your -- the word "illuminance" is 3 equivalent to the term "irradiance," correct? 4 A That's how I'm interpreting the word 5 "illuminance," yes. 6 Q Okay. If -- yes. And you also use this 7 same parenthetical -- illuminance, parenthetical, 8 irradiance in your '511 declaration, correct? In 9 Paragraph 115? 10 A Yes. 11 MR. ROXBOROUGH: Ky, if we could pull up 12 Sekine again and Paragraph 71, which is 13 Exhibit 15. 14 And if we could really magnify 15 Paragraph 71 by another 20 percent if it's 16 possible. 17 BY MR. ROXBOROUGH: 18 Q Dr. Rosen, you can see that? 19 A Yes. 20 Q Dr. Rosen, in a lot of the equivalence 21 between the words "illuminance" and "irradiance," 22 you would admit that a skilled artisan could also	95 1 And so to reiterate, Dr. Rosen, would that 2 be a fair reading of Paragraph 71 to the skilled 3 artisan in light of illuminance and irradiance 4 equivalency you make in Paragraph 114 of your '301 5 declaration? 6 MR. SPORTEL: Object to form. 7 BY THE WITNESS: 8 A Yes, I agree. 9 BY MR. ROXBOROUGH: 10 Q And when reading that phrase, Dr. Rosen, 11 such irradiance is being applied to each pixel, 12 correct? 13 A Each pixel in the plane of the image 14 forming element 23, yes. 15 Q Thank you. 16 MR. ROXBOROUGH: Dr. Rosen, I want to 17 shift gears to the concept of motivating to 18 combine to references. And, actually -- I'm 19 actually closing in on -- this has actually moved 20 more quickly, this section, than I anticipated, 21 and so what we might do, I'd like to confer with 22 my colleague to see if there's anything further
94 1 read Paragraph 71 as follows -- and I'm going to 2 read it aloud, and then supply comment, but my 3 question -- I'm giving you the question before I 4 read it. But the question is effectively 5 predicated on the notion that the word 6 "illuminance" and "irradiance" are equivalent. So 7 I'm going to insert the word "irradiance" into 8 this phrase. 9 And so it would read: "That is, when 10 there is an illuminance difference (irradiance) 11 difference between images at the boundary of 12 adjacent projection images TG, the following are 13 conceivable: 1, performance differences of the 14 projection optical system 25; and, 2, performance 15 differences at the light source 21. Thus, in 16 embodiment 3, measurements of the illumination 17 (irradiance) distribution on the projection plane 18 TM of the projection image TG are performed, and 19 the brightness gradation (duty ratio) of each 20 pixel in the plane of the image forming element 32 21 is controlled to make illumination (irradiance) 22 distribution uniform."	96 1 beyond my three questions, but we may be in a 2 position to be finishing this deposition earlier 3 than anticipated. 4 And so what I would like to do is take at 5 least a 10 to 15-minute break and come back. 6 Nathan, would that be appropriate just in 7 the terms of expediency? 8 MR. SPORTEL: That's fine. Whatever you 9 want to do. 10 MR. ROXBOROUGH: That would be ideal. I 11 mean, we're 20 minutes off our normal break, but 12 if we could come back in, let's just say, 12 to 13 15 minutes, we may be in a position to wrap things 14 up. 15 I think we can go off the record. 16 (WHEREUPON, a recess was had.) 17 BY MR. ROXBOROUGH: 18 Q Dr. Rosen, I've got, I think, four 19 questions, and the first is: Dr. Rosen, nowhere 20 in your declaration do you controvert Dr. Chen's 21 opinion that the skilled artisan would be 22 motivated to combine Sekine and Greene, correct?

97 1 A Let me... 2 Q We can pull up your declaration, and, you 3 know, subject to your thoughts, control+F -- 4 A Yeah. 5 Q -- the words "motivate," "motivated to 6 combine" or just the word "motivate." 7 A Oh, yeah, sorry. If you're waiting for me 8 to respond, I -- 9 Q Yes. Sorry. How about I read the 10 question -- 11 A Okay. 12 Q I can read the question again. 13 Dr. Rosen, nowhere in your declaration, do 14 you controvert Dr. Chen's opinion that the skilled 15 artisan would be motivated to combine Sekine and 16 Greene, correct? 17 A I did not -- right, yes, I agree. 18 Q And nowhere in your declaration do you 19 controvert Dr. Chen's opinion that the skilled 20 artisan would be motivated to combine Sekine and 21 Shkolnik that's in Ground 3? 22 A Let me check that.	99 1 Q So I'll read the question in full: 2 Nowhere in your declaration do you controvert 3 Dr. Chen's opinion that Greene teaches gamma 4 adjustment with respect to Ground 2 of his 5 opinion, correct? 6 A Correct. 7 MR. ROXBOROUGH: Dr. Rosen, we have no 8 further questions, and I'll turn it over to 9 Nathan. 10 Nathan, I mentioned we can take a break, 11 which we did to be fair with -- 12 MR. SPORTEL: Sure. Give me five minutes. 13 MR. ROXBOROUGH: -- Dr. Rosen at this 14 juncture and so if you'd like time. 15 MR. SPORTEL: Let me just have five 16 minutes, and I -- I don't know that I need any. I 17 might have one, but I don't have much. 18 MR. ROXBOROUGH: Certainly. We'll be back 19 in five minutes. 20 We can come off the record, Michelle. 21 (WHEREUPON, a recess was had.) 22 MR. SPORTEL: Ky, could you quickly pull
98 1 Yes, I agree. 2 Q And, Dr. Rosen, turning to secondary 3 indicia of nonobviousness, it's fair to say that 4 nowhere in your declaration do you address 5 secondary indicia of nonobviousness, correct? 6 A Can you repeat that -- 7 Q Yeah -- 8 A -- I don't -- 9 Q -- so to give some context, secondary 10 indicia are factors that support a nonobviousness 11 conclusion. And my question is nowhere -- isn't 12 it fair to say that nowhere in your declaration do 13 you address secondary indicia of nonobviousness? 14 A I do not address that. 15 Q And, Dr. Rosen, nowhere in your 16 declaration do you controvert Dr. Chen's opinion 17 that Greene teaches gamma adjustment with respect 18 to Ground 2 of his opinion, correct? 19 A So your question is about Greene? 20 Q Correct. 21 A Greene, I believe what you said is 22 correct.	100 1 up Exhibit 9 and go to Paragraph 38. 2 THE TECHNICIAN: Stand by. 3 EXAMINATION 4 BY MR. SPORTEL: 5 Q Dr. Rosen, do you recall earlier our 6 conversation -- or your conversation with 7 Mr. Roxborough that -- regarding the level of 8 ordinary skill in the art? 9 A Yes. 10 Q And do you recall defining the level of 11 ordinary skill in the way that you did here in 12 Paragraph 38, which is a person who had a master's 13 degree in mechanical engineering, industrial 14 engineering, optics, or a similar field with 15 coursework or industry experience in additive 16 manufacturing; or a bachelor's degree with a 17 subset of that coursework and two to three years 18 of additive manufacturing experience? 19 A Yes, I recall discussing this. 20 Q Okay. And earlier in the deposition, do 21 you recall when Counsel asked you about the level 22 of ordinary skill, and you said you had a lot more

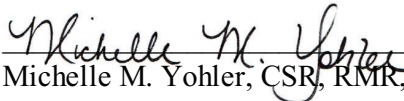
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26 (101 to 104)

101 1 experience than the person of ordinary skill 2 defined here? 3 A Yes. 4 Q Okay. And in Paragraph 39, you wrote: 5 "Although my qualifications and experience exceed 6 those of the hypothetical person having an 7 ordinary" -- "having ordinary skill in the art, my 8 analysis and opinions regarding the '301 patent 9 have been based on the perspective of a person of 10 ordinary skill in the art as of July 30th 2018." 11 Did I read that correctly? 12 A Yes. 13 Q So is it still true that, even though you 14 have a lot more experience, you gave your opinions 15 based on the level of skill defined in your 16 declaration? 17 A Yes. 18 Q Great. 19 MR. SPORTEL: No further questions from 20 me, Counsel. 21 MR. ROXBOROUGH: I don't believe we will 22 have further questions, but if we could take	103 1 MS. REPORTER: So regular delivery and no 2 rough? 3 MR. SPORTEL: I mean, if you're going to 4 auto-generate a rough, we'll take it, but regular 5 delivery is fine. 6 (WHEREUPON, the deposition was concluded 7 at 8:04 p.m. CST.) 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22
102 1 another five-minute break, I'd be grateful, Nathan 2 and -- 3 MR. SPORTEL: No problem. 4 MR. ROXBOROUGH: -- we'll be back on the 5 record in five minutes. 6 MR. SPORTEL: Okay. 7 (WHEREUPON, a recess was had.) 8 MR. ROXBOROUGH: Michelle, we've got 9 nothing further. No further questions from 10 petitioner. I guess there's just the issue of 11 logistics, but we can address that possibly off 12 the record if you think best, unless Nathan's got 13 anything further to add. 14 MR. SPORTEL: Nothing further for me. 15 (WHEREUPON, discussion was had off the 16 record.) 17 MS. REPORTER: And the transcript, 18 Mr. Sportel? 19 MR. SPORTEL: We don't need anything 20 expedited. I mean, this will be attached with the 21 petitioner reply, so we'll see it. Just whenever 22 you get a copy to us.	104 1 ACKNOWLEDGMENT OF DEPONENT 2 I, DAVID ROSEN, Ph.D., do hereby 3 acknowledge that I have read and examined the 4 foregoing testimony and the same is a true, 5 correct, and complete transcription of the 6 testimony given by me and any corrections appear 7 on the attached errata sheet signed by me. 8 9 _____ 10 (SIGNATURE) (DATE) 11 12 13 14 15 16 17 18 19 20 21 22

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Conducted on May 26, 2026

27 (105 to 108)

105 1 CERTIFICATE OF REPORTER 2 3 I, MICHELLE M. YOHLER, a Certified 4 Shorthand Reporter within and for the County of 5 Will, State of Illinois, do hereby certify: 6 That previous to the commencement of the 7 examination of the witness, the witness was duly 8 sworn to testify the whole truth concerning the 9 matters herein; 10 That the foregoing deposition transcript 11 was reported stenographically by me, was 12 thereafter reduced to typewriting under my 13 personal direction and constitutes a true record 14 of the testimony given and the proceedings had; 15 That the said deposition was taken 16 remotely before me at the time and place 17 specified; 18 That I am not a relative or employee or 19 attorney or counsel, nor a relative or employee of 20 such attorney or counsel for any of the parties 21 hereto, nor interested directly or indirectly in 22 the outcome of this action.	
106 1 IN WITNESS WHEREOF, I do hereunto set my 2 hand and affix my seal of office at Chicago, 3 Illinois, this 27th day of May, 2026. 4 5 6 7 8  9 Michelle M. Yohler, CSR, RMR, CRR 10 Certified Shorthand Reporter 11 CSR No.: 84-4531 12 13 14 15 16 17 18 19 20 21 22	

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Case Name: 3D Systems Corporation, et al. -v- Intrepid Automation, Inc. (PTAB)

Case No.: IPR2025-01242 and IPR2025-01241

Witness Name: David Rosen, Ph.D

Deposition Date: May 26, 2026

After having read my deposition, I wish to make the following changes:

PAGE__28_____ LINE__17-22_____

CHANGE__answer (A) _____

TO__question (Q) _____

REASON FOR CHANGE_____Mr Roxborough continued with his
question_____

PAGE__29_____ LINE__1-7_____

CHANGE__answer (A) _____

TO__question (Q) _____

REASON FOR CHANGE_____again, Mr. Roxborough continued his question_____

PAGE__29_____ LINE__16-22_____

CHANGE_____

TO_____these lines continue my answer that started on line 15_____

REASON FOR
CHANGE_____

PAGE__81_____ LINE__18_____

CHANGE__the pixel_____

TO each pixel

REASON FOR CHANGE I believe I would have said "each pixel" not "the pixel" since I was not referencing a specific pixel but talking in more general terms.

PAGE 94 LINE 20

CHANGE 32

TO 23

REASON FOR CHANGE the correct quote refers to item 23 not 32

☐

W

Please check box for no changes



(Signature of deponent)