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Transcript of Martin C. Peckerar, Ph.D. (Volume 3)

Date: September 10, 2021

Case: PEAG LLC, et al -v- VARTA Microbattery GMBH. (PTAB)

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WORLDWIDE COURT REPORTING & LITIGATION TECHNOLOGY

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UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE PATENT TRIAL AND APPEAL BOARD

PEAG LLC (d/b/a JLab Audio), AUDIO PARTNERSHIP LLC
and AUDIO PARTNERSHIP PLC (d/b/a Cambridge Audio),

Petitioner,

v.

VARTA MICROBATTERY GMBH,

Patent Owner.

Case IPR2020-01211	Case IPR2020-01212
USP 9,496,581	USP 9,153,835

Case IPR2020-01213	Case IPR2020-01214
USP 9,799,858	USP 9,799,913

VIDEOTAPED DEPOSITION OF MARTIN C. PECKERAR, PH.D.

VOLUME 3

Conducted Virtually

Friday, September 10, 2021

8:56 a.m. EDT

Job No.: 395274

Pages: 351 - 445

Reported by: Monique Vouthouris, CCR, RPR, CRR

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REMOTE VIDEOTAPED deposition of MARTIN C.
PECKERAR, PH.D., pursuant to notice, before Monique
Vouthouris, CCR, RPR, CRR, Notary Public in and for
the States of New Jersey and New York.

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ALSO PRESENT:

JEAN-LOUIS ZIESCH, Planet Depos Videographer

SARAH LOILER, Planet Depos Technician

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C O N T E N T S

EXAMINATION OF MARTIN C. PECKERAR, PH.D.	PAGE
By Mr. Palmieri	357
By Mr. Mueller	439

E X H I B I T S

(Attached to transcript.)

DEPOSITION EXHIBIT	PAGE
Exhibit 1005 U.S. Patent Application	376
Pub. No. US 2005/0233212, Kaun.	
Exhibit 1039 Publication of Unexamined	386
Patent Application (A), Kannou.	
Exhibit 1040 U.S. Patent Application,	399
Pub. No. US 2007/0218356, Kawamura.	
Exhibit 2050 Supplemental Declaration of	360
Martin C. Peckerar, Ph.D.	

1	P R O C E E D I N G S	
2		08:55:45
3	THE VIDEOGRAPHER: This is the beginning of	08:55:45
4	Media Number 1, Volume Number 3 of the continuation of	08:55:48
5	the videotaped deposition of Dr. Martin Peckerar, in	08:55:52
6	the matter of PEAG LLC, et al., versus VARTA	08:55:56
7	Microbattery, et al., in the U.S. Patent and Trademark	08:56:03
8	Office, Case Number IPR 2020-01211, -12, -13, and -14.	08:56:08
9	Today's date is Friday, September the 10th,	08:56:18
10	2021. The time on the video monitor is 8:56 a.m.	08:56:23
11	Eastern Standard Time. The certified videographer	08:56:30
12	today is Jean-Louis Ziesch representing Planet Depos.	08:56:33
13	This video deposition is taking place remotely.	08:56:37
14	Would counsel please identify yourself and	08:56:40
15	state whom you represent.	08:56:42
16	MR. PALMIERI: On behalf of the petitioners	08:56:45
17	PEAG LLC, Audio Partnership LLC and Audio Partnership	08:56:50
18	PLC, my name is Nick Palmieri, with Baker Botts. Here	08:56:55
19	with me is Paul Ragusa, also with Baker Botts.	08:56:59
20	MR. MUELLER: This is Wes Mueller from	08:57:03
21	Leydig Voit & Mayer in Chicago, on behalf of the	08:57:09
22	patent owner VARTA Microbattery GmbH.	08:57:11

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1 THE VIDEOGRAPHER: The court reporter today 08:57:16
2 is Monique Vouthouris representing Planet Depos. 08:57:17
3 Would the court reporter please swear in the witness. 08:57:20
4 MARTIN C. PECKERAR, PH.D., 08:57:41
5 being first duly sworn or affirmed by the Notary, 08:57:41
6 testifies as follows: 08:57:41
7 EXAMINATION 08:57:41
8 BY MR. PALMIERI: 08:58:00
9 Q Good morning, Dr. Peckerar. How are you 08:58:00
10 doing today? 08:58:03
11 A Doing well. Hopefully you are, too. 08:58:04
12 Q So before we get started, I just wanted to 08:58:06
13 ask is there anyone else in the room with you right 08:58:10
14 now? 08:58:12
15 A Yes. Mr. Mueller and Mr. Wittmann. 08:58:13
16 Q So as a preliminary matter, you've prepared 08:58:21
17 two declarations in this case so far. Is that 08:58:25
18 correct? 08:58:28
19 A Yes, there are two transcripts here. 08:58:28
20 Q Well, so the transcripts I believe are 08:58:35
21 referring to previous depositions. But for the IPRs 08:58:42
22 at issue, you prepared two expert declarations? 08:58:45

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1 Q And so -- who provided this assistance to 08:59:42
2 you? 08:59:46

3 A Well, that was done by Leydig. They have a 08:59:46
4 drafting office. 08:59:49

5 Q But you prepared the substantive content of 08:59:52
6 each section. That's correct? 08:59:56

7 A Yes. 08:59:58

8 Q And in preparing this declaration, did you 08:59:59
9 review any particular materials? 09:00:05

10 A Yes, of course, and those are listed in one 09:00:09
11 of the sections of my -- of my supplemental report. 09:00:12

12 Q And if -- if we could bring onto the screen, 09:00:17
13 I circulated a copy of the supplemental declaration. 09:00:22
14 And on pages 1 and 2 of that declaration, you list the 09:00:27
15 materials that you considered? 09:00:34

16 A Yes, Section III. 09:00:37

17 Q Section III, that's right. And did you 09:00:38
18 review any other materials not listed in that section? 09:00:41

19 A Those are the materials that I spent most 09:00:45
20 time on and they're -- 09:00:48

21 THE TECHNICIAN: Mr. Palmieri, would you 09:00:52
22 like this marked as an exhibit? 09:00:54

1 MR. PALMIERI: Yes. Could you mark it as 09:01:01
2 Exhibit 2050. It should already be physically marked 09:01:05
3 in the copy, but... 09:01:09
4 (Exhibit 2050, Supplemental Declaration of 09:01:09
5 Martin C. Peckerar, Ph.D., marked for identification.) 09:01:18
6 Q Okay. And so if you used any reference or 09:01:18
7 reviewed any -- any materials for this declaration 09:01:22
8 for -- in any substantive manner, they will be listed 09:01:26
9 in that Section III. Is that correct? 09:01:30
10 A Yes. Yes. 09:01:32
11 Q And before we go on, are there any errors or 09:01:34
12 corrections that you're aware of in your supplemental 09:01:38
13 declaration that you would like to resolve? 09:01:42
14 A I have none. I don't -- it is possible that 09:01:45
15 I missed a typo or two. I would apologize for that. 09:01:50
16 Q So you were previously deposed on June 2nd 09:01:55
17 and 3rd. Is that correct? 09:01:59
18 A I believe that was the case. 09:02:02
19 Q Did you review those deposition transcripts? 09:02:04
20 A Yes. 09:02:09
21 Q Did you review them in anticipation for 09:02:09
22 today's deposition or did you just generally review 09:02:12

1 them? 09:02:16

2 A Just generally reviewed them. 09:02:16

3 Q All right. Did you discuss your deposition 09:02:19

4 testimony with anyone? 09:02:22

5 A After the deposition was given, yes, I did. 09:02:25

6 Q And that was -- with whom did you discuss? 09:02:31

7 A With Leydig counsel, to some extent. 09:02:34

8 Q Did you discuss with anyone else? 09:02:38

9 A No. 09:02:41

10 Q You did not discuss with anyone at VARTA 09:02:41

11 directly. Is that correct? 09:02:45

12 A No. Well, I met with -- with VARTA 09:02:47

13 personnel. Not in conjunction with these -- with 09:02:52

14 these records and proceedings. 09:02:56

15 Q So you didn't -- you did not -- just to 09:02:59

16 clarify, you did not discuss your deposition 09:03:02

17 transcript with any VARTA personnel? 09:03:04

18 A No. 09:03:09

19 Q And did you discuss whether any of your 09:03:09

20 previous testimony in those depositions was contrary 09:03:12

21 to any of VARTA's positions? 09:03:15

22 A No. 09:03:17

1 Q Since your previous deposition, have you 09:03:18
2 been deposed in any other matters? 09:03:23
3 A No. 09:03:27
4 Q And have you done anything to prepare for 09:03:34
5 today's deposition specifically? 09:03:36
6 A Well, I read over my supplemental report a 09:03:37
7 number of times, and I -- I looked -- looked at the 09:03:42
8 materials that were referenced therein. That would be 09:03:51
9 the extent of my preparation. 09:03:57
10 Q So in addition to the supplemental 09:04:00
11 declaration, you reviewed other -- other relevant 09:04:03
12 materials that might have been cited therein? 09:04:07
13 A Well, the supplemental included a number 09:04:11
14 of -- of references that were not in the original 09:04:17
15 deposition. But I believe those were all pretty 09:04:22
16 well-documented and listed in the supplemental. 09:04:26
17 Q But you didn't -- you didn't refer, in 09:04:29
18 preparation for today, to any materials that are 09:04:32
19 outside of your supplemental declaration? 09:04:34
20 A No. 09:04:37
21 Q Okay. And did you prepare with anyone? 09:04:39
22 A Most of the work that I did, of course, 09:04:44

1 was -- was my own reading and review of all the -- of 09:04:48
2 the supplemental and the cited materials in the 09:04:54
3 supplemental. I did have some conversation with -- 09:04:57
4 with Leydig. 09:05:03
5 Q And do you know when you met with VARTA's 09:05:05
6 counsel? 09:05:10
7 A I would have to go back to my hours log. I 09:05:10
8 don't have that with me. 09:05:14
9 Q Do you have an approximate period of time 09:05:15
10 that you met with them? 09:05:19
11 A Well, yeah, I would -- well, certainly 09:05:20
12 between -- between the deposition in June and today 09:05:25
13 there have been a couple of conversations, yeah. 09:05:28
14 Q But in preparation specifically for this 09:05:31
15 deposition have you met with them? 09:05:34
16 A Well, I certainly met with them before this 09:05:36
17 deposition and we discussed issues relating to it. 09:05:40
18 Q Okay. And do you know about how -- at least 09:05:43
19 how many times you've met with them, just a rough 09:05:46
20 idea? 09:05:49
21 A I would say maybe three or four times. As I 09:05:49
22 said, I'd have to look at my hours log. I'm not sure. 09:06:03

1 I don't believe that this was part of the -- of the 09:06:08
2 materials considered section. 09:06:10

3 Q So in terms of your supplemental 09:06:15
4 declaration -- yeah, supplemental declaration itself, 09:06:20
5 I'd like to turn to what is marked as page 7 of 09:06:23
6 Exhibit 2050, and that begins Section 5.A.1. In this 09:06:31
7 section you discuss -- you discuss dendrite growth. 09:06:41
8 Is that correct? 09:06:49

9 A Yes. 09:06:49

10 Q Do you recall that? 09:06:49

11 A Yes. Yes. 09:06:50

12 Q So can you describe in your words how 09:06:52
13 dendrites form? 09:06:55

14 A Yes, okay. Dendrites are little trees, 09:06:57
15 okay. They shoot up from -- from the negative 09:07:01
16 terminal plates of a battery. Just about any battery, 09:07:05
17 by the way. And in the case of a lithium battery, the 09:07:11
18 problem is that lithium intercalates into the cathode; 09:07:17
19 in other words, it inserts itself into little passages 09:07:22
20 in the -- in the storage material that constitute the 09:07:27
21 cathode. And sometimes that -- that insertion process 09:07:32
22 lags the arrival rate of the -- of various ions, like 09:07:40

1 a lithium ion. And as a result, a tree grows up 09:07:46
2 because the material beneath it can't absorb it. It's 09:07:50
3 a lot like macular degeneration, but we won't get into 09:07:55
4 that. 09:08:00

5 The -- and so there are two requisites for 09:08:03
6 the -- for the tree-forming site. The region in which 09:08:07
7 the tree grows has to be particularly attractive to 09:08:13
8 the ion in solution, and that ion has to be 09:08:19
9 incident -- what we call a -- it's called a nucleating 09:08:26
10 site, and the tree will grow up from the nucleating 09:08:30
11 site, which is triggered by a reduction in free energy 09:08:37
12 of the ion itself. And so you get these tree-like 09:08:40
13 structures shooting up. 09:08:45

14 Would you like some more? Let me also say, 09:08:46
15 I mean, in secondary cells, dendrite formation is a 09:08:50
16 major problem in just about every cell that you can 09:08:58
17 imagine. I did a lot of work in trying to develop 09:09:01
18 rechargeable zinc batteries. We had a hell of a time 09:09:05
19 with dendrites in rechargeable zinc. 09:09:10

20 Q So following up on that, can you describe -- 09:09:15
21 and maybe I just missed this a little -- where the 09:09:19
22 dendrite formation begins at. So we have -- and, 09:09:24

1 actually, let me clarify that a little more. So let's 09:09:28
2 say we have an electrode layer and a separator layer 09:09:32
3 and a second electrode layer. Can you describe where 09:09:36
4 in that configuration the dendrite formation would 09:09:42
5 begin? 09:09:45

6 MR. MUELLER: Objection to form. 09:09:45

7 A Well, let's see here. Okay. It will form 09:09:53
8 in what we call nucleating sites, areas where the ion 09:10:05
9 motion is impeded and is more likely to plate, and 09:10:11
10 that -- and there could be secondary considerations as 09:10:22
11 well. I mean, let's suppose that -- of course, all of 09:10:25
12 the separated materials that we discuss are either 09:10:30
13 woven, meaning that they have fibers across one 09:10:36
14 another which leave pores, the nucleation might occur 09:10:40
15 within a pore, and it might be assisted by a kind of 09:10:45
16 scaffolding that a separator represents. And that 09:10:50
17 will be true in other ionic separators, like Nafion or 09:10:53
18 other materials as well. 09:10:59

19 So, so does that answer your question, if 09:11:01
20 you'd like? 09:11:09

21 Q That helps. I have some follow-ups on it. 09:11:10

22 A Okay. 09:11:12

1 Q So can -- can these nucleating sites be 09:11:13
2 found on the electrode layers as opposed to the 09:11:18
3 separator materials? 09:11:21

4 A Yeah, they can pretty well form anywhere, 09:11:22
5 yes. 09:11:25

6 Q And so is the separator material usually 09:11:27
7 chosen to reduce dendrite formation? 09:11:32

8 MR. MUELLER: Objection to form. 09:11:36

9 A Well, you do what you can to get rid of the 09:11:40
10 dendrites, okay. You use surface treatments, you 09:11:45
11 choose the separator materials. In the barer areas, I 09:11:49
12 mean, that was relatively easy to address because in 09:11:57
13 the barer areas you generally see -- see structures 09:12:01
14 forming which we call mounds. Maybe I'm getting ahead 09:12:05
15 of my report, but you have to remember I taught this 09:12:11
16 stuff for a long time so you'll excuse me for waxing 09:12:14
17 poetic. 09:12:19

18 We use brightener additives to plating mast 09:12:20
19 to avoid mounding, and the -- and so there were a 09:12:26
20 number of approaches that you would use to eliminate 09:12:32
21 dendrite formation. 09:12:37

22 Q So I want to look at a specific example and 09:12:39

1 so this will be the Kaun reference, which you discuss 09:12:42
2 throughout your report. It's Exhibit 1041 in these 09:12:49
3 IPRs. We can stay on the same Exhibit 2050 as well, 09:12:54
4 that's all right. 09:13:00

5 So, Dr. Peckerar, in Kaun we have a specific 09:13:02
6 example of a spiral wound electrode assembly, with a 09:13:09
7 separator located in between the electrode layers. Is 09:13:13
8 that correct? 09:13:18

9 A Yes. 09:13:18

10 MR. MUELLER: Objection to form. 09:13:19

11 Q And one of the topics of discussion for that 09:13:22
12 reference is the formation of gaps between the 09:13:26
13 separator materials. Do you recall that? 09:13:30

14 MR. MUELLER: Objection to form. 09:13:33

15 A Yes, I recall that discussion. 09:13:35

16 Q And so bringing -- bringing the dendrites 09:13:39
17 back in, would dendrites form in the electrode 09:13:46
18 assembly of Kaun? 09:13:50

19 MR. MUELLER: Objection to form. 09:13:52

20 A As I just testified, dendrites can form 09:13:53
21 wherever. Nucleating sites develop and nucleating 09:13:59
22 sites can develop pretty much anywhere. 09:14:04

1 Q So the nucleating sites could form on the 09:14:07
2 electrode layers of Kaun? 09:14:10

3 MR. MUELLER: Objection to form. 09:14:12

4 A And in the separators as well. Anywhere. 09:14:14

5 Q So could they form in the gap between the 09:14:20
6 separator layers? 09:14:23

7 MR. MUELLER: Objection to form. 09:14:24

8 A As I said, I do have a section on this in my 09:14:32
9 supplemental report, but let me say yes, they could 09:14:36
10 form in those regions. 09:14:40

11 Q And if they form in the gap regions, would 09:14:45
12 there be anything to inhibit their growth? 09:14:48

13 MR. MUELLER: Objection to form. 09:14:51

14 A What would inhibit their growth would be the 09:14:52
15 rate of arrival of the -- of the ion that constitutes 09:14:58
16 the dendrite, and -- and what that arrival rate is 09:15:03
17 depends on a number of things. And I wouldn't say 09:15:11
18 that there's any reason to believe that that arrival 09:15:15
19 rate or the density of nucleating sites would be 09:15:19
20 different in either the gap or in the region over 09:15:24
21 the -- beneath the separator. 09:15:28

22 In fact, as I mentioned earlier, there's 09:15:31

1 reason to believe that the separator might serve as a 09:15:33
2 scaffolding that support the growth of the tree. 09:15:36

3 Q So does the separator then form to -- 09:15:42
4 apologies, let me rephrase that. 09:15:48

5 Does the separator then act to inhibit the 09:15:50
6 growth of dendrites so that they cannot form a 09:15:53
7 connection between the electrode layers? 09:15:58

8 MR. MUELLER: Objection to form. 09:16:00

9 A There's no reason to believe that. 09:16:02

10 Q So it's your testimony that the separator 09:16:06
11 does not inhibit -- 09:16:08

12 A It could actually -- it could actually speed 09:16:11
13 it up, but you'd have to -- there's a tremendous 09:16:13
14 amount of literature on this. I believe we've 09:16:19
15 included some of that in our -- I've included that in 09:16:23
16 my report and -- but as I said, you can get little 09:16:27
17 trees forming anywhere. 09:16:34

18 Q And so you have another section here, and 09:16:37
19 it's on pages 8 to 9 of Exhibit 2050, that describes 09:16:40
20 the use of a polyvinylidene fluoride, also known as 09:16:48
21 Kynar, that's described in the Kaun reference. 09:16:56

22 A Right. 09:16:59

1 Q Can you -- can you describe what this Kynar 09:16:59
2 is doing? And apologies if I'm saying that wrong. 09:17:03
3 I'm happy to take a corrected pronunciation if you 09:17:07
4 have it. 09:17:11

5 A Yeah, no, it is Kynar. I believe he 09:17:12
6 pronounces his name Kaun. 09:17:15

7 If -- if the butt joint is too large, of 09:17:21
8 course there's a danger that you could -- there are 09:17:29
9 certain deleterious effects that could occur, but -- 09:17:33
10 and so if you're worried about that, according to 09:17:37
11 Kaun, you can put Kynar, which is a resin, an 09:17:42
12 insulating resin, and solve the problem. 09:17:47

13 Q And this Kynar would prevent dendrite 09:17:53
14 formation? 09:17:58

15 A I think that that -- I don't -- that 09:18:01
16 certainly wouldn't eliminate the dendrite problem, no. 09:18:07
17 But it -- it would prevent the formation of other 09:18:11
18 types of deleterious effects, and I believe that was 09:18:19
19 the main issue. 09:18:26

20 Q So you've noted a couple times the -- the 09:18:28
21 effects that can be caused from a gap forming. Could 09:18:33
22 you describe some of those deleterious effects? 09:18:38

1 A Obviously you've got a separator, right, and 09:18:42
2 on top of and on bottom under the active electrodes. 09:18:49
3 And if you've got this huge gap, when you squeeze 09:18:54
4 things together, you short the electrodes out. 09:19:00
5 Also, we make a big deal -- okay. We make a 09:19:02
6 big deal about particle sizes, okay. We choose the 09:19:12
7 particle sizes to be large enough in the active 09:19:17
8 material so that -- just large enough so that they 09:19:23
9 won't penetrate the separator material themselves and 09:19:26
10 also they wouldn't fall into any -- to create shorts 09:19:29
11 in themselves. 09:19:37
12 So we -- so we -- as a matter of fact, in 09:19:39
13 one of my companies we had a very expensive particle 09:19:46
14 size sorter and we would choose specific particle 09:19:51
15 sizes that wouldn't crash through the separator and at 09:19:54
16 the same token wouldn't fill up the pores of the 09:20:00
17 materials that we were using. They would be -- they 09:20:03
18 wouldn't be too small, they wouldn't be too big; 09:20:06
19 they'd be just right. But these are all the 09:20:11
20 considerations that go into battery manufacturing. 09:20:14
21 So those are some of the issues; there will 09:20:16
22 be shorting out of the layer and what all, which I 09:20:19

1 think would be rare, even in Kaun's case. Or the 09:20:21
2 particles which would pierce the layer for -- well, 09:20:26
3 those are the main issues, so that would outline. 09:20:35
4 Q And so -- so going back to this Kynar 09:20:39
5 material, if we assume that it's being used as an 09:20:44
6 adhesive to fill that gap, what differentiates it from 09:20:49
7 the separator material? 09:20:55
8 MR. MUELLER: Objection to form. 09:20:56
9 A Well, Kynar is non-conductive resin. Now, 09:20:57
10 the separator materials -- as I've testified 09:21:19
11 previously, the separator materials are highly 09:21:24
12 engineered structures and they're aimed at passing 09:21:27
13 ions of a certain type. Now, clearly the Kynar isn't 09:21:31
14 an engineered material that was designed to do that. 09:21:38
15 So it might lead to some effective area reduction of 09:21:42
16 the battery plate. Not a lot. 09:21:50
17 Q So the -- 09:21:50
18 A Small amount. 09:22:01
19 (Court Reporter clarification.) 09:22:01
20 A Not a lot, small amount. 09:22:04
21 Q So the Kynar doesn't facilitate ionic 09:22:04
22 conduction the way that the separator material does? 09:22:10

1 discusses the central fastener of Kaun. Is that 09:23:35
2 correct? 09:23:41
3 A Yes. 09:23:41
4 Q And you reproduce on the next page, page 13, 09:23:46
5 you reproduce a number of figures from Kaun. Do you 09:23:52
6 see those? 09:23:56
7 A Yes. 09:23:57
8 Q If we're looking only at Figure 7A, is the 09:24:00
9 central fastener shown in that figure? 09:24:07
10 A No. 09:24:10
11 Q And then moving on to Figure 7C, do those 09:24:14
12 figures show -- does Figure 7C show a central 09:24:20
13 fastener? 09:24:24
14 A Yes and yes. 09:24:25
15 Q And if we could move into Kaun itself, and 09:24:27
16 that's Exhibit -- apologies, I don't remember the 09:24:33
17 exact exhibit number for Kaun. Sorry, just one 09:24:41
18 second. 09:24:56
19 So Kaun is Exhibit 1005 of these IPR 09:25:35
20 proceedings. 09:25:41
21 A Yes. 09:25:42
22 MR. PALMIERI: And, Sarah, could we bring 09:25:48

1 that up as well on the screen. 09:25:51

2 THE TECHNICIAN: Is that the document ending 09:26:02

3 in U.S. 2005/0233212? 09:26:04

4 MR. PALMIERI: That's correct, yeah. Yes, 09:26:10

5 starts with K-a-u-n. Great. Thank you. 09:26:11

6 (Exhibit 1005, U.S. Patent Application Pub. 09:26:11

7 No. US 2005/0233212, Kaun, marked for identification.) 09:26:11

8 BY MR. PALMIERI: 09:26:20

9 Q So I want to look at paragraph 69 of 0069, 09:26:20

10 which corresponds with those figures that we were just 09:26:29

11 looking at, 7A through 7D. 09:26:33

12 A You just passed it. 09:26:38

13 Q It should be on page 4 -- page 15 of this 09:26:40

14 PDF, overall? 09:26:44

15 A Is that the one you're referring to? 09:26:47

16 Q Yeah. So those are the figures, and then if 09:26:49

17 we can go to paragraph 0069 on this specific language. 09:26:52

18 THE TECHNICIAN: I'm sorry, I'm not entirely 09:27:04

19 sure where to go. 09:27:06

20 MR. PALMIERI: Sorry. So within Kaun, if 09:27:07

21 you could go to page -- page 15 of the PDF, and on 09:27:11

22 that page is paragraph 69, on the left there, yeah. 09:27:18

1 Perfect. Thanks. 09:27:29

2 Q Okay. So in paragraph 69 we can see there's 09:27:31

3 a description of Figure 7C that says it "depicts the 09:27:38

4 outer pan of the housing for the electrochemical 09:27:43

5 device, including the central [sic] fastener, 09:27:46

6 polymeric tube." Do you see that portion, 09:27:50

7 Dr. Peckerar? 09:27:55

8 A Yes, I do. 09:27:56

9 Q And so does this imply to you that there's 09:27:57

10 an embodiment that doesn't have a central fastener as 09:28:00

11 well -- 09:28:04

12 MR. MUELLER: Objection to form. 09:28:05

13 Q -- and actually specifies -- 09:28:06

14 A Well, as I've testified before, the center 09:28:08

15 fastener is an essential part of this construct, and 09:28:13

16 what you said doesn't contradict that. 09:28:16

17 Q So can you describe the purpose of the 09:28:20

18 center fastener in Kaun? 09:28:23

19 A Sure. Okay. Most of the cells that have 09:28:26

20 been discussed in the past all had beaded -- what 09:28:36

21 we've been terming beaded over seals, beaded over 09:28:44

22 closure, and these present a mechanical impediment to 09:28:48

1 the motion the can separating from the top. 09:28:51

2 These cells, for various reasons, don't 09:28:54

3 and -- but this is -- by the way, I mean, if you look 09:28:57

4 at the patents cited, that's a rare case now. What -- 09:29:02

5 what the -- what the issue is is you need as much 09:29:11

6 force that would prevent motion along the axis of the 09:29:17

7 top and can. Usually a single approach isn't enough, 09:29:25

8 and that's what's cited here. 09:29:30

9 In this particular case, there is a 09:29:35

10 requirement for that center fastener, in this case the 09:29:38

11 polymeric tube, which can be affixed in a number of 09:29:42

12 ways to the can, in this case the can top, and then 09:29:47

13 there would be a mating member on the bottom. And 09:29:55

14 these would supply the necessary force-fit separate, 09:30:01

15 hold the cell together. And if this is a polymeric 09:30:08

16 tube, there are a number of ways to affix that tube to 09:30:13

17 the can top, and that would explain why it doesn't -- 09:30:16

18 it isn't shown in Figure A as penetrating. 09:30:19

19 Q And so is this central fastener used to 09:30:25

20 provide pressure-loading to the cell? 09:30:31

21 MR. MUELLER: Objection to form. 09:30:33

22 A Pressure loading? No, not pressure-loading. 09:30:36

1 Q Is it used in the pressure-release mechanism 09:30:42
2 of Kaun? 09:30:47
3 MR. MUELLER: Objection to form. 09:30:47
4 A No. 09:30:48
5 Q I'd like to look now at Figure 12B of Kaun, 09:30:49
6 and this is up on page 8 of -- of the PDF. 09:31:00
7 A The Kaun patent? 09:31:06
8 Q Yes, page 8 of the Kaun patent. 09:31:08
9 A Yup. 09:31:12
10 Q And can you describe what this figure is 09:31:14
11 showing? 09:31:16
12 A Yeah. It's spring-load. It's an additional 09:31:17
13 method of ensuring closure of the can, of the housing. 09:31:23
14 You've got little springs, 38, that screw down and 09:31:30
15 hold the cells together. Kaun was greatly afraid of 09:31:37
16 the cells blowing apart, and so he used a number of 09:31:42
17 approaches to ensure that that didn't happen. 09:31:45
18 Q And is there a central fastener in this 09:31:48
19 figure? 09:31:52
20 MR. MUELLER: Objection to form. 09:31:53
21 A Honestly, of course, that would appear in 09:31:54
22 the -- in those central regions full of rectangles. 09:32:00

1 While I don't see it, it doesn't mean it's not there. 09:32:08

2 Q But you can't identify a central fastener 09:32:11

3 that's shown in this figure. Is that correct? 09:32:15

4 A Yes. But in the body of the patent he 09:32:18

5 refers to the need for the center fastener over and 09:32:20

6 over, as well as the claim. 09:32:23

7 Q And I'd like to go now down to paragraph 09:32:28

8 120, which is on page 20 of this PDF -- 09:32:32

9 A Okay. 09:32:38

10 Q -- down near the bottom, bottom right of the 09:32:38

11 page. So let's looking -- looking at the last 09:32:41

12 sentence there, it recites, "The gasket 32, usually a 09:32:49

13 polyethylene, can also be an adhesive polymer such as 09:32:54

14 DuPont Surlyn, to seal the cell without 09:32:59

15 pressure-loading where a pressure-release seal is not 09:33:03

16 required." Do you see that? 09:33:09

17 A Yes. 09:33:10

18 Q And so does this embodiment necessarily 09:33:10

19 require a central fastener? 09:33:14

20 MR. MUELLER: Objection to form. 09:33:16

21 A He doesn't teach against it in this 09:33:17

22 paragraph. What he's saying amplifies what we've been 09:33:28

1 talking about earlier, that -- that that outer seal, 09:33:33
2 the gasket seal, really only provides partial closure 09:33:41
3 of the cell. The way that works is as the gas build 09:33:45
4 up, pressure build up in the cell, the housing will -- 09:33:52
5 will move apart and the -- and a little section at the 09:33:59
6 bottom of the gasket will open up and that will admit 09:34:09
7 gas to create a vent. 09:34:17

8 But, you see, the reason I say that that 09:34:19
9 amplifies what we said earlier is that by itself the 09:34:22
10 gasket doesn't create a true -- while it -- true 09:34:27
11 closure of the cell. I mean, and this isn't a truly 09:34:31
12 closed cell any way you look at it; it's only 09:34:36
13 intermittently closed because it admits venting. 09:34:40

14 But the idea is that the -- well, if you 09:34:43
15 look at the -- the housing insert, the top housing 09:34:45
16 insert, it's elevated, it allows gas egress through -- 09:34:50
17 through the gasket region. So that indicates that the 09:34:56
18 gasket by itself isn't a sufficient seal, okay. 09:34:59

19 And so, now, he, again -- he, again, 09:35:04
20 speculates, throwing this over the wall that, well, if 09:35:12
21 you want these cells to be truly closed, maybe you 09:35:15
22 could use DuPont Surlyn. He doesn't cite any data, he 09:35:19

1 doesn't cite he's done this, but he says, well, maybe 09:35:22
2 you could use a better adhesive. But that is 09:35:26
3 speculation. 09:35:30

4 Q So -- so in one embodiment of Kaun then, 09:35:32
5 there's a pressure-release mechanism where the seal 09:35:37
6 will allow gas to be vented. Is that correct? 09:35:41

7 A Right. The gasket will allow gas venting, 09:35:44
8 right. 09:35:47

9 Q And -- but in paragraph 120 here, we see an 09:35:47
10 embodiment where pressure-release seal is not required 09:35:52
11 in the cell. Is that correct? 09:35:56

12 MR. MUELLER: Objection to form. 09:35:58

13 A No -- first of all, you know, on so many 09:35:59
14 counts, okay, every cell requires some form of 09:36:08
15 pressure relief. Just because you're not providing 09:36:12
16 that venting through the gasket doesn't mean he 09:36:14
17 doesn't have pressure relief elsewhere in the cell. 09:36:17
18 These things could be bombs. 09:36:20

19 What he's also citing is something that -- 09:36:27
20 that isn't followed up on either of the rest of the 09:36:30
21 patent or in the claims. He's saying, well, you know, 09:36:33
22 if you really want to stick these things together, 09:36:36

1 maybe you could use a better -- a better adhesive. 09:36:39
2 But he doesn't cite the degree to which that -- that 09:36:44
3 adhesive by itself would seal the cell. That doesn't 09:36:50
4 preclude the center seal -- the center fastener which 09:36:54
5 he -- which he refers to over and over again in the 09:36:59
6 patent. 09:37:02
7 Q Okay. But in -- in this embodiment in 09:37:04
8 paragraph 120, this embodiment is directed to a cell 09:37:09
9 that doesn't have the same pressure-release gasket 09:37:17
10 seal as, you know, the other embodiments that we were 09:37:24
11 discussing? 09:37:28
12 MR. MUELLER: Objection to form. 09:37:29
13 Q Regardless of the central fastener or not, 09:37:29
14 this, this embodiment doesn't include a 09:37:33
15 pressure-release seal? 09:37:36
16 MR. MUELLER: Objection to form. 09:37:38
17 A But he is not -- he's not discounting the 09:37:42
18 need for the center fastener here. All he's saying is 09:37:50
19 that if you have some other -- I mean, this is 09:37:55
20 again -- I apologize myself for speculating. But 09:37:57
21 what -- what he is definitely saying here is that -- 09:38:02
22 that you can do -- you can get better sealing using an 09:38:05

1 adhesive polymer and then the additional venting 09:38:10
2 mechanism and -- but that does -- that does not -- it 09:38:14
3 doesn't allow you to leave this center fastener off 09:38:24
4 altogether. 09:38:29

5 Q And the vent in this embodiment then would 09:38:32
6 not be at the point -- at the gasket? 09:38:38

7 MR. MUELLER: Objection to form. 09:38:40

8 Q I can rephrase that if you need a better -- 09:38:42

9 A Well, it's my -- well, maybe I shouldn't 09:38:46
10 render an opinion on this, but let me just state that, 09:38:54
11 that -- okay. The meaning of this paragraph is 09:38:59
12 that -- as I've said both in my preliminary report and 09:39:03
13 the supplementary report is DuPont Surlyn could be 09:39:10
14 used to provide a one additional mechanism for 09:39:14
15 sealing. It doesn't discount the need that's 09:39:23
16 expressed over and over again in the other -- 09:39:27
17 throughout the patent and claims that there should be 09:39:30
18 a center seal. 09:39:32

19 Q And so one last question on this. Would the 09:39:36
20 seal provided by this DuPont Surlyn be airtight? 09:39:39

21 MR. MUELLER: Objection to form. 09:39:43

22 A If Kaun made that statement, it would be 09:39:45

1 speculation. I don't think we have any evidence that 09:39:53
2 that would be the case. He's citing it's a potential. 09:39:57
3 Q Okay. So now I'd like to move on to 09:40:05
4 another -- another piece of prior art, and this is 09:40:08
5 Exhibit 1039. I will refer to it as Kannou, and this 09:40:11
6 is a Japanese -- 09:40:21
7 A Yes. 09:40:21
8 Q -- patent application, which we provided a 09:40:24
9 translation for. 09:40:27
10 MR. PALMIERI: And, Sarah, so that should be 09:40:32
11 marked as Exhibit 1039 and it's -- 09:40:34
12 THE TECHNICIAN: Is the exhibit entitled 09:40:39
13 K-w-o-n? 09:40:44
14 MR. PALMIERI: No. 09:40:45
15 THE WITNESS: No. Kannou. 09:40:45
16 MR. PALMIERI: This is JP2003-031266. 09:40:46
17 THE TECHNICIAN: I'm sorry, sir, I don't 09:40:52
18 have that exhibit. 09:40:54
19 THE WITNESS: Excuse me, may I take a brief 09:40:57
20 break? 09:41:01
21 MR. PALMIERI: Yeah, of course. Do you want 09:41:01
22 to take -- 09:41:01

1 THE WITNESS: 60 seconds. 09:41:02

2 MR. PALMIERI: Yeah, can we go off the 09:41:03

3 record, please. 09:41:04

4 THE VIDEOGRAPHER: It is 9:41 a.m. We go 09:41:05

5 off the record. 09:41:10

6 (Recess 9:41 a.m. - 9:44 a.m.) 09:41:11

7 THE VIDEOGRAPHER: It is 9:44 a.m. We are 09:44:45

8 back on the record. 09:44:49

9 (Exhibit 1039, Publication of Unexamined 09:44:49

10 Patent Application (A), Kannou, marked for 09:44:49

11 identification.) 09:44:51

12 BY MR. PALMIERI: 09:44:51

13 Q All right. So, Dr. Peckerar, I want to move 09:44:59

14 on to Exhibit 1039, and that's Kannou, which is a 09:45:02

15 Japanese application. Let's -- first, when did you 09:45:07

16 first see this -- this piece of art? 09:45:16

17 A This is relatively recent. I mean, the 09:45:19

18 name -- the first wave of patents that I analyzed was 09:45:31

19 Kobayashi and Kaun and others, of course. But I 09:45:39

20 believe that Kannou came in with these -- with these 09:45:46

21 additional -- with the most recent set of patents that 09:45:58

22 we've been discussing here in the supplemental claims. 09:46:07

1 Q So you did not see Kannou prior to your 09:46:15
2 previous deposition? 09:46:18

3 A I'm -- I can't say with certainty. I 09:46:20
4 reviewed in detail a large number of patents here. I 09:46:28
5 don't know the dates in which I analyzed or became 09:46:32
6 exposed to any one. I know Kannou is relatively 09:46:39
7 recent in the patent stream. There's no end of 09:46:43
8 reading here. 09:46:46

9 Q So you don't recall the specific time frame 09:46:47
10 when you -- when you were first introduced to the 09:46:49
11 patent? 09:46:52

12 A As I said, it was later -- later than Kaun 09:46:52
13 and Kobayashi. 09:46:55

14 Q And was this patent application provided to 09:46:57
15 you by -- by VARTA's counsel? 09:47:02

16 A I believe so. But as I said, honestly, I 09:47:09
17 have done a lot of reading, this has taken a lot of 09:47:15
18 time, and I don't remember the sources or the exact 09:47:18
19 dates on which I received the various documents. 09:47:22

20 Q So just to clarify, you didn't do any 09:47:26
21 independent searching to find Kannou, to your 09:47:29
22 recollection? 09:47:32

1 A No. But let me also say, I mean, I read the 09:47:34
2 patent literature. I still have a semi-functioning 09:47:41
3 company in this business, so I -- so that -- those 09:47:46
4 documents I do come across -- I do come across in the 09:47:54
5 course of my work, so... 09:47:58

6 Q So I'd like to look starting with Figure 1 09:48:07
7 of Kannou and that will be on page 7 of the PDF. 09:48:10

8 A Okay. 09:48:18

9 Q It might be in multiple spots because since 09:48:18
10 the translation is mixed with the original here, but 09:48:22
11 page 7 should be a good location for it. And then -- 09:48:26
12 near the bottom of the page if you want -- there it 09:48:35
13 is. 09:48:40

14 So can you describe this, what's shown in 09:48:44
15 Figure 1, Dr. Peckerar? 09:48:48

16 MR. MUELLER: Objection to form. 09:48:51

17 A Yeah. Figure 1 is the Kannou battery. It 09:48:55
18 is a spirally wound cell with a bead seal. 09:49:03

19 Q And so those -- so we see several electrode 09:49:09
20 layers that protrude from the spiral winding. Is that 09:49:14
21 correct? 09:49:19

22 A Yes. And you can refer to my -- my 09:49:19

1 supplementary report in and around paragraph 15 in 09:49:21
2 which I discuss this. 09:49:25

3 Q All right. So I believe figure -- element 09:49:27
4 number 6 and 7 point to the electrode layers, and 09:49:31
5 those electrode layers make contact with the cell 09:49:35
6 housing. Is that correct? 09:49:38

7 A Yeah, they kind of spring-load, yes. 09:49:40

8 Q And that's similar to the orientation in one 09:49:44
9 of the embodiments of Kaun. Is that correct? 09:49:48

10 A No, it's physically different. 09:49:52

11 Q Can you describe those physical differences? 09:49:57

12 A Yeah. As I recall, the Kaun projections, 09:50:00
13 which do make contact with the top and bottom -- the 09:50:07
14 top can of the cell, point normal to the cell wall. 09:50:11
15 Here we see a slight angle allowing for the spring 09:50:17
16 motion. 09:50:23

17 Q But there's no additional adhesive or any 09:50:23
18 additional bond or connection between those layers and 09:50:30
19 the housing in Kannou? 09:50:33

20 MR. MUELLER: Objection to form. 09:50:36

21 A Well, no, in these drawings you don't, and 09:50:37
22 also, I don't refer to any -- any adhesives of what 09:51:03

1 all holding things together here. This is a beaded 09:51:13
2 seal. 09:51:17

3 Q And then just to clarify, the electrode 09:51:19
4 layers are arranged in a spiral wound assembly? 09:51:26

5 A Yes, this is a spiral wound assembly. 09:51:30

6 Q And there's a separator material interposed 09:51:36
7 between those electrode layers? 09:51:39

8 A Yes. 09:51:42

9 Q And in your opinion, is Kannou closed by 09:51:42
10 being beaded over? 09:51:49

11 A Yes. 09:51:51

12 Q Do -- do the cut edges of the cell cup 09:51:52
13 extend over the cell top? 09:52:01

14 A Yes, they do. 09:52:07

15 Q Can you indicate where on this figure you 09:52:09
16 see that? 09:52:14

17 A Yeah. Look to the left and to the right of 09:52:14
18 the cell itself and you see this bulge in which the 09:52:17
19 can top sits within the gasket, and then bent over 09:52:22
20 that, bent over that little U portion of the curl, 09:52:30
21 U-shaped portion of the can -- of the can top, okay, 09:52:35
22 that makes -- that's a beaded over cell. 09:52:40

1 Q Is there any force-fit connection in Kannou? 09:52:46

2 A Kannou's primary seal is this bead. 09:52:54

3 Q So it uses a beaded over closure, in your 09:53:10

4 opinion, but is there any force-fit connection in this 09:53:18

5 cell? 09:53:21

6 MR. MUELLER: Objection to form. 09:53:22

7 A Can you be a bit more clear? I mean, I'm 09:53:23

8 not sure what you mean by force-fit connection, the 09:53:29

9 latter. 09:53:38

10 Q So do you remember providing a definition 09:53:41

11 for a force-fit connection in your supplemental 09:53:44

12 declaration? 09:53:48

13 A I describe all of the -- all of the sealing 09:53:49

14 mechanisms and certainly in those relating to these 09:54:02

15 patents in the supplemental and I'm just looking for 09:54:08

16 the place in which I do. And, you know, if you look 09:54:11

17 at 47, for example, paragraph 47, we see 09:54:16

18 force-fitting -- an example, force-fitting connection 09:54:21

19 in which the can casings, the sides of the can overlap 09:54:26

20 and -- and form a friction fit to the -- between the 09:54:36

21 can top and the can cup. Yeah, I think I address 09:54:46

22 that. 09:54:52

1 Q So how would a -- apologies, please 09:54:54
2 continue. 09:54:57
3 A Yeah. I was just wondering, you know, how 09:54:58
4 you were referring to this. 09:54:59
5 Q Well, so -- so how would a person of 09:55:01
6 ordinary skill understand the term "force-fit 09:55:05
7 connection"? 09:55:10
8 A Well, of course, I -- I didn't consider in 09:55:10
9 my original discussion, you know, how a person of 09:55:18
10 ordinary -- or a layperson, for example, would view 09:55:21
11 force-fit connection. But what I would say is, you 09:55:27
12 know, it would be obvious -- what's obvious is that 09:55:32
13 you force the can top into the can -- into the can cup 09:55:36
14 and there would be some friction, which would oppose 09:55:40
15 axial separation. 09:55:46
16 Q Okay. 09:55:46
17 A But that's not -- but that's not -- let me 09:55:50
18 just point out. That's not what's happening here. I 09:55:52
19 mean, you do see the mechanical impediment, which is 09:55:56
20 the curled over can, cup on the left and the right of 09:55:58
21 the drawing. 09:56:03
22 Q And is -- so is that mechanical impediment 09:56:05

1 in addition to an initial force-fit connection? 09:56:11

2 MR. MUELLER: Objection to form. 09:56:13

3 A That would be speculation. I mean, what's 09:56:16

4 clear is this is a button -- this is a beaded cell, 09:56:19

5 and there is a -- as with most of the cells produced 09:56:23

6 at the time, and the bead represents a mechanical 09:56:30

7 impediment. 09:56:35

8 MR. PALMIERI: So if we can, can we scroll 09:56:38

9 up to paragraph 42 of Kannou, and that's on page 5 of 09:56:42

10 this, of the PDF. 09:56:53

11 Q So this paragraph recites, "In addition, the 09:57:01

12 edge protruding from the roll surface is bent without 09:57:03

13 a notch" -- 09:57:07

14 A Which paragraph are you referring to? 09:57:08

15 Q Apologies. It's paragraph 42. And so I can 09:57:11

16 recite it as well. And this is paragraph 42 of 09:57:26

17 Kannou -- 09:57:33

18 A Yes. 09:57:33

19 Q -- just for reference. So it states, "In 09:57:34

20 addition, the edge protruding from the roll surface is 09:57:37

21 bent without a notch, so a repulsive force that 09:57:41

22 attempts to return the bent part to the original shape 09:57:44

1 can easily act, and thus the contact area between the 09:57:47
2 protruding edge of the inner surface of the container 09:57:47
3 can be improved. As a result, the internal resistance 09:57:47
4 of the battery can be reduced and the discharge 09:57:54
5 capacity can be enhanced." 09:57:56

6 Can you -- in your opinion, what is this 09:58:02
7 paragraph referring to? 09:58:06

8 MR. MUELLER: Objection, outside the scope. 09:58:06

9 A Well, okay, let me state two things that 09:58:19
10 appear in my supplemental report. The -- there were 09:58:26
11 two -- there were two instantiations of the spiral 09:58:38
12 wind that were discussed in the patent. One had it at 09:58:46
13 a single member which acted as a spring-load and 09:58:54
14 another which had multiple members around the axis of 09:59:00
15 the cell. And the one member, the single member 09:59:06
16 pulled current out the end of the wind and required 09:59:14
17 transport of charge all the way around the wind to 09:59:19
18 exit. That -- that was the strawman which Kannou -- 09:59:22
19 which Kannou felt was -- was -- was a poor 09:59:31
20 representation. It gave higher internal resistance. 09:59:40

21 And as I state in my supplement report, the 09:59:44
22 higher internal resistance, even in a micro cell, is 09:59:48

1 an important issue; you don't want to have high 09:59:52
2 internal resistance. By placing multiple contacts 09:59:55
3 that peel off current from -- from different lengths 09:59:58
4 along the winding, you reduce the internal resistance. 10:00:01
5 And you see in 42 he's discussing internal resistance, 10:00:05
6 okay. 10:00:11
7 Am I being clear here? 10:00:13
8 Q Yeah, no, I'm understanding you. Thank you. 10:00:15
9 A Okay. What he's saying is you've got one 10:00:18
10 lousy instantiation with one peel-off, and he's 10:00:22
11 showing -- I think it's kind of an elegant experiment; 10:00:26
12 it's probably worth a letter at least in some 10:00:29
13 respected journal -- that if you peel off the current 10:00:32
14 from various points along the winding, you do two 10:00:35
15 things; you create a radial spring action that allows 10:00:39
16 for good contact between the plates and the top and 10:00:44
17 bottom and the cup floor and the top ceiling, and -- 10:00:49
18 and you -- and the current paths are smaller, so you 10:00:59
19 get lower internal resistance. 10:01:06
20 So Kannou is reciting here the need for 10:01:08
21 lowering internal resistance. That's, I think, the 10:01:10
22 main gist of 42. 10:01:13

1 Q Okay. And so on that note, I'd like to go 10:01:16
2 back down to Figure 7, which is on page 8. It should 10:01:20
3 be near the top on the right. Yeah, there it is. 10:01:28
4 And I believe -- and please correct me if 10:01:32
5 I'm wrong -- that this is the alternative embodiment 10:01:34
6 that you were just discussing? 10:01:39
7 A 6, Figure 6 clearly shows internal 10:01:40
8 resistance, yeah. Single spring, right. 14 and 16, 10:01:44
9 yeah. 10:01:49
10 Q Okay. And so -- so those two components, 14 10:01:51
11 and 16, what did those represent? 10:01:54
12 A They represented contacts to the -- to 10:01:58
13 the -- to the anode and cathode, the spiral wind, 10:02:07
14 single points of contact as in -- as compared to 10:02:11
15 Figure 5 in which you have multiple points. 10:02:15
16 Q So they would function as output conductors 10:02:17
17 in this cell? 10:02:21
18 MR. MUELLER: Objection to form. 10:02:22
19 A I guess you can call them output conductors, 10:02:24
20 yeah. 10:02:32
21 Q And as you mentioned, these -- these output 10:02:33
22 conductors, 14 and 16, they're connected to the 10:02:39

1 electrode layers? 10:02:43

2 A Yes. 10:02:44

3 Q And do you recall by -- by what mechanism 10:02:45

4 they are connected? 10:02:50

5 A I can think of a number of mechanisms that 10:02:54

6 come to my mind. 10:03:03

7 Q Can you describe those mechanisms? 10:03:07

8 A They could be welded. 10:03:10

9 Q Does Kannou, to your recollection, describe 10:03:17

10 them being welded? 10:03:19

11 A In my -- let's see. I -- I recall the 10:03:24

12 mention of these being welded, welded to the -- to the 10:03:43

13 electrode. 10:03:50

14 Q And then do you recall any means of 10:03:52

15 connection to the cell housing from these output 10:03:56

16 conductors? 10:04:00

17 A The assumption was that this would be a 10:04:00

18 spring-load, but it was -- remember, Figure 7 -- okay, 10:04:03

19 let me just state again what my position on these 10:04:07

20 single contacts were. 10:04:12

21 This was a strawman that was set up to 10:04:13

22 demonstrate the importance -- and I'm quite certain 10:04:16

1 that that was at least stated in my supplemental 10:04:21
2 declaration, that this was a strawman that 10:04:25
3 demonstrated how -- how Figure 5 with multiple points 10:04:29
4 of contact allowed for reduction in internal 10:04:34
5 resistance. 10:04:40

6 Q So -- so, in your opinion, Figure 6 and 7 10:04:44
7 refer to art that predates Kannou? 10:04:49

8 MR. MUELLER: Objection to form. 10:04:51

9 A No. No. The answer is no. I can't -- I'm 10:04:54
10 not sure how that could be derived. 10:05:03

11 Q So if Kannou is directed towards 10:05:06
12 improvements on -- on Figure 6 and 7, then those 10:05:09
13 figures must have existed before Kannou was developed? 10:05:15

14 MR. MUELLER: Objection to form. 10:05:18

15 Q Is that fair to say? 10:05:19

16 A No. This is a document of Kannou's work. 10:05:21

17 Q Okay. And so going back to those tabs, the 10:05:27
18 spring-loading mechanism is the only means of contact 10:05:34
19 between those output conductors and the housing? 10:05:38

20 A I believe the spring-loading is highlighted 10:05:42
21 here. But -- and I'd have to go through my report 10:05:49
22 again to remember exactly what phraseology I used 10:05:57

1 relating to that. But as I said, you've got two 10:05:59
2 approaches, one which has multiple tabs, one which has 10:06:03
3 a single tab. The table that was listed in Kannou 10:06:08
4 shows clearly that Figure 5 is superior. 10:06:15
5 Q Okay. But there's -- there's no adhesive or 10:06:21
6 other -- other bond between the output conductors and 10:06:24
7 the housing, that you recall? 10:06:27
8 MR. MUELLER: Objection to form. 10:06:29
9 A I don't recall that, no. 10:06:31
10 Q And so now I want to move on to another 10:06:40
11 piece of art that was cited, and this is Kawamura. It 10:06:44
12 is Exhibit 1040. 10:06:53
13 MR. PALMIERI: And, Sarah, I just shared it 10:06:56
14 with you as well. 10:06:59
15 (Exhibit 1040, U.S. Patent Application, Pub. 10:06:59
16 No. US 2007/0218356, Kawamura, marked for 10:06:59
17 identification.) 10:07:00
18 Q And this -- this is a U.S. patent 10:07:00
19 application. 10:07:04
20 And so, Dr. Peckerar, do you have it in 10:07:19
21 front of you? 10:07:22
22 A I see it, yes. 10:07:22

1 Q And again, like Kannou, do you recall 10:07:25
2 approximately the first time that you saw this, this 10:07:28
3 reference? 10:07:32

4 A It was probably around the same time I saw 10:07:32
5 Kannou. 10:07:36

6 Q Do you recall if these were presented to you 10:07:36
7 at the same time or was Kawamura presented at a 10:07:39
8 separate time? 10:07:45

9 A No, I don't have that recollection. 10:07:46

10 Q Okay. No problem. And now I'd like to take 10:07:47
11 a look at Figure 5, and this is on page 6 of the PDF. 10:07:51

12 A Yeah. 10:07:59

13 Q Can you describe what this figure is 10:08:01
14 showing? 10:08:03

15 A Well, this is a cylinder cell. It's not 10:08:05
16 a -- the axial length is far greater than the -- than 10:08:15
17 the radial, than the radius or the diameter, and it -- 10:08:21
18 but it does show a wound cell inserted into the 10:08:29
19 cylinder can. 10:08:33

20 Q So just to clarify, the electrode layers are 10:08:36
21 in the form of a spiral winding, correct? 10:08:40

22 A Yeah, that's my current recollection. 10:08:44

1 Q And then how are the electrode layers then 10:08:48
2 connected to the housing? 10:08:52

3 A Honestly, I read through this, this patent, 10:08:56
4 and it seemed to me that a miracle happened. Maybe 10:09:02
5 I'm going beyond, but remember, I mean, this was a 10:09:08
6 patent that addressed the issue of improving the 10:09:14
7 chemistry of the cell itself, the active material 10:09:18
8 composition. 10:09:23

9 And while I do talk about pulling a metal 10:09:25
10 contact -- I believe it's 513 -- out of the spiral 10:09:30
11 wind, which, by the way, would traverse the whole 10:09:35
12 wind, and they did mention various means of fixing 10:09:40
13 that, like welding, but they didn't describe in any 10:09:44
14 way how those welds would be accomplished. All 10:09:50
15 they've drawn is a line, okay, and you don't see how 10:09:53
16 that line sits with respect to the other materials in 10:09:57
17 the cell to which the contacts have to be made. 10:10:01

18 Q And so would you describe this housing as 10:10:06
19 closed by being beaded over? 10:10:09

20 A As a matter of fact, yes. 10:10:12

21 Q Okay. Is there a force-fit connection in 10:10:18
22 Kawamura? 10:10:21

1 MR. MUELLER: Objection to form. 10:10:23

2 A There is a nice mechanical impediment 510 10:10:25

3 that represents -- 10:10:32

4 Q So there -- so there's not -- 10:10:47

5 (Court Reporter clarification.) 10:10:47

6 THE WITNESS: Say that one more time, 10:10:47

7 please. 10:10:47

8 THE COURT REPORTER: I didn't hear the end 10:10:47

9 of your answer. "There was a nice mechanical 10:10:47

10 impediment, 510, that represents..." 10:10:49

11 A That represents the -- that provides the 10:10:49

12 force that prevents the cell from flying apart. 10:10:53

13 Q And so is that a force-fit connection as you 10:10:57

14 understand it? 10:11:03

15 MR. MUELLER: Objection to form. 10:11:04

16 A I wouldn't define it that way. We have 10:11:05

17 been -- yes, I wouldn't define it that way. 10:11:10

18 Q Okay. And so now I'd like to move back into 10:11:13

19 your -- your supplemental declaration. And I would 10:11:19

20 like to beginning in Section VI, which begins on page 10:11:23

21 19 of the PDF, I'd like to discuss the substitute 10:11:31

22 claims that you've -- that we've briefly touched on 10:11:38

1 some of them, but I'd like to discuss them in some 10:11:43
2 more detail. 10:11:46

3 So as part of -- as part of the IPRs, VARTA 10:11:49
4 has proposed some substitute claims in the event that 10:11:54
5 their original claims are found invalid. And as part 10:12:00
6 of your supplemental declaration here, you've provided 10:12:04
7 some discussion of those claims with respect to the 10:12:07
8 prior art, as well as, you know, alleged support in 10:12:10
9 their original patent applications. 10:12:15

10 Is that correct? Is that your understanding 10:12:18
11 of this section? 10:12:21

12 A I'm sorry, I was just reading over the -- 10:12:23

13 Q Oh, no, no problem. 10:12:26

14 A Let me take a moment here. 10:12:30

15 Okay. Now we're focusing on VI, right? 10:12:40

16 Q We're focusing on Section VI -- 10:12:45

17 A Yeah, okay. 10:12:48

18 Q -- for now, yeah, beginning on page -- on 10:12:48
19 page 19 of the PDF. 10:12:50

20 A Right. And as I say, the material of the -- 10:12:52
21 of the revised substitute claims is included in the 10:12:58
22 scope of the original claim. That's all that means. 10:13:05

1 Q And so I would like to just discuss the 10:13:11
2 particular, you know, substitute claims and the 10:13:15
3 language that you've used right now. 10:13:18

4 So beginning the first -- in paragraph 35, 10:13:20
5 the first feature you recite is "'the cup casing 10:13:25
6 partially overlaps the top casing in an overlapping 10:13:30
7 area.'" Do you see that? 10:13:34

8 A "The cup casing partly [sic] overlaps" -- 10:13:39
9 "Certain substitute claims submitted by VARTA recite 10:13:39
10 the features of 'the cup casing partially overlap" -- 10:13:47
11 "overlaps the top casing, and the housing cup and the 10:13:55
12 housing top are held by force-fitting connections," 10:14:00
13 yes. 10:14:05

14 Q So -- so just that first -- that first 10:14:07
15 feature, "'the cup casing partially overlaps the top 10:14:10
16 casing in an overlapping area.'" 10:14:16

17 A Yeah, you slide the cup in the can. The 10:14:18
18 casings align against one another. 10:14:21

19 Q In that -- in that phrase, what do you take 10:14:24
20 the term "partially" to mean? 10:14:26

21 A They're not -- the cup isn't fully inserted 10:14:28
22 into the can. In other words, there's space -- the 10:14:32

1 cut edge terminates and yet the cup continues, the cup 10:14:36

2 cut edge of the top. 10:14:41

3 Q Okay. So if there's -- if they overlap 10:14:43

4 completely, then this claim term would not be met? 10:14:47

5 MR. MUELLER: Objection to form. 10:14:50

6 A I don't believe I said that in the report. 10:14:55

7 And I don't -- I have no opinion on that right now. 10:15:01

8 Q So does this -- this overlap would occur in 10:15:06

9 the lateral direction, along the casing of the housing 10:15:11

10 components? 10:15:17

11 A Let's get definitions straight here. You 10:15:18

12 have a cup and a can, they both start out looking like 10:15:23

13 cups, or glasses. They've got what becomes a floor. 10:15:29

14 I think I defined elsewhere that the can cup provides 10:15:36

15 a floor, which is adjacent to the casing housing, and 10:15:42

16 then the can top has a ceiling, and that's the anatomy 10:15:48

17 of the cell. 10:15:58

18 Q And so both the cup casing and the top 10:16:06

19 casing contain a lateral portion? 10:16:11

20 A Sure, they've got side walls, yeah. 10:16:17

21 Q And those -- those side walls are what 10:16:20

22 overlap? 10:16:24

1 increased the force, frictive force between the can 10:17:58
2 and the top. 10:18:04

3 835 as it came out had -- had a conical cup 10:18:06
4 and it served the same purpose. And so this was an 10:18:12
5 additional mechanism that helped in creating the seal, 10:18:19
6 which was as I -- if you read the report over and over 10:18:24
7 again, you know, I make the point that one mechanism 10:18:29
8 is rarely enough. You've got to think of a number of 10:18:32
9 mechanisms; in the case of the VARTA patents, ensure 10:18:36
10 they achieve the first force-fit by simple insertion 10:18:44
11 and then they jazz it up a bit by -- by changing the 10:18:48
12 shape of the can and cup. 10:18:54

13 Q Okay. And so I think that that leads into 10:18:57
14 the second -- well, it leads into the second and third 10:19:01
15 elements here, but I want to focus on the second one 10:19:06
16 now, and that's "'the housing cup and the housing top 10:19:08
17 are held together by a force-fitting connection.'" 10:19:12

18 And so we've discussed the force-fit 10:19:14
19 connection previously, but, you know, I just want to 10:19:18
20 clarify a few points. In a force-fit connection, as 10:19:21
21 you understand it, is there a radial pressure that's 10:19:24
22 exerted on the housing to effect that seal? 10:19:28

1 A There's a -- the forces that come about as 10:19:34
2 you do this insertion I discuss, okay. Yeah, I mean, 10:19:42
3 you can get friction, simple friction. Even in Kaun 10:19:46
4 there was a little bit of friction, but that wasn't 10:19:52
5 the dominant mechanism of closing or sealing the can. 10:19:55
6 In the case of the VARTA patents, yeah, there will be 10:20:02
7 some radial force simply developed by the -- by 10:20:09
8 friction between the gasket and the top and the can, 10:20:14
9 yeah. 10:20:22
10 But VARTA goes beyond this. They discuss 10:20:24
11 flat bottom area, disposed radially inward of the 10:20:31
12 second part that overlaps the top casing. I mean, 10:20:35
13 these are secondary mechanisms, and these supply -- by 10:20:38
14 the way, okay, let me clarify one other thing, okay. 10:20:45
15 The radial force per se isn't what holds the cell 10:20:48
16 together. It's axial force. So what you end up with 10:20:55
17 is an improvement in friction, increase in the 10:20:59
18 friction using these -- using these different 10:21:06
19 techniques that are listed in -- in -- by 7B, 7A and 10:21:09
20 7B, all of 7, okay. So I don't know what else I can 10:21:16
21 say. 10:21:24
22 Q Okay. So just to continue along this vein, 10:21:26

1 that there may be a radial force involved in a 10:21:36
2 force-fit connection? 10:21:40

3 A Let me state one more time, okay, that you 10:21:45
4 prise the can apart with axial force, okay. Now, the 10:21:53
5 way these -- the way these -- these force-fitting 10:21:59
6 connections work is they -- they increase the force -- 10:22:07
7 you can call it the critical force necessary to prise 10:22:14
8 the can apart, by increasing friction and perhaps even 10:22:19
9 forming a pressure weld between the can top and the 10:22:23
10 can cup through the intermediary of the -- of the 10:22:28
11 gasket material. 10:22:35

12 And so you -- so what drives the whole thing 10:22:36
13 is radial -- is axial force. It's axial force that 10:22:43
14 prises the cell apart, but you adjust that using the 10:22:49
15 techniques that I just mentioned. You improve it. 10:22:53

16 Q And so you mentioned, you know, friction 10:22:59
17 force being potentially a primary form of sealing and 10:23:03
18 then in VARTA's claims they also describe a secondary 10:23:08
19 form of sealing, and we'll get to that specific claim 10:23:13
20 language later. But I want to discuss now other 10:23:17
21 secondary forms of sealing that could be added to a, 10:23:21
22 you know, battery that is sealed with a force-fit. 10:23:27

1 Could that secondary sealing be a beading over of the 10:23:33
2 edge? 10:23:37

3 MR. MUELLER: Objection to form. 10:23:38

4 A I -- I have been using the term "mechanical 10:23:40
5 impediment" throughout these depositions, the bead 10:23:50
6 represents a mechanical impediment to motion, and 10:23:53
7 it's -- yes. 10:24:00

8 Q So you could have a force-fit connection in 10:24:08
9 addition to this mechanical impediment imposed by a 10:24:15
10 beading over? 10:24:19

11 MR. MUELLER: Objection to form. 10:24:19

12 A I think once you've done the bead, 10:24:21
13 everything else is gravy, okay. 10:24:32

14 Q Okay. And so now, now I'll move on to that 10:24:38
15 third feature in paragraph 35, and that's the feature 10:24:41
16 of the "'cup casing includes a first proximal" -- "a 10:24:44
17 first part" -- sorry -- "proximal to the flat bottom 10:24:49
18 area and a second part disposed in the overlapping 10:24:52
19 area" -- 10:24:56

20 A Can you bring that up? 10:24:57

21 Q Oh, yes, I'm sorry. 10:24:58

22 MR. PALMIERI: Sarah, could you scroll down 10:25:00

1 to the next page and it's at the very top. 10:25:02

2 Q So let me repeat. "'The cup casing includes 10:25:06

3 a first proximal" -- "first part proximal to the flat 10:25:09

4 bottom area and a second part disposed in the 10:25:12

5 overlapping area, the first part of the cup casing 10:25:15

6 being disposed radially inward with respect to the 10:25:18

7 second part.'" 10:25:22

8 And do you see that language, Dr. Peckerar? 10:25:23

9 A Yes, right, that's what I've been 10:25:25

10 describing. 10:25:29

11 Q Sure. And can you describe the advantages 10:25:29

12 that are achieved by using this additional method? 10:25:32

13 A Yeah. The fact that you're kind of 10:25:35

14 strangling -- I think in my -- I don't know if this 10:25:47

15 is -- should be part of this discussion. It was 10:25:54

16 mentioned I believe in my original declaration report, 10:25:56

17 there's something which we've been calling a swage 10:26:05

18 fitting, okay. Without a blackboard it's hard to show 10:26:10

19 these things. 10:26:17

20 But the idea is that you've got this kind of 10:26:18

21 drawn-in region at the bottom of the can and then 10:26:20

22 you've got the sloping wall on top. And what you're 10:26:25

1 doing when you force-fit the can cup and the can top 10:26:31
2 is you're -- the stress. If you have a given amount 10:26:37
3 of displacement, you're going to have to push apart 10:26:46
4 the first part of the cell. I'm sorry, that's 10:26:51
5 speculation here, okay. But having made these things, 10:26:53
6 I think I can tell you that the idea is that -- that 10:26:58
7 you probably will even deform the bottom of the can a 10:27:03
8 bit, forming what we call the swage fitting, which is 10:27:08
9 different than a simple -- than a simple friction 10:27:14
10 fitting because you're actually just forming material. 10:27:20
11 And so these -- this bottom portion over 10:27:23
12 here is going to -- going to serve to increase the -- 10:27:25
13 the frictive force, and what that does is that raises 10:27:32
14 the threshold in which the can prises apart from the 10:27:36
15 top. 10:27:43
16 Q And so this -- this would provide a radial 10:27:44
17 pressure that assists with the sealing? 10:27:47
18 A There is going to be some radial pressure, 10:27:54
19 right, and that radial pressure helps define the 10:27:57
20 critical axial force. 10:28:03
21 Q And so could this -- this radial deformation 10:28:07
22 cause damage to the cell interior? 10:28:13

1 MR. MUELLER: Objection to form. 10:28:16

2 A I don't see that as happening. I don't see 10:28:20

3 any evidence for that. None of these patents show -- 10:28:27

4 well, I can't state that that would occur with any 10:28:31

5 degree of certainty. You'd have to show me examples 10:28:39

6 and I'd have to look them over and evaluate them. 10:28:43

7 Q But in your opinion would it be possible 10:28:46

8 that this radial force could cause damage to the 10:28:49

9 interior -- 10:28:54

10 MR. MUELLER: Objection to form. 10:28:55

11 A I don't -- I wouldn't care to speculate on 10:28:56

12 that. I would like to see specific examples. 10:29:03

13 Q Okay. And so now, now I'd like to move on 10:29:07

14 to paragraph 38. 10:29:10

15 THE VIDEOGRAPHER: Is it a good time to 10:29:14

16 change our media? 10:29:16

17 MR. PALMIERI: Yeah, do we want to take a 10:29:21

18 quick break, come off the record? 10:29:24

19 THE VIDEOGRAPHER: Yes. Thank you. It is 10:29:30

20 10:29 a.m. We go off the record. 10:29:31

21 (Recess 10:29 a.m. - 10:42 a.m.) 10:29:35

22 THE VIDEOGRAPHER: It is the beginning of 10:42:25

1 Media Number 2 of Volume Number 3 of the testimony of 10:42:29
2 Dr. Martin Peckerar. It is 10:42 a.m. We are back on 10:42:33
3 the record. 10:42:40

4 BY MR. PALMIERI: 10:42:40

5 Q So, Dr. Peckerar, before the break we were 10:42:41
6 discussing this radial deformation that served as a 10:42:43
7 secondary sealing characteristic according to VARTA's 10:42:49
8 claims, and we were discussing whether -- whether 10:42:54
9 there could be any damage to the internals of the 10:42:56
10 cell. I just wanted to follow up on that a little 10:42:59
11 bit. 10:43:03

12 So, you know, you did not feel comfortable 10:43:03
13 without a, you know, a specific example saying whether 10:43:06
14 damage would occur. But would a person of ordinary 10:43:10
15 skill in the art have any reasonable expectation that 10:43:13
16 that damage would occur? 10:43:21

17 A Well, I mean, VARTA cites force-fitting 10:43:24
18 connections using the -- using the techniques that 10:43:35
19 we've been talking about. Everybody who builds a 10:43:38
20 battery is concerned with reliability and 10:43:45
21 functionality and yield, and you can be sure you're 10:43:48
22 not going to build a successful business on techniques 10:43:55

1 that are going to damage the cell. So, again, let me 10:43:59
2 just leave it at that, show me an example and I'll 10:44:02
3 talk about it. 10:44:06

4 Q And then if we look on page 21 of the 10:44:08
5 supplemental declaration, right above paragraph 38, 10:44:16
6 there's a figure of the VARTA cell, and you've 10:44:20
7 indicated a portion where -- where the cell cup is 10:44:26
8 disposed radially inward with respect to the second 10:44:31
9 part. Do you see that? 10:44:34

10 A Yes. That's -- that's in the patent, right. 10:44:36

11 Q And so I wanted to discuss the degree of 10:44:40
12 radially inward deformation that would have to occur 10:44:48
13 in order for this to be -- to be effective. 10:44:53

14 MR. MUELLER: Objection to form. 10:44:57

15 Q In your opinion, to what degree would the 10:45:00
16 cup have to be radially deformed inwards for this 10:45:05
17 technique to be effective? 10:45:09

18 MR. MUELLER: Same objection. 10:45:11

19 A Again, if you do it too much, you're not 10:45:12
20 going to be able to fit the can into the cup. If you 10:45:22
21 do it too little, you get no benefit, you know. It's 10:45:26
22 like the three bears; you've got to do it just right. 10:45:31

1 And now, in using the -- and what this patent 10:45:35
2 indicates is that you've got to do it just right, and 10:45:45
3 it is possible because VARTA produces this. 10:45:48
4 Q And so does this figure show a cell where 10:45:54
5 it's been done -- where the cell cup has been radially 10:45:59
6 deformed just the right amount? 10:46:05
7 MR. MUELLER: Objection to form. 10:46:07
8 A I'd hesitate to speculate, but I would -- I 10:46:08
9 would say yes. 10:46:18
10 Q And is there any other guidance in the 10:46:19
11 patent itself that describes how to determine when 10:46:22
12 that deformation is just right, in your words? 10:46:26
13 A Well, A35 does that extensively. It talks 10:46:30
14 about the cone angles. It talks about the amounts of 10:46:35
15 deformation. And I'll be quite frank, I'd have to 10:46:41
16 look through the report again to see exactly what they 10:46:50
17 talk about. They do mention some quantification of 10:46:53
18 it, of the area, of the -- of the areas that are 10:46:57
19 involved in these parts 1 and part 2, as I recall. 10:47:02
20 Q And so now, now I think I'd like to move on 10:47:17
21 to a new paragraph, paragraph 38, which bleeds over 10:47:22
22 from page 18 -- sorry, page 21 of the PDF to page 22 10:47:28

1 of the PDF. And so this is -- this is a new -- 10:47:35
2 another new substitute claim feature which is proposed 10:47:39
3 for the '858 patent. 10:47:44

4 And just to read it off, the feature is 10:47:48
5 "'two metal housing halves, each including a generally 10:47:52
6 round end surface joined to a lateral surface region, 10:47:56
7 the lateral surface regions of the housing halves at 10:47:59
8 least partially overlapping each other and being 10:48:05
9 separated from one another by an electrically 10:48:07
10 insulating seal, the lateral surface regions providing 10:48:10
11 a force-fit connection therebetween to form a 10:48:13
12 leak-tight, button cell housing having a plane bottom 10:48:18
13 region and a plane top region parallel thereto.'" 10:48:23

14 Do you see that feature? 10:48:27

15 A Yes, I do. 10:48:27

16 Q So in your opinion what does the term 10:48:28
17 "generally round" mean? 10:48:31

18 MR. MUELLER: Objection to form. 10:48:32

19 A I think that was a discussion that appears 10:48:33
20 in the transcript of our earlier meetings. Somehow 10:48:37
21 they talked about an oval cell which is a kind of a 10:48:45
22 circle, but honestly, if you go into CVS you don't buy 10:48:49

1 those. 10:49:00

2 Q Could other shapes be considered generally 10:49:03

3 round; for example, an octagonal shape be considered 10:49:06

4 generally round? 10:49:11

5 MR. MUELLER: Objection to form. 10:49:12

6 A Show me an example of an octagonal cell. If 10:49:13

7 you like, we can walk through CVS together. 10:49:19

8 Q So is there a certain point at which an oval 10:49:23

9 wouldn't be considered generally round? 10:49:27

10 MR. MUELLER: Objection to form. 10:49:29

11 A Well, if you remember, an ellipse can be 10:49:31

12 derived from a circle. You know, you just take the 10:49:39

13 two -- both sides join them together you get a circle 10:49:42

14 and then you move them apart from their original 10:49:49

15 ellipse, and that's why you have a derivative circle, 10:49:50

16 okay. I don't know if there are other shapes or forms 10:49:54

17 that do that. 10:49:56

18 Q And this new feature recites "providing a 10:49:58

19 force-fit connection therebetween to form a 10:50:02

20 leak-tight, button cell housing." Is it possible to 10:50:05

21 have a force-fit connection that isn't leak-tight? 10:50:08

22 A Sure. 10:50:14

1 Q Can you describe an example of how that 10:50:18
2 could occur? 10:50:21

3 A Go back to Kaun. Kaun describes, as we 10:50:22
4 discussed, he's got a force-fit initially. The 10:50:37
5 main -- the burden of sealing is, as we discussed, and 10:50:42
6 it's in all these reports, that the main burden is on 10:50:47
7 their center, their center fastener, okay, but -- but 10:50:53
8 you can have some friction and yet the cell under 10:50:58
9 pressurization lifts and yields a vent. 10:51:05

10 Q So, in your opinion, Kaun is an example of a 10:51:11
11 force-fit connection that isn't -- isn't leak-tight? 10:51:15

12 MR. MUELLER: Objection to form. 10:51:17

13 A It's a force-fit connection which under 10:51:18
14 certain circumstances allows venting or leakage, if 10:51:24
15 you will, under certain circumstances. 10:51:29

16 Q Okay. And if we go -- if we go down to, 10:51:31
17 let's see here, page 21 of the PDF. I'm sorry, I'm 10:51:40
18 just trying to find my place here real quick. Okay, 10:51:59
19 I'm sorry, it's page 23 of the PDF, actually. 10:52:19
20 Apologies for that. 10:52:24

21 A Which document are we looking at? 10:52:25

22 Q In your supplemental declaration -- 10:52:28

1 which I believe is element 103 in that figure? Yeah, 10:54:05
2 I agree, it is -- it is a little hard to see it. 10:54:12
3 A It's hard to see, right, yeah. Right. 10:54:14
4 Q And so -- so, you know, this force-fit 10:54:26
5 connection does require having a gasket between those 10:54:30
6 two lateral surface areas. Is that correct? 10:54:33
7 A Yes. 10:54:35
8 Q All right. And now moving onto the next 10:54:36
9 page, paragraph 40, which is at the very top, we'll 10:54:50
10 move on to a new feature. And let me just read that 10:54:54
11 feature out. It's "'the first metal conductor and the 10:55:00
12 second metal conductor are respectively shielded from 10:55:05
13 the lateral end sides of the spiral winding by a first 10:55:10
14 insulating element and a second insulating element.'" 10:55:13
15 Do you see that feature? 10:55:16
16 A Yeah, I see the paragraph. 10:55:17
17 Q Sorry, yeah, do you see that paragraph. 10:55:20
18 So does shielded there mean that the 10:55:27
19 conductors have no contact with the spiral winding due 10:55:31
20 to the insulating elements? 10:55:35
21 A Are shielded from the lateral end sides of 10:55:39
22 the spiral winding. I mean, the idea in the VARTA 10:55:53

1 patent is that -- that the end faces by themselves 10:56:01
2 don't contact either the floor or ceiling. That's 10:56:05
3 what that paragraph refers to. That's what that 10:56:09
4 paragraph refers to. 10:56:12

5 Q Okay. So the shielding can't prevent all 10:56:17
6 contact with the electrode assembly because the output 10:56:21
7 conductors would need to contact the electrode 10:56:26
8 assembly for the battery to function? 10:56:30

9 A Yes, but -- okay, maybe you should restate 10:56:33
10 what you said. I mean -- I mean, what ends up 10:56:38
11 happening is you've got these insulating surfaces on 10:56:42
12 the end pieces, and then you pull -- in the VARTA 10:56:45
13 patents you pull out a piece of the electrode and lie 10:56:48
14 it flat on the insulating, whether it's a single 10:56:51
15 insulator or a double insulator. 10:56:54

16 So what did you -- if you can repeat what 10:56:56
17 you said, I can... 10:56:59

18 Q Yeah, sure. So the shielding where you use 10:57:00
19 the term -- where the term "shielded" is used there, 10:57:04
20 it means that there's no contact with the respective 10:57:07
21 end face of the electrode assembly that the output 10:57:12
22 conductor is adjacent to. 10:57:18

1 additional separate insulator and the at least one 10:58:43
2 second additional separate insulator respectively 10:58:48
3 preventing direct electrical contact between the 10:58:51
4 lateral end sides of the spiral winding and the first 10:58:54
5 metal conductor and the second metal conductor.'" 10:58:59
6 Do you see that paragraph? 10:59:02
7 A Yeah, right, it's describing what we just 10:59:03
8 talked about, yes. 10:59:06
9 Q So this is directed to another claim. This 10:59:08
10 is directed to claim -- substitute Claim 15. Is that 10:59:13
11 correct? 10:59:18
12 A Substitute -- 15, you say? 10:59:18
13 Q Correct, yeah, sorry, one five. 10:59:21
14 A Okay. Well, I hate to do this, but can you 10:59:24
15 pull that up and I could make a better determination. 10:59:28
16 Q Yeah. Yes. 10:59:33
17 MR. PALMIERI: And, Sarah, I will just 10:59:36
18 circulate real quick the appropriate document to bring 10:59:39
19 that up. 10:59:42
20 Q Yes, and so this is in -- this will be in 10:59:49
21 VARTA's revised contingent motion to amend for the 10:59:52
22 '858 patent, and this will be -- Claim 15 is on page 11:00:01

1 43 of this document. 11:00:07

2 A This is the substitute claim, yeah. 11:00:11

3 Q Correct. Correct, this will be a substitute 11:00:14

4 claim. 11:00:17

5 THE TECHNICIAN: Would you like this to be 11:00:17

6 marked as an exhibit? 11:00:18

7 MR. PALMIERI: Yes, let's mark it as an 11:00:24

8 exhibit for this. So it's already filed in this case, 11:00:27

9 so, actually, I don't know if we need to mark it as an 11:00:39

10 exhibit if it's already been filed. It's one of the 11:00:42

11 papers. 11:00:45

12 Sarah, could you possibly just zoom in a 11:00:52

13 little bit more, too. I'm just having some trouble 11:00:57

14 seeing the text. Yeah. 11:01:01

15 BY MR. PALMIERI: 11:01:11

16 Q And so is that what you wanted to review, 11:01:12

17 Dr. Peckerar? 11:01:15

18 A Yeah. So there's an additional separate 11:01:15

19 insulating layer that's called for here associated 11:01:19

20 with the first metal and one second insulating layer 11:01:22

21 associated with the second metal, right? 11:01:26

22 Q Correct. 11:01:28

1 through the patent, I was concerned with the end line 11:04:11
2 product and what the various structures were doing. I 11:04:16
3 mean, in both cases you're not going to get electrical 11:04:20
4 contact in the end faces. Whether or not there are 11:04:29
5 broader applications or nuances in the -- you know, 11:04:33
6 I'm not a linguist, okay, so I really have no opinion 11:04:38
7 on that. 11:04:43

8 Q So while reviewing -- while reviewing these 11:04:43
9 substitute claims, did you make note of the fact that 11:04:47
10 substitute Claim 15 would include an extra insulator? 11:04:55

11 A Well, I made note that there was an extra 11:05:00
12 insulator there, and when I looked at the products in 11:05:02
13 the disassembly, I saw there were cases in which there 11:05:06
14 was a separate -- another insulator, yeah, a tape, 11:05:10
15 yeah. 11:05:12

16 Q And so what -- what advantages would a 11:05:13
17 person of ordinary skill in the art see or seek to 11:05:16
18 achieve by including this extra insulator layer? 11:05:19

19 A In my initial analysis I pointed out what 11:05:28
20 the patent language says, that it's an added assurance 11:05:36
21 that you're not going to get that kind of contact. 11:05:40
22 But the tape itself, okay -- perhaps I shouldn't go 11:05:43

1 this far, but the tape itself holds the output 11:05:46
2 conductor flat, prevents wrinkling. But that wouldn't 11:05:51
3 be -- that goes beyond the scope of what I said 11:05:55
4 before. I'm just sharing that right now. 11:05:58
5 Q And so in your opinion, would a person of 11:06:01
6 ordinary skill in the art understand the term 11:06:04
7 "shielded" to have the same meaning as the term 11:06:07
8 "preventing direct electrical contact"? 11:06:11
9 MR. MUELLER: Objection to form. 11:06:13
10 A I mean, I hate to be obstinate on this. I 11:06:15
11 mean, if there are linguistic differences between 11:06:21
12 those two terms, I would open -- be open to that, 11:06:26
13 okay. In my interpretation, I took "shielding" and 11:06:32
14 "insulation" in isolation, insulate, to have the same 11:06:36
15 function in this case. But that doesn't mean in other 11:06:41
16 cases they might have different implication. 11:06:45
17 Q Okay. So -- so based on that understanding, 11:06:48
18 both -- the insulators in both Claim 10 as well as the 11:06:53
19 separate insulators in Claim 15 perform the same 11:06:57
20 function? 11:07:02
21 A Well, the global function is isolation, 11:07:06
22 okay. The second insulator as stated improves it, the 11:07:13

1 likelihood that you're going to achieve full isolation 11:07:23
2 of the end face from the cup, the ceiling or floor, 11:07:27
3 okay. 11:07:33

4 I went a little bit further in that in which 11:07:34
5 I pointed out what I, as hopefully someone with skill 11:07:37
6 in the art, would see based on disassembly could have 11:07:44
7 been a tape here that's holding things flat. So there 11:07:52
8 is an additional -- but that's not really included in 11:07:55
9 the text here. 11:07:59

10 Q So -- so it's your opinion that the 11:08:02
11 insulators are performing the same isolation function 11:08:04
12 in both claims? 11:08:07

13 MR. MUELLER: Objection to form. 11:08:09

14 A No. What I was -- I think the answer is no, 11:08:11
15 okay. As I just said, I mean, the second insulator 11:08:15
16 surely it does have some aspect, but there are other 11:08:20
17 envisionable functions for that second insulator. As 11:08:25
18 I mentioned, it's a tape, hold things flat. 11:08:29

19 Q But those other functions aren't claimed 11:08:33
20 here. Is that correct? 11:08:35

21 A I think a POSA would be open to the idea 11:08:38
22 that there are other functions. 11:08:44

1 Q That may be so, but in terms of the claim 11:08:47
2 scope, the functions and purposes set forth and 11:08:52
3 covered by this claim, those other functions are not 11:08:55
4 recited by the claim? 11:09:01
5 A But they would be suggested to a POSA by 11:09:03
6 looking at the cross section. 11:09:06
7 Q Perhaps. But just as a yes or no, those 11:09:08
8 functions are not recited in these claims? 11:09:10
9 MR. MUELLER: Objection to form. 11:09:12
10 A I would repeat what I just said. 11:09:13
11 Q So can you provide a yes or no answer to 11:09:21
12 whether those additional functions, whether or not 11:09:24
13 considered by a person of ordinary skill, are those 11:09:28
14 functions recited in these claims? 11:09:31
15 A They're suggested by the claims. 11:09:35
16 Q But they are not recited by the claims? 11:09:38
17 A I think a POSA, if you see two materials, 11:09:42
18 you might scratch your head and say why are you doing 11:09:49
19 this, and I would take it from there. I mean, to me, 11:09:53
20 as a POSA, it became clear, especially on looking at, 11:09:57
21 studying the diagrams provided, that there would be a 11:10:04
22 secondary function, and I provided what that function 11:10:07

1 is. And so all of this was a chain of thought that 11:10:10
2 went through my head, and I'm -- I am certainly a POSA 11:10:13
3 in this, so... 11:10:18

4 Q So -- so Dr. Peckerar, I'm not asking about 11:10:19
5 what a POSA might consider additional purposes are. I 11:10:21
6 just need a yes or no answer to are those additional 11:10:26
7 functions recited in this claim? 11:10:30

8 MR. MUELLER: Objection to form. 11:10:32

9 Q Just a yes or no. 11:10:34

10 A I don't think it's a yes or no issue. I 11:10:37
11 think -- I think if you, you know, it's -- it's like 11:10:40
12 in general parlance if you repeat a word twice, you 11:10:45
13 know, it's not just because you like to hear your own 11:10:50
14 voice, but you see things that have different meanings 11:10:55
15 and so you are led in your mind to think about other 11:11:00
16 meanings here, so... 11:11:04

17 Q Other meanings that are not recited in the 11:11:05
18 claim? 11:11:07

19 A That are not recited, right. 11:11:07

20 Q Okay. Thank you. Now, let's go back to the 11:11:09
21 supplemental declaration. 11:11:13

22 A Yup. 11:11:16

1 Q And I want to move on to paragraph 44, and 11:11:16
2 this is another -- another new feature recited by the 11:11:21
3 substitute claims. It's -- paragraph 44 starts on 11:11:25
4 page 27 of the PDF and then bleeds over to -- 11:11:31
5 A I've got it. 11:11:35
6 Q -- 28. 11:11:35
7 A Yes, I've got it. 11:11:36
8 Q Okay. And so this feature is "(i) the 11:11:38
9 first housing half or the second housing half to which 11:11:43
10 the metal foil connects, (ii) the metal foil, and 11:11:46
11 (iii) one of the first insulating element or the 11:11:50
12 second insulating element form a sequence of three 11:11:52
13 flat layers in direct contact with one another in 11:11:56
14 which the metal foil is interposed between the other 11:11:59
15 two layers.'" 11:12:02
16 A Yes. 11:12:05
17 Q Okay. 11:12:07
18 A Yeah, got it. 11:12:08
19 Q So according to this claim language, the 11:12:09
20 metal foil connects to the housing. Is that correct? 11:12:11
21 A The metal foil has to connect somewhere to 11:12:14
22 the housing, otherwise you wouldn't get electricity 11:12:18

1 out. 11:12:22

2 Q And it would also have -- it would also be 11:12:22

3 in contact with the insulating elements? 11:12:25

4 A It lies flat on the -- the output conductor 11:12:28

5 lies flat on the insulating elements. 11:12:33

6 Q Okay. So it's in contact with them? 11:12:35

7 A There's that too, as stated. 11:12:37

8 Q Is the output conductor -- apologies. Is 11:12:42

9 the metal foil connected to the insulating element? 11:12:45

10 A It lies flat thereon. 11:12:48

11 Q Okay. But is it connected to it? 11:12:52

12 A If it lies flat, I don't see how it can't -- 11:12:58

13 it can't be in contact with. If you want to get into 11:13:02

14 the linguistics of the meaning of connection, we can 11:13:05

15 be here all day, but -- 11:13:08

16 Q Would you consider it to be connected to the 11:13:10

17 insulating element? 11:13:12

18 A It's not an essential feature here. It lies 11:13:14

19 flat thereon. 11:13:19

20 Q So just a yes or no, is the metal foil 11:13:21

21 connected to the insulating element? 11:13:24

22 MR. MUELLER: Objection to form. 11:13:27

1 A Maybe. I'm sorry, I don't mean to be 11:13:28
2 facetious, but, you know. 11:13:32

3 Q Can you point me to any elements that would 11:13:36
4 facilitate that connection? 11:13:39

5 A Well, as I said, you know, in my 11:13:41
6 interpretation of the second insulating layer is a 11:13:44
7 tape, okay. It holds the output conductor in place to 11:13:47
8 prevent wrinkling and provides a flat surface to 11:13:53
9 eventually perform a well-defined electrical contact 11:13:56
10 with the can floor and ceiling. 11:14:00

11 Q And so, in your opinion, would a person of 11:14:05
12 ordinary skill in the art understand the metal foil to 11:14:07
13 be connected to the insulating element? 11:14:11

14 MR. MUELLER: Objection to form. 11:14:12

15 A It would be in contact with. I mean, if you 11:14:13
16 mean connected in some other sense, I don't know. 11:14:18
17 Sorry. 11:14:24

18 Q Okay. And so in order for this cell to 11:14:26
19 function -- 11:14:30

20 A Yeah. 11:14:30

21 Q -- the metal foil would have to also be in 11:14:32
22 contact with the electrode assembly. Is that correct? 11:14:34

1 A It eventually is in direct contact with -- 11:14:37
2 electrical contact with the floor or ceiling. 11:14:42
3 Q I'm discussing the electrode assembly 11:14:47
4 itself, the spiral, the spiral winding. 11:14:50
5 A Well, the spiral winding by itself is never 11:14:53
6 in contact, okay. It's shielded from, okay. But what 11:14:56
7 is in contact with the housing is the output 11:15:01
8 conductor. 11:15:07
9 Q Yeah, so the metal foil, which is what I'm 11:15:09
10 discussing, has to be in contact with the electrode 11:15:14
11 assembly. Is that correct? 11:15:17
12 A The metal foil eventually has to be in 11:15:19
13 electrical contact with the assembly, yes. 11:15:24
14 Q So the entire metal foil can't be interposed 11:15:28
15 between the insulating element and the housing. Is 11:15:33
16 that correct? 11:15:45
17 A That's not what the patent says. I mean, 11:15:45
18 the patent just says that you've got these two 11:15:47
19 insulating layers which rest on the end face and -- 11:15:50
20 and the output conductor lies flat on the uppermost 11:15:56
21 insulating layer. By that I mean the one that's 11:16:01
22 closest to the floor and ceiling. 11:16:05

1 Q So I just want to point you to some -- the 11:16:08
2 specific language of this substitute claim, which 11:16:11
3 states that, you know, these three layers -- the 11:16:15
4 housing half, metal foil and insulating element -- 11:16:18
5 form a sequence of three layers in direct contact with 11:16:21
6 one another in which the metal foil is interposed 11:16:24
7 between the other two layers. Do you see that 11:16:27
8 language? 11:16:31
9 A Yeah. 11:16:32
10 Q So the entire metal foil cannot be 11:16:35
11 interposed between those layers in order for the 11:16:39
12 battery to function? 11:16:41
13 MR. MUELLER: Objection to form. 11:16:42
14 A I'm not sure where we're going with it. 11:16:43
15 Q So let me clarify. At least some portion of 11:16:51
16 the metal foil has to connect to the electrode 11:16:54
17 assembly. Is that correct? 11:16:57
18 A Yes, yeah, it's pulled out from the line, 11:16:59
19 yeah. 11:17:02
20 Q And that portion would not be -- that 11:17:02
21 portion which connects to the electrode assembly would 11:17:05
22 not be interposed between the housing and the 11:17:09

1 insulating element. Is that correct? 11:17:13

2 A There is another alternative, which is 11:17:17

3 suggested by the drawings, okay. If you have -- if 11:17:21

4 you have a piece of tape and then you have another 11:17:26

5 insulating layer on top and you cut a little rectangle 11:17:29

6 in that and then you press down on it, then you have 11:17:33

7 an insulator -- output conductor insulator 11:17:36

8 configuration. 11:17:41

9 Q But then would that metal foil still be, in 11:17:42

10 your opinion, interposed between those layers then, if 11:17:47

11 there's now a hole in one layer? 11:17:50

12 A In that case it would be interposed, yes, of 11:17:52

13 course, yeah. I mean, there's -- yes, in that case. 11:17:56

14 Q So -- so let me just clarify that. In that 11:17:59

15 case where there's -- and please correct me if I'm 11:18:04

16 misunderstanding -- a hole in one of the insulating 11:18:08

17 elements through which the metal -- 11:18:12

18 A Yes. 11:18:12

19 Q -- foil would go, you would still consider 11:18:14

20 that to be interposed between the layers? 11:18:17

21 A Sure, yeah. I mean, you got the three 11:18:19

22 layers. I can put labels on it; one, two, three. 11:18:22

1 Q Despite the fact that the metal foil would 11:18:27
2 have to go through one of those layers? 11:18:30

3 A Oh, yes. I don't find any difficulty with 11:18:33
4 that. I don't think any other POSA would either. 11:18:37

5 MR. PALMIERI: Okay. So that is it for -- 11:18:44
6 for my questions today. I appreciate your time, 11:18:47
7 Dr. Peckerar. 11:18:51

8 Do we want to take a -- Wes, do you want to 11:18:51
9 take a brief break? 11:18:55

10 MR. MUELLER: Yeah, let's take like a 10, 11:18:57
11 15-minute break. I'm not sure if we've got anything 11:18:59
12 or not. 11:19:02

13 MR. PALMIERI: Okay. I think we can go off 11:19:03
14 the record then. 11:19:04

15 THE VIDEOGRAPHER: Okay. It is 11:19 a.m. 11:19:06
16 We go off the record. 11:19:09

17 (Recess 11:19 a.m. - 11:41 a.m.) 11:19:10

18 THE VIDEOGRAPHER: It is the beginning of 11:41:41
19 Media Number 3, Volume Number 3 of the testimony of 11:41:43
20 Dr. Martin Peckerar. It is 11:51 [sic] a.m. We are 11:41:47
21 back on the record. 11:41:52

22 EXAMINATION 11:42:01

1 BY MR. MUELLER: 11:42:02

2 Q Dr. Peckerar, I'd like to touch on one topic 11:42:02

3 you talked about this morning, and I would refer you 11:42:02

4 to paragraph 13 of your supplemental expert 11:42:03

5 declaration at page 9. Do you see that? 11:42:06

6 A 13 on page 9, yes. 11:42:19

7 Q Now, can you explain whether Kaun discloses 11:42:23

8 that gaps will exist between an adjacent separator 11:42:32

9 layers? 11:42:39

10 THE TECHNICIAN: Doctor, could you please 11:42:39

11 center yourself in frame? I think you're -- 11:42:40

12 THE WITNESS: Sorry. 11:42:43

13 THE TECHNICIAN: Thank you. 11:42:44

14 THE WITNESS: Yes. Is that okay? Super. 11:42:45

15 MR. PALMIERI: Objection to form, just 11:42:48

16 before you... 11:42:50

17 A Okay. Kaun by himself doesn't disclose the 11:42:52

18 formation of gaps, no. There's no language -- 11:42:58

19 BY MR. MUELLER: 11:43:04

20 Q In fact, Kaun discloses that the separator 11:43:04

21 layers will abut each other, correct? 11:43:07

22 A Well, that's what he draws and he doesn't go 11:43:10

1 further than that either in the drawing or the text. 11:43:14

2 Q Now, if you even assume that there are small 11:43:18

3 gaps between adjacent separator layers in Kaun's 11:43:21

4 electrolytes -- or in Kaun's battery cell, will that 11:43:27

5 affect or impact the operation of the battery? 11:43:34

6 MR. PALMIERI: Objection to form. 11:43:36

7 A As I expressed in my original report, my 11:43:39

8 declaration, no. During the processing of the cell 11:43:47

9 itself, the layers would squeeze together under the -- 11:43:54

10 as they were -- as they were wound, and there would be 11:44:03

11 no appreciable gap. And as I said, there's no verbal 11:44:10

12 mention of that, nor any in Kaun, nor is there any 11:44:15

13 illustration of a gap per se. 11:44:23

14 Q Now, earlier today you also talked about the 11:44:26

15 use of Kynar disclosed by Kaun to glue adjacent 11:44:30

16 separator edges together. Do you recall that? 11:44:35

17 A Yes. 11:44:38

18 Q Now, is it your understanding that dendrites 11:44:38

19 would be more likely to form where there was Kynar -- 11:44:44

20 A No, no, absolutely not. 11:44:48

21 MR. PALMIERI: Objection to form. 11:44:49

22 Q And why is that? 11:44:50

1 MR. PALMIERI: Same objection. 11:44:54

2 A Kynar would make the region less likely to 11:44:56

3 form the dendrites. It's a -- it's a kind of a 11:45:00

4 plastic resin and it wouldn't allow the dendrite 11:45:04

5 growth. 11:45:10

6 Q Okay. And can you explain why that is? 11:45:11

7 A As I said, it's density and there are no 11:45:14

8 exposed nucleating sites through the Kynar. 11:45:18

9 Q Can you compare that to whether there would 11:45:23

10 be nucleating sites in the separator material? 11:45:26

11 A Yes -- 11:45:29

12 MR. PALMIERI: Objection to form. 11:45:29

13 A Well, two things -- sorry to interrupt. 11:45:31

14 There are two things, the -- the separators 11:45:34

15 can contain many nucleating sites because of their 11:45:43

16 ambient surface area; that's one thing. And the 11:45:47

17 second issue associated with the -- with the -- with 11:45:51

18 the separators themselves is they can act as a 11:46:00

19 scaffolding on which the incoming flow of lithium ions 11:46:03

20 would aggregate and would prevent the absorption of 11:46:10

21 those in the intercalating sites in the underlying 11:46:16

22 layer. 11:46:20

1 Q And would you have that same type of 11:46:20
2 scaffolding if there were a gap? 11:46:22

3 A No. 11:46:25

4 MR. MUELLER: Okay. No more questions from 11:46:25
5 patent owner. 11:46:28

6 MR. PALMIERI: We have no -- no follow-up 11:46:31
7 questions either. 11:46:35

8 THE VIDEOGRAPHER: Okay. So it is the end 11:46:37
9 of the testimony of Martin Peckerar, Dr. Martin 11:46:40

10 Peckerar. It is 11:46 a.m. We are off the record. 11:46:45

11 (Time noted: 11:46 a.m.) 11:46:51

12

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1 CERTIFICATE OF CERTIFIED SHORTHAND REPORTER

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3 I, MONIQUE VOUTHOURIS, Certified Court
4 Reporter and Notary Public within and for the States
5 of New Jersey and New York, do hereby certify:

6 That MARTIN C. PECKERAR, Ph.D., the witness
7 whose deposition is hereinbefore set forth, was duly
8 sworn by me before the commencement of such
9 deposition, and that such deposition was taken before
10 me and is a true record of the testimony given by such
11 witness.

12 I further certify that the adverse party was
13 represented by counsel at the deposition.

14 I further certify that the deposition of
15 MARTIN C. PECKERAR, PH.D., occurred virtually via Zoom
16 Videoconference, on Friday, September 10, 2021,
17 commencing at 8:56 a.m. to 11:46 a.m. EDT.

18 I further certify that I am not related to
19 any of the parties to this action by blood or
20 marriage, I am not employed by or an attorney to any
21 of the parties to this action, and that I am in no way
22 interested, financially or otherwise, in the outcome

PLANET DEPOS

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1 of this matter.

2

3 IN WITNESS WHEREOF, I have hereunto set my
4 hand this 12th day of September 2021.

5

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Monique Vouthouris

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Monique Vouthouris, CCR, RPR, CRR

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Notary Public of the State of New Jersey

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My commission expires: April 8, 2024

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A			
able	actually	adverse	406:19, 408:20,
415:20	366:1, 370:12,	444:12	419:6, 421:8,
about	377:13, 412:10,	affect	422:5, 432:1,
363:18, 364:16,	419:19, 425:9	441:5	434:15
365:16, 371:10,	added	affirmed	alleged
372:6, 381:1,	409:21, 426:11,	357:5	403:8
401:9, 408:1,	426:18, 428:20	affix	allow
414:19, 415:3,	addition	378:16	382:6, 382:7,
416:14, 416:17,	362:10, 393:1,	affixed	384:3, 442:4
417:21, 420:19,	393:11, 393:20,	378:11	allowed
423:9, 424:8,	410:9	afraid	398:4
432:4, 432:15,	additional	379:15	allowing
440:3, 441:14	379:12, 384:1,	after	389:15
above	384:14, 386:21,	361:5	allows
415:5	389:17, 389:18,	again	381:16, 395:15,
absolutely	407:5, 411:12,	381:19, 383:5,	419:14
441:20	423:19, 423:21,	383:20, 384:16,	along
absorb	424:1, 424:2,	397:19, 398:22,	378:6, 395:4,
365:2	425:18, 426:10,	400:1, 407:7,	395:14, 405:9,
absorption	426:11, 430:8,	415:1, 415:19,	408:22
442:20	431:12, 432:5,	416:16, 427:21	already
abut	432:6	against	360:2, 425:8,
440:21	additives	380:21, 404:18	425:10, 426:5
accomplished	367:18	aggregate	also
401:14	address	442:20	354:1, 356:19,
according	367:12, 391:21	agree	365:14, 370:20,
371:10, 414:7,	addressed	421:2	372:5, 372:10,
433:19	401:6	ahead	380:13, 382:19,
achieve	addressing	367:14	388:1, 389:22,
407:10, 428:18,	374:8	aimed	409:18, 434:2,
430:1	adhesive	373:12	435:21, 441:14
achieved	373:6, 380:13,	airtight	alternative
411:12	382:2, 383:1,	384:20	396:5, 438:2
across	383:3, 384:1,	al	altogether
366:13, 388:4	389:17, 399:5	356:6, 356:7	384:4
act	adhesives	align	ambient
370:5, 394:1,	389:22	404:18	442:16
442:18	adjacent	all	amend
acted	405:15, 422:22,	358:7, 358:20,	424:21
394:13	440:8, 441:3,	361:3, 362:15,	amount
action	441:15	363:1, 366:11,	370:14, 373:18,
395:15, 444:19,	adjust	368:4, 372:19,	373:20, 406:11,
444:21	409:14	372:22, 374:22,	412:2, 416:6
active	admit	377:20, 382:13,	amounts
372:2, 372:7,	381:6	383:18, 386:13,	416:14
401:7	admits	389:3, 390:1,	amplifies
	381:13	391:13, 394:17,	380:22, 381:9
	advantages	401:14, 403:22,	analysis
	411:11, 428:16		428:19

<p>analyzed 386:18, 387:5</p> <p>anatomy 405:16</p> <p>angle 389:15</p> <p>angles 416:14</p> <p>anode 396:13</p> <p>another 366:14, 370:18, 385:4, 394:14, 399:10, 404:18, 417:2, 417:9, 423:16, 424:9, 428:14, 433:2, 433:13, 437:6, 438:2, 438:4</p> <p>answer 366:19, 398:9, 402:9, 430:14, 431:11, 432:6</p> <p>anticipation 360:21</p> <p>any 358:17, 359:9, 359:18, 360:6, 360:7, 360:8, 360:11, 361:17, 361:19, 361:21, 362:2, 362:18, 364:16, 369:18, 372:10, 381:12, 381:22, 385:1, 387:6, 387:20, 389:17, 389:22, 391:1, 391:4, 397:14, 401:13, 413:3, 413:4, 414:9, 414:15, 416:10, 426:13, 427:4, 435:3, 439:3, 439:4, 441:12, 444:19, 444:20</p> <p>anyone 357:13, 361:4,</p>	<p>361:8, 361:10, 362:21</p> <p>anything 362:4, 369:12, 439:11</p> <p>anywhere 367:4, 368:22, 369:4, 370:17</p> <p>apart 379:16, 381:5, 402:12, 409:4, 409:8, 409:14, 412:3, 412:14, 418:14</p> <p>apologies 370:4, 371:2, 375:16, 392:1, 393:15, 419:20, 434:8</p> <p>apologize 360:15, 383:20</p> <p>appeal 351:2</p> <p>appear 379:21, 394:10</p> <p>appears 417:19</p> <p>application 355:12, 355:16, 355:17, 376:6, 385:8, 386:10, 386:15, 387:14, 399:15, 399:19</p> <p>applications 403:9, 428:5</p> <p>appreciable 441:11</p> <p>appreciate 439:6</p> <p>approach 378:7</p> <p>approaches 367:20, 379:17, 399:2</p> <p>appropriate 424:18</p> <p>approximate 363:9</p>	<p>approximately 400:2</p> <p>april 445:10</p> <p>area 373:15, 394:1, 404:7, 404:16, 408:11, 410:18, 410:19, 411:4, 411:5, 416:18, 442:16</p> <p>areas 366:8, 367:11, 367:13, 416:18, 421:6</p> <p>aren't 430:19</p> <p>around 389:1, 394:14, 394:17, 400:4</p> <p>arranged 390:4</p> <p>arrival 364:22, 369:15, 369:16, 369:18</p> <p>art 385:4, 386:16, 398:7, 399:11, 403:8, 414:15, 428:17, 429:6, 430:6, 435:12</p> <p>asking 432:4</p> <p>aspect 430:16</p> <p>assembly 368:6, 368:18, 390:4, 390:5, 422:6, 422:8, 422:21, 423:13, 435:22, 436:3, 436:11, 436:13, 437:17, 437:21</p> <p>assistance 358:17, 359:1</p> <p>assisted 366:15</p> <p>assists 412:17</p>	<p>associated 406:19, 423:19, 423:21, 425:19, 425:21, 442:17</p> <p>assume 373:5, 441:2</p> <p>assumption 397:17</p> <p>assurance 428:20</p> <p>attached 355:10</p> <p>attempts 393:22</p> <p>attorney 444:20</p> <p>attractive 365:7</p> <p>audio 351:4, 351:5, 353:4, 356:17</p> <p>avenue 353:18</p> <p>avoid 367:19</p> <p>aware 360:12</p> <p>axial 392:15, 400:16, 408:16, 409:4, 409:13, 412:20</p> <p>axis 378:6, 394:14</p> <hr/> <p style="text-align: center;">B</p> <hr/> <p>back 363:7, 368:17, 373:4, 386:8, 396:2, 398:17, 402:18, 414:2, 419:3, 432:20, 439:21</p> <p>baker 353:5, 356:18, 356:19</p> <p>barer 367:11, 367:13</p> <p>based 427:15, 429:17,</p>
--	--	--	---

<p>430:6 batteries 365:18 battery 364:16, 364:17, 372:20, 373:16, 374:3, 388:17, 394:4, 409:22, 414:20, 422:8, 437:12, 441:4, 441:5 bead 388:18, 391:2, 393:6, 410:5, 410:12 beaded 377:20, 377:21, 390:1, 390:10, 390:22, 391:3, 393:4, 401:19 beading 410:1, 410:10 bears 415:22 became 387:5, 431:20 because 365:2, 367:12, 381:13, 382:15, 388:9, 412:10, 416:3, 422:6, 432:13, 442:15 becomes 405:13 been 362:2, 362:12, 363:13, 377:20, 377:21, 380:22, 386:22, 402:17, 410:4, 411:9, 411:17, 414:19, 416:5, 425:10, 430:7 before 351:2, 352:6, 357:12, 360:11, 363:16, 377:14, 398:13, 414:5,</p>	<p>429:4, 440:16, 444:8, 444:9 begin 366:5 beginning 356:3, 402:20, 403:18, 404:4, 413:22, 439:18 begins 364:6, 365:22, 374:12, 402:20 behalf 353:3, 353:12, 356:16, 356:21, 358:11 being 357:5, 373:5, 390:10, 395:7, 397:10, 397:12, 401:19, 409:17, 411:6, 417:8 believe 357:20, 360:18, 362:15, 364:1, 369:18, 370:1, 370:9, 370:14, 371:5, 371:18, 386:20, 387:16, 389:3, 396:4, 398:20, 401:10, 405:6, 411:16, 421:1 beneath 365:2, 369:21 benefit 415:21 bent 390:19, 390:20, 393:12, 393:21, 393:22 better 382:2, 383:1, 383:22, 384:8, 424:15 between 363:12, 368:7, 368:12, 369:5, 370:7, 389:18,</p>	<p>390:7, 391:20, 394:1, 395:16, 398:19, 399:6, 407:1, 408:8, 409:9, 420:7, 420:12, 420:18, 420:22, 421:5, 424:3, 426:19, 427:18, 427:22, 429:11, 433:14, 436:15, 437:7, 437:11, 437:22, 438:10, 438:20, 440:8, 441:3 beyond 401:5, 408:10, 429:3 big 372:5, 372:6, 372:18 bit 391:7, 407:11, 408:4, 412:8, 414:11, 425:13, 430:4 blackboard 411:18 bleeds 416:21, 433:4 blood 444:19 blowing 379:16 board 351:2 body 380:4 bombs 382:18 bond 389:18, 399:6 both 384:12, 405:12, 405:18, 418:13, 428:3, 429:18, 430:12 bottom 372:2, 378:13,</p>	<p>380:10, 381:6, 388:12, 389:13, 395:17, 408:11, 410:17, 411:4, 411:21, 412:7, 412:11, 417:12, 420:15 botts 353:5, 356:18, 356:19 break 385:20, 413:18, 414:5, 439:9, 439:11 brief 385:19, 439:9 briefly 402:22 brightener 367:18 bring 359:12, 375:22, 410:20, 424:18 bringing 368:16 broader 428:5 build 381:3, 381:4, 414:22 builds 414:19 bulge 390:18 burden 419:5, 419:6 business 388:3, 414:22 butt 371:7 button 393:4, 417:12, 418:20 buy 417:22 <hr/> <p style="text-align: center;">C</p> <hr/> call 365:9, 366:8,</p>
--	---	--	---

<p>367:14, 396:19, 409:7, 412:8 called 365:9, 425:19 calling 411:17 cambridge 351:5 came 386:20, 407:3 can't 365:2, 380:2, 387:3, 398:9, 413:4, 422:5, 434:12, 434:13, 436:14 cannot 370:6, 437:10 capacity 394:5 care 413:11 carries 420:5 case 351:11, 351:13, 356:8, 357:17, 360:18, 364:17, 373:1, 378:4, 378:9, 378:10, 378:12, 385:2, 407:9, 408:6, 425:8, 429:15, 438:12, 438:13, 438:15 cases 428:3, 428:13, 429:16 casing 404:5, 404:6, 404:8, 404:10, 404:11, 404:15, 404:16, 405:9, 405:15, 405:18, 405:19, 408:12, 410:16, 411:2, 411:5 casings 391:19, 404:18</p>	<p>cathode 364:18, 364:21, 396:13 cause 412:22, 413:8 caused 371:21, 420:21 ccr 351:25, 352:7, 445:8 ceiling 395:17, 405:16, 422:2, 426:20, 430:2, 435:10, 436:2, 436:22 cell 365:16, 378:15, 378:20, 380:14, 381:3, 381:4, 381:11, 381:12, 382:11, 382:14, 382:17, 383:3, 383:8, 388:18, 389:5, 389:14, 390:12, 390:13, 390:18, 390:22, 391:5, 393:4, 394:15, 394:22, 396:17, 397:15, 400:15, 400:18, 401:7, 401:17, 402:12, 405:17, 406:5, 406:8, 408:15, 409:14, 412:4, 412:22, 414:10, 415:1, 415:6, 415:7, 416:4, 416:5, 417:12, 417:21, 418:6, 418:20, 419:8, 420:20, 426:11, 435:18, 441:4, 441:8 cells 365:15, 377:19, 378:2, 379:15, 379:16, 381:21, 393:5</p>	<p>center 377:14, 377:18, 378:10, 380:5, 383:4, 383:18, 384:3, 384:18, 419:7, 440:11 central 374:13, 375:1, 375:9, 375:12, 377:5, 377:10, 378:19, 379:18, 379:22, 380:2, 380:19, 383:13 certain 371:9, 373:13, 397:22, 404:9, 418:8, 419:14, 419:15 certainly 363:11, 363:16, 371:16, 391:14, 427:5, 432:2 certainty 387:3, 413:5 certificate 444:1 certified 356:11, 444:1, 444:3 certify 444:5, 444:12, 444:14, 444:18 chain 432:1 change 413:16 changing 407:11 characteristic 414:7 charge 394:17 chemistry 401:7 chicago 353:19, 356:21 choose 367:11, 372:6,</p>	<p>372:14 chosen 367:7 circle 417:22, 418:12, 418:13, 418:15 circulate 424:18 circulated 359:13 circumstances 419:14, 419:15 cite 374:8, 381:22, 382:1, 383:2 cited 362:12, 363:2, 378:4, 378:8, 399:11 cites 374:6, 406:17, 414:17 citing 382:19, 385:2 claim 380:6, 403:22, 405:4, 409:19, 417:2, 424:9, 424:10, 424:22, 425:2, 425:4, 426:2, 426:3, 426:17, 426:21, 427:2, 427:15, 428:10, 429:18, 429:19, 431:1, 431:3, 431:4, 432:7, 432:18, 433:19, 437:2 claimed 430:19 claims 382:21, 384:17, 386:22, 402:22, 403:4, 403:5, 403:7, 403:21, 404:2, 404:9, 409:18, 414:8, 428:9, 430:12,</p>
---	--	--	--

<p>431:8, 431:14, 431:15, 431:16, 433:3 clarification 373:19, 402:5 clarify 361:16, 366:1, 387:20, 390:3, 400:20, 407:20, 408:14, 426:21, 437:15, 438:14 clear 391:7, 393:4, 395:7, 431:20 clearly 373:13, 396:7, 399:4 closed 381:12, 381:13, 381:21, 390:9, 401:19, 406:5, 406:8 closest 436:22 closing 408:5 closure 377:22, 379:13, 381:2, 381:11, 391:3 color 358:22 come 388:4, 397:6, 408:1, 413:18 comfortable 414:12 commencement 444:8 commencing 444:17 commission 445:10 companies 372:13 company 388:3 compare 442:9</p>	<p>compared 396:14 completely 405:4 components 396:10, 405:10 composition 401:8 concerned 414:20, 428:1 conducted 351:19 conduction 373:22 conductor 421:11, 421:12, 422:22, 423:12, 423:20, 423:22, 424:5, 426:6, 429:2, 434:4, 434:8, 435:7, 436:8, 436:20, 438:7 conductors 396:16, 396:19, 396:22, 397:16, 398:19, 399:6, 421:19, 422:7, 423:11 cone 416:14 configuration 366:4, 423:8, 423:10, 438:8 confirm 423:11 conflict 427:5 conical 407:3 conjunction 361:13 connect 433:21, 437:16 connected 396:22, 397:4, 401:2, 423:12, 434:9, 434:11,</p>	<p>434:16, 434:21, 435:13, 435:16 connection 370:7, 389:18, 391:1, 391:4, 391:8, 391:11, 391:18, 392:7, 392:11, 393:1, 397:15, 401:21, 402:13, 407:17, 407:19, 407:20, 409:2, 410:8, 417:11, 418:19, 418:21, 419:11, 419:13, 420:7, 420:12, 420:21, 421:5, 434:14, 435:4 connections 404:12, 409:6, 414:18 connects 433:10, 433:20, 437:21 consider 392:8, 432:5, 434:16, 438:19 considerations 366:10, 372:20 considered 359:15, 364:2, 418:2, 418:3, 418:9, 427:21, 431:13 constitute 364:20 constitutes 369:15 construct 377:15 contact 389:5, 389:13, 394:1, 395:16, 396:14, 398:4, 398:18, 401:10, 421:19, 422:2, 422:6, 422:7, 422:20, 424:3,</p>	<p>426:7, 426:19, 427:3, 427:9, 427:11, 427:19, 428:4, 428:21, 429:8, 433:13, 434:3, 434:6, 434:13, 435:9, 435:15, 435:22, 436:1, 436:2, 436:6, 436:7, 436:10, 436:13, 437:5 contacts 395:2, 396:12, 397:20, 401:17 contain 405:19, 442:15 container 394:2 content 358:20, 359:5 contingent 424:21 continuation 356:4 continue 392:2, 408:22 continues 405:1 contradict 377:16 contrary 361:20 conversation 363:3 conversations 363:13 copy 359:13, 360:3 correct 357:18, 358:12, 358:13, 359:6, 360:9, 360:17, 361:11, 364:8, 368:8, 374:14, 375:2, 376:4, 380:3, 382:6, 382:11, 388:21,</p>
--	---	---	---

<p>389:6, 389:9, 396:4, 400:21, 403:10, 421:6, 424:11, 424:13, 425:3, 425:22, 426:8, 430:20, 433:20, 435:22, 436:11, 436:16, 437:17, 438:1, 438:15, 440:21 corrected 371:3 corrections 360:12 corresponds 376:10 could 359:12, 360:1, 366:10, 369:1, 369:5, 369:9, 370:12, 371:8, 371:9, 371:21, 375:15, 375:22, 376:21, 381:22, 382:2, 382:18, 383:1, 384:13, 397:8, 398:10, 409:21, 410:1, 410:8, 410:22, 412:21, 413:8, 414:9, 418:2, 419:2, 424:15, 425:12, 430:6, 440:10 counsel 356:14, 361:7, 363:6, 387:15, 444:13 counts 382:14 couple 363:13, 371:20, 406:17 course 359:10, 362:22, 366:11, 371:8, 379:21, 385:21, 386:19, 388:5,</p>	<p>392:8, 406:9, 438:13 court 357:1, 357:3, 373:19, 402:5, 402:8, 444:3 covered 431:3 crash 372:15 create 372:10, 381:7, 381:10, 395:15 creating 407:5 critical 409:7, 412:20 cross 431:6 crr 351:25, 352:7, 445:8 cup 390:12, 391:21, 392:13, 392:20, 395:17, 404:5, 404:8, 404:10, 404:11, 404:15, 404:17, 404:21, 405:1, 405:12, 405:14, 405:18, 407:3, 407:12, 407:16, 409:10, 410:16, 411:2, 411:5, 412:1, 415:7, 415:16, 415:20, 416:5, 420:8, 420:15, 426:20, 430:2 cups 405:13 curl 390:20 curled 392:20 current 394:16, 395:3, 395:13, 395:18,</p>	<p>400:22 cut 390:12, 405:1, 405:2, 438:5 cvs 417:22, 418:7 cylinder 400:15, 400:19 <hr/>D<hr/>d 351:4, 351:5 damage 412:22, 413:8, 414:9, 414:14, 414:16, 415:1 danger 371:8 data 381:22 date 356:9 dates 387:5, 387:19 day 434:15, 445:4 deal 372:5, 372:6 declaration 355:20, 358:3, 358:4, 358:7, 358:8, 358:11, 358:15, 358:18, 359:8, 359:13, 359:14, 360:4, 360:7, 360:13, 362:11, 362:19, 364:4, 391:12, 398:2, 402:19, 403:6, 411:16, 415:5, 419:22, 432:21, 440:5, 441:8 declarations 357:17, 357:22 define 402:16, 402:17, 412:19</p>	<p>defined 405:14 definitely 383:21 definition 391:10 definitions 405:11 deform 412:7 deformation 412:21, 414:6, 415:12, 416:12, 416:15 deformed 415:16, 416:6 degeneration 365:3 degree 383:2, 413:5, 415:11, 415:15 degrees 406:3 delay 374:21 deleterious 371:9, 371:18, 371:22 demonstrate 397:22 demonstrated 398:3 dendrite 364:7, 365:15, 365:22, 366:4, 367:7, 367:21, 369:16, 371:13, 371:16, 442:4 dendrites 364:13, 364:14, 365:19, 367:10, 368:16, 368:17, 368:20, 370:6, 441:18, 442:3 density 369:19, 442:7 depend 426:2</p>
---	--	---	--

<p>depends 369:17</p> <p>depicts 377:3</p> <p>depos 354:2, 354:3, 356:12, 357:2</p> <p>deposed 360:16, 362:2</p> <p>deposition 351:17, 352:5, 355:11, 356:5, 356:13, 358:5, 360:19, 360:22, 361:3, 361:5, 361:16, 362:1, 362:5, 362:15, 363:12, 363:15, 363:17, 387:2, 444:7, 444:9, 444:13, 444:14</p> <p>depositions 357:21, 361:20, 410:5</p> <p>derivative 418:15</p> <p>derive 427:14</p> <p>derived 398:10, 418:12</p> <p>describe 364:12, 365:20, 366:3, 371:1, 371:22, 377:17, 379:10, 388:14, 389:11, 391:13, 397:7, 397:9, 400:13, 401:13, 401:18, 409:18, 411:11, 419:1, 420:6, 420:11</p> <p>described 370:21, 423:14</p> <p>describes 370:19, 416:11, 419:3</p> <p>describing 411:10, 424:7</p>	<p>description 377:3</p> <p>designed 373:14</p> <p>despite 439:1</p> <p>detail 387:4, 403:2</p> <p>determination 424:15</p> <p>determine 416:11</p> <p>develop 365:17, 368:21, 368:22</p> <p>developed 398:13, 408:7</p> <p>device 377:5</p> <p>diagrams 431:21</p> <p>diameter 400:17</p> <p>difference 427:4, 427:17, 427:22</p> <p>differences 389:11, 429:11</p> <p>different 369:20, 389:10, 395:3, 408:18, 412:9, 423:3, 429:16, 432:14</p> <p>differentiates 373:6</p> <p>difficult 420:17</p> <p>difficulty 439:3</p> <p>direct 424:3, 427:3, 427:8, 427:19, 429:8, 433:13, 436:1, 437:5</p> <p>directed 383:8, 398:11, 424:9, 424:10</p> <p>direction 405:9</p>	<p>directly 361:11</p> <p>disassembly 428:13, 430:6</p> <p>discharge 394:4</p> <p>disclose 440:17</p> <p>disclosed 441:15</p> <p>discloses 440:7, 440:20</p> <p>discount 384:15</p> <p>discounting 383:17</p> <p>discuss 361:3, 361:6, 361:8, 361:10, 361:16, 361:19, 364:7, 366:12, 368:1, 389:2, 402:21, 403:1, 404:1, 408:2, 408:10, 409:20, 415:11</p> <p>discussed 363:17, 377:20, 394:12, 407:18, 419:4, 419:5, 426:5</p> <p>discusses 374:13, 375:1</p> <p>discussing 383:11, 386:22, 395:5, 396:6, 414:6, 414:8, 426:3, 426:15, 436:3, 436:10</p> <p>discussion 368:11, 368:15, 392:9, 403:7, 411:15, 417:19</p> <p>disk 423:3</p> <p>displacement 412:3</p> <p>disposed 408:11, 410:18,</p>	<p>411:4, 411:6, 415:8</p> <p>doctor 440:10</p> <p>document 376:2, 398:16, 419:21, 424:18, 425:1</p> <p>documents 374:20, 387:19, 388:4</p> <p>doing 357:10, 357:11, 371:2, 412:1, 428:2, 431:18</p> <p>dominant 408:5</p> <p>done 359:3, 362:4, 382:1, 387:17, 410:12, 416:5</p> <p>double 422:15</p> <p>down 379:14, 380:7, 380:10, 396:2, 410:22, 419:16, 438:6</p> <p>dr 356:5, 357:9, 368:5, 377:7, 386:13, 388:15, 399:20, 411:8, 414:2, 414:5, 425:17, 432:4, 439:7, 439:20, 440:2, 443:9</p> <p>drafting 359:4</p> <p>drawing 392:21, 441:1</p> <p>drawings 389:21, 438:3</p> <p>drawn 401:15</p> <p>drawn-in 411:21</p> <p>draws 440:22</p>
---	--	--	---

<p>drives 409:12</p> <p>due 421:19</p> <p>duly 357:5, 444:7</p> <p>dupont 380:14, 381:22, 384:13, 384:20</p> <p>during 441:8</p> <hr/> <p style="text-align: center;">E</p> <hr/> <p>each 359:6, 417:5, 417:8, 440:21</p> <p>earlier 369:22, 381:1, 381:9, 406:12, 417:20, 441:14</p> <p>early 406:18</p> <p>ease 358:2</p> <p>easily 394:1</p> <p>eastern 356:11</p> <p>easy 367:12</p> <p>edge 393:12, 393:20, 394:2, 405:1, 405:2, 410:2</p> <p>edges 390:12, 441:16</p> <p>edt 351:21, 444:17</p> <p>effect 407:22</p> <p>effective 373:15, 415:13, 415:17</p> <p>effects 371:9, 371:18, 371:21, 371:22</p> <p>egress 381:16</p>	<p>either 358:3, 366:12, 369:20, 382:20, 422:2, 439:4, 441:1, 443:7</p> <p>electrical 424:3, 427:3, 427:8, 427:11, 427:19, 428:3, 429:8, 435:9, 436:2, 436:13</p> <p>electrically 417:9</p> <p>electricity 433:22</p> <p>electrochemical 377:4</p> <p>electrode 366:2, 366:3, 367:2, 368:6, 368:7, 368:17, 369:2, 370:7, 388:19, 389:4, 389:5, 390:3, 390:7, 397:1, 397:13, 400:20, 401:1, 422:6, 422:7, 422:13, 422:21, 423:7, 423:12, 435:22, 436:3, 436:10, 437:16, 437:21</p> <p>electrodes 372:2, 372:4</p> <p>electrolytes 441:4</p> <p>elegant 395:11</p> <p>element 389:3, 421:1, 421:14, 433:11, 433:12, 434:9, 434:17, 434:21, 435:13, 436:15, 437:4, 438:1</p> <p>elements 407:15, 421:20, 434:3, 434:5,</p>	<p>435:3, 438:17</p> <p>elevated 381:16</p> <p>eliminate 367:20, 371:16</p> <p>ellipse 418:11, 418:15</p> <p>else 357:13, 361:8, 408:20, 410:13</p> <p>elsewhere 382:17, 405:14</p> <p>embodiment 377:10, 380:18, 382:4, 382:10, 383:7, 383:8, 383:14, 384:5, 396:5</p> <p>embodiments 383:10, 389:9</p> <p>employed 444:20</p> <p>end 387:7, 394:16, 402:8, 408:16, 417:6, 421:13, 421:21, 422:1, 422:12, 422:21, 424:4, 426:7, 426:20, 428:1, 428:4, 430:2, 436:19, 443:8</p> <p>ending 376:2</p> <p>ends 422:10</p> <p>energy 365:11</p> <p>engineered 373:12, 373:14</p> <p>enhanced 394:5</p> <p>enough 372:7, 372:8, 378:7, 407:8</p> <p>ensure 379:17, 407:9</p> <p>ensuring 379:13</p>	<p>entire 358:14, 436:14, 437:10</p> <p>entirely 376:18</p> <p>entitled 385:12</p> <p>envisionable 430:17</p> <p>errors 360:11</p> <p>especially 431:20</p> <p>esq 353:6, 353:7, 353:15, 353:16</p> <p>essential 377:15, 434:18</p> <p>et 356:6, 356:7</p> <p>evaluate 413:6</p> <p>even 358:21, 373:1, 394:22, 408:3, 409:8, 412:7, 441:2</p> <p>event 403:4</p> <p>eventually 423:14, 435:9, 436:1, 436:12</p> <p>every 365:16, 382:14</p> <p>everybody 414:19</p> <p>everything 410:13</p> <p>evidence 385:1, 413:3</p> <p>exact 375:17, 387:18</p> <p>exactly 398:22, 416:16</p> <p>examination 355:2, 357:7, 439:22</p> <p>example 367:22, 368:6,</p>
--	--	---	---

<p>391:17, 391:18, 392:10, 414:13, 415:2, 418:3, 418:6, 419:1, 419:10 examples 413:5, 413:12, 427:14 excuse 367:16, 374:15, 385:19 exerted 407:22 exhibit 355:11, 355:12, 355:15, 355:17, 355:20, 359:22, 360:2, 360:4, 364:6, 368:2, 368:3, 370:19, 374:12, 374:17, 375:16, 375:17, 375:19, 376:6, 385:5, 385:11, 385:12, 385:18, 386:9, 386:14, 399:12, 399:15, 425:6, 425:8, 425:10 exist 440:8 existed 398:13 exit 394:18 expectation 414:15 expensive 372:13 experiment 395:11 expert 357:22, 440:4 expires 445:10 explain 378:17, 440:7, 442:6</p>	<p>exposed 387:6, 442:8 expressed 384:16, 441:7 extend 390:13 extensively 416:13 extent 361:7, 362:9 extra 428:10, 428:11, 428:18</p> <hr/> <p style="text-align: center;">F</p> <hr/> <p>face 422:21, 426:20, 430:2, 436:19 faces 422:1, 428:4 facetious 435:2 facilitate 373:21, 435:4 fact 369:22, 372:12, 401:20, 411:13, 428:9, 439:1, 440:20 fair 398:15 fall 372:10 far 357:17, 400:16, 429:1 fastener 374:13, 375:1, 375:9, 375:13, 377:5, 377:10, 377:15, 377:18, 378:10, 378:19, 379:18, 380:2, 380:5, 380:19, 383:4, 383:13, 383:18, 384:3, 419:7 feature 404:5, 404:15,</p>	<p>410:15, 417:2, 417:4, 417:14, 418:18, 421:10, 421:11, 421:15, 423:16, 423:18, 433:2, 433:8, 434:18 features 404:10 feel 414:12 felt 394:19 few 407:20 fibers 366:13 figure 375:8, 375:9, 375:11, 375:12, 377:3, 378:18, 379:5, 379:10, 379:19, 380:3, 388:6, 388:15, 388:17, 389:3, 390:15, 396:2, 396:7, 396:15, 397:18, 398:3, 398:6, 398:12, 399:4, 400:11, 400:13, 415:6, 416:4, 421:1 figures 358:21, 375:5, 375:12, 376:10, 376:16, 398:13 filed 425:8, 425:10 filings 406:18 fill 372:16, 373:6 financially 444:22 find 387:21, 419:18, 439:3 first 357:5, 358:7,</p>	<p>382:13, 386:15, 386:16, 386:18, 387:10, 400:2, 404:4, 404:5, 404:14, 407:10, 410:16, 410:17, 411:3, 411:5, 412:4, 421:11, 421:13, 423:11, 423:18, 423:20, 423:22, 424:4, 425:20, 433:9, 433:11 fit 391:20, 415:20 fitting 411:18, 412:8, 412:10 five 424:13 fixing 401:12 flat 408:11, 410:17, 411:3, 422:14, 423:4, 423:7, 429:2, 430:7, 430:18, 433:13, 434:4, 434:5, 434:10, 434:12, 434:19, 435:8, 436:20 floor 395:17, 405:13, 405:15, 422:2, 426:20, 430:2, 435:10, 436:2, 436:22 flow 442:19 fluoride 370:20 flying 402:12 focus 407:15 focusing 403:15, 403:16</p>
---	--	--	--

<p>foil 433:10, 433:14, 433:20, 433:21, 434:9, 434:20, 435:12, 435:21, 436:9, 436:12, 436:14, 437:4, 437:6, 437:10, 437:16, 438:9, 438:19, 439:1 follow 414:10 follow-up 443:6 follow-ups 366:21 followed 382:20 following 365:20 follows 357:6 force 378:6, 392:13, 393:21, 402:12, 406:11, 407:1, 408:7, 408:15, 408:16, 409:1, 409:4, 409:6, 409:7, 409:13, 409:17, 412:13, 412:20, 413:8 force-fit 378:14, 391:1, 391:4, 391:8, 391:11, 392:6, 392:11, 393:1, 401:21, 402:13, 407:10, 407:18, 407:20, 409:2, 409:22, 410:8, 412:1, 417:11, 418:19, 418:21, 419:4, 419:11, 419:13, 421:4 force-fitting 391:18, 404:12, 406:22, 407:17,</p>	<p>409:5, 414:17 forces 408:1 form 364:13, 366:6, 366:7, 367:4, 367:8, 368:10, 368:14, 368:17, 368:19, 368:20, 369:1, 369:3, 369:5, 369:7, 369:10, 369:11, 369:13, 370:3, 370:6, 370:8, 373:8, 374:5, 377:12, 378:21, 379:3, 379:20, 380:20, 382:12, 382:14, 383:12, 383:16, 384:7, 384:21, 388:16, 389:20, 391:6, 391:20, 393:2, 396:18, 398:8, 398:14, 399:8, 400:21, 402:1, 402:15, 405:5, 409:17, 409:19, 410:3, 410:11, 413:1, 413:10, 415:14, 416:7, 417:11, 417:18, 418:5, 418:10, 418:19, 419:12, 426:16, 427:20, 429:9, 430:13, 431:9, 432:8, 433:12, 434:22, 435:14, 437:5, 437:13, 440:15, 441:6, 441:19, 441:21, 442:3, 442:12 format 358:20 formation 365:15, 365:22, 366:4, 367:7,</p>	<p>367:21, 368:12, 371:14, 371:17, 440:18 formed 420:7 forming 367:14, 370:17, 371:21, 409:9, 412:8, 412:10 forms 409:21, 418:16 forth 431:2, 444:7 found 367:2, 403:5 four 363:21 frame 387:9, 440:11 frank 416:15 free 365:11 friction 391:20, 392:14, 408:3, 408:4, 408:8, 408:17, 408:18, 409:8, 409:16, 412:9, 419:8, 420:21 frictive 407:1, 412:13 friday 351:20, 356:9, 444:16 front 399:21 full 379:22, 430:1 fully 404:21 function 374:4, 396:16, 422:8, 426:14, 429:15, 429:20, 429:21, 430:11, 431:22, 435:19, 437:12</p>	<p>functionality 414:21 functions 430:17, 430:19, 430:22, 431:2, 431:3, 431:8, 431:12, 431:14, 432:7 further 430:4, 441:1, 444:12, 444:14, 444:18</p> <hr/> <p style="text-align: center;">G</p> <hr/> <p>gap 369:5, 369:11, 369:20, 371:21, 372:3, 373:6, 441:11, 441:13, 443:2 gaps 368:12, 440:8, 440:18, 441:3 gas 381:3, 381:7, 381:16, 382:6, 382:7 gasket 380:12, 381:2, 381:6, 381:10, 381:17, 381:18, 382:7, 382:16, 383:9, 384:6, 390:19, 408:8, 409:11, 420:17, 420:22, 421:5 gave 394:20 general 432:12 generally 360:22, 361:2, 367:13, 417:5, 417:17, 418:2, 418:4, 418:9 getting 367:14 gist 395:22</p>
---	--	--	---

<p>given 361:5, 412:2, 444:10 glasses 405:13 global 429:21 glue 441:15 gmbh 351:8, 353:13, 356:22 go 360:11, 363:7, 372:20, 376:17, 376:19, 376:21, 380:7, 386:2, 386:4, 396:1, 398:21, 413:20, 417:22, 419:3, 419:16, 428:22, 432:20, 438:19, 439:2, 439:13, 439:16, 440:22 goes 408:10, 420:19, 429:3 going 373:4, 398:17, 401:5, 412:3, 412:12, 412:18, 414:22, 415:1, 415:20, 426:19, 428:3, 428:21, 430:1, 437:14 good 357:9, 388:11, 395:16, 413:15 gravy 410:13 great 376:5 greater 400:16 greatly 379:15 grow 365:10</p>	<p>grows 365:1, 365:7 growth 364:7, 369:12, 369:14, 370:2, 370:6, 442:5 guess 396:19, 426:18 guidance 416:10</p> <hr/> <p style="text-align: center;">H</p> <hr/> <p>half 433:9, 437:4 halves 417:5, 417:7 hand 445:4 happen 379:17 happened 401:4 happening 392:18, 413:2, 422:11 happy 371:3 hard 411:18, 421:2, 421:3, 423:1 hate 424:14, 429:10 head 431:18, 432:2 hear 402:8, 432:13 held 404:12, 407:17 hell 365:18 helped 407:5 helps 366:21, 412:19 here 356:18, 357:19, 366:7, 370:18, 374:9, 378:8,</p>	<p>382:9, 383:18, 383:21, 386:22, 387:4, 387:8, 388:10, 389:15, 390:1, 392:18, 395:7, 395:20, 398:21, 403:6, 403:14, 405:11, 407:15, 412:5, 412:12, 419:17, 419:18, 425:19, 430:7, 430:9, 430:20, 432:16, 434:15, 434:18 hereby 444:5 hereinbefore 444:7 hereunto 445:3 hesitate 416:8 high 395:1 higher 394:20, 394:22 highlighted 398:20 highly 373:11 himself 440:17 hold 378:15, 379:15, 406:14, 430:18 holding 390:1, 430:7 holds 408:15, 429:1, 435:7 hole 438:11, 438:16 honestly 379:21, 387:16, 401:3, 417:22 hopefully 357:11, 430:5 hours 363:7, 363:22</p>	<p>housing 377:4, 379:13, 381:4, 381:15, 389:6, 389:19, 397:15, 398:19, 399:7, 401:2, 401:18, 404:11, 404:12, 405:9, 405:15, 407:16, 407:22, 417:5, 417:7, 417:12, 418:20, 433:9, 433:20, 433:22, 436:7, 436:15, 437:4, 437:22 huge 372:3</p> <hr/> <p style="text-align: center;">I</p> <hr/> <p>idea 363:20, 381:14, 411:20, 412:6, 421:22, 430:21 identification 360:5, 376:7, 386:11, 399:17 identify 356:14, 380:2 ii 433:10 iii 359:16, 359:17, 360:9, 433:11 illinois 353:19 illustration 441:13 imagine 365:17 imagined 374:7 impact 441:5 impeded 366:9 impediment 377:22, 392:19, 392:22, 393:7,</p>
--	--	--	---

<p>402:2, 402:10, 410:5, 410:6, 410:9 implication 429:16 imply 377:9 importance 397:22 important 395:1 imposed 410:9 improve 409:15 improved 394:3 improvement 408:17 improvements 398:12 improves 429:22 improving 401:6 incident 365:9 include 383:14, 428:10 included 362:13, 370:15, 403:21, 430:8 includes 410:16, 411:2 including 377:5, 417:5, 428:18 incoming 442:19 increase 408:17, 409:6, 412:12 increased 407:1 increasing 409:8 independent 387:21</p>	<p>indicate 390:15 indicated 415:7 indicates 381:17, 416:2 inhibit 369:12, 369:14, 370:5, 370:11 initial 393:1, 428:19 initially 419:4 inner 394:2 insert 381:15, 381:16 inserted 400:18, 404:21 insertion 364:21, 407:10, 408:2 inserts 364:19 instantiation 395:10 instantiations 394:11 insufficient 406:12, 406:14 insulate 427:6, 429:14 insulating 371:12, 417:10, 421:14, 421:20, 422:11, 422:14, 423:4, 425:19, 425:20, 426:11, 433:11, 433:12, 434:3, 434:5, 434:9, 434:17, 434:21, 435:6, 435:13, 436:15, 436:19, 436:21, 437:4, 438:1, 438:5, 438:16 insulation 429:14</p>	<p>insulator 422:15, 423:19, 423:21, 424:1, 424:2, 426:12, 428:10, 428:12, 428:14, 428:18, 429:22, 430:15, 430:17, 438:7 insulators 426:6, 427:7, 429:18, 429:19, 430:11 insurance 426:19 intercalates 364:18 intercalating 442:21 interchangeable 427:12 interested 444:22 interior 412:22, 413:9 intermediary 409:10 intermittently 381:13 internal 394:3, 394:20, 394:22, 395:2, 395:4, 395:5, 395:19, 395:21, 396:7, 398:4 internals 414:9 interposed 390:6, 433:14, 436:14, 437:6, 437:11, 437:22, 438:10, 438:12, 438:20 interpretation 429:13, 435:6 interrupt 442:13 intervening 423:6</p>	<p>introduced 387:10 invalid 403:5 involved 409:1, 416:19 inward 408:11, 411:6, 415:8, 415:12 inwards 415:16 ion 365:1, 365:8, 365:12, 366:8, 369:15 ionic 366:17, 373:21 ions 364:22, 373:13, 442:19 ipr 351:11, 351:13, 356:8, 375:19 iprs 357:21, 368:3, 403:3 isolation 429:14, 429:21, 430:1, 430:11 issue 357:22, 371:19, 378:5, 395:1, 401:6, 432:10, 442:17 issues 363:17, 372:21, 373:3 itself 364:4, 364:19, 365:12, 375:15, 381:9, 381:18, 383:3, 390:18, 401:7, 406:12, 406:13, 416:11, 428:22, 429:1, 436:4, 436:5, 441:9</p> <hr/> <p style="text-align: center;">J</p> <hr/> <p>japanese 385:6, 386:15</p>
--	--	--	---

<p>jazz 407:11</p> <p>jean-louis 354:2, 356:12</p> <p>jersey 352:8, 444:5, 445:9</p> <p>jlab 351:4</p> <p>job 351:23</p> <p>join 418:13</p> <p>joined 417:6</p> <p>joint 371:7</p> <p>journal 395:13</p> <p>jp 385:16</p> <p>june 360:16, 363:12</p> <hr/> <p style="text-align: center;">K</p> <hr/> <p>k-a-u-n 376:5</p> <p>k-w-o-n 385:13</p> <p>kannou 355:16, 385:5, 385:15, 386:10, 386:14, 386:20, 387:1, 387:6, 387:21, 388:7, 388:17, 389:19, 390:9, 391:1, 393:9, 393:17, 394:18, 394:19, 395:20, 397:9, 398:7, 398:11, 398:13, 399:3, 400:1, 400:5</p> <p>kannou's 391:2, 398:16</p> <p>kaun 355:14, 368:1, 368:5, 368:18,</p>	<p>369:2, 370:21, 371:6, 371:11, 374:6, 374:13, 375:1, 375:5, 375:15, 375:17, 375:19, 376:7, 376:20, 377:18, 379:2, 379:5, 379:7, 379:8, 379:15, 382:4, 384:22, 386:19, 387:12, 389:9, 389:12, 408:3, 419:3, 419:10, 440:7, 440:17, 440:20, 441:12, 441:15</p> <p>kaun's 373:1, 441:3, 441:4</p> <p>kawamura 355:19, 399:11, 399:16, 400:7, 401:22</p> <p>kind 366:15, 389:7, 395:11, 411:13, 411:20, 417:21, 428:21, 442:3</p> <p>know 363:5, 363:18, 382:13, 382:21, 383:10, 387:5, 387:6, 391:16, 392:3, 392:9, 392:12, 403:8, 404:2, 407:7, 407:19, 408:20, 409:16, 409:22, 411:14, 414:12, 414:13, 415:21, 418:12, 418:16, 421:4, 423:2, 425:9, 427:8, 428:5, 432:11, 432:13, 435:2, 435:5, 435:16, 437:3</p>	<p>known 370:20</p> <p>kobayashi 386:19, 387:13</p> <p>kynar 370:21, 371:1, 371:5, 371:11, 371:13, 373:4, 373:9, 373:13, 373:21, 441:15, 441:19, 442:2, 442:8</p> <hr/> <p style="text-align: center;">L</p> <hr/> <p>labels 438:22</p> <p>lags 364:22</p> <p>language 376:17, 404:3, 409:20, 411:8, 427:15, 428:20, 433:19, 437:2, 437:8, 440:18</p> <p>large 371:7, 372:7, 372:8, 387:4</p> <p>last 380:11, 384:19</p> <p>later 387:12, 409:20</p> <p>lateral 405:9, 405:19, 417:6, 417:7, 417:10, 420:7, 420:12, 420:22, 421:6, 421:13, 421:21, 424:4</p> <p>latter 391:9</p> <p>layer 366:2, 366:3, 372:22, 373:2, 425:19, 425:20, 426:11, 428:18, 435:6, 436:21, 438:5, 438:11, 442:22</p>	<p>layers 367:2, 368:7, 369:2, 369:6, 370:7, 388:20, 389:4, 389:5, 389:18, 390:4, 390:7, 397:1, 400:20, 401:1, 433:13, 433:15, 436:19, 437:3, 437:5, 437:7, 437:11, 438:10, 438:20, 438:22, 439:2, 440:9, 440:21, 441:3, 441:9</p> <p>layperson 392:10</p> <p>lead 373:15</p> <p>leads 407:13, 407:14</p> <p>leak-tight 417:12, 418:20, 418:21, 419:11</p> <p>leakage 419:14</p> <p>least 363:18, 395:12, 398:1, 417:8, 423:18, 423:20, 423:22, 424:1, 437:15</p> <p>leave 366:14, 384:3, 415:2</p> <p>led 432:15</p> <p>left 376:22, 390:17, 392:20</p> <p>length 400:16</p> <p>lengths 395:3</p> <p>less 442:2</p> <p>let's 366:1, 366:7,</p>
--	--	--	---

<p>366:11, 380:11, 386:15, 397:11, 405:11, 419:17, 423:15, 425:7, 432:20, 439:10 letter 395:12 leydig 353:14, 356:21, 359:3, 361:7, 363:4 lie 422:13, 423:4, 423:7 lies 434:4, 434:5, 434:10, 434:12, 434:18, 436:20 lifts 419:9 likelihood 430:1 likely 366:9, 441:19, 442:2 line 401:15, 401:16, 420:6, 428:1, 437:18 linguist 428:6 linguistic 429:11 linguistics 434:14 list 359:14 listed 359:10, 359:18, 360:8, 362:16, 399:3, 408:19 literature 370:14, 388:2 lithium 364:17, 364:18, 365:1, 442:19 little 364:14, 364:19,</p>	<p>365:21, 366:1, 370:16, 379:14, 381:5, 390:20, 408:4, 414:10, 415:21, 421:2, 425:13, 430:4, 438:5 llc 351:4, 353:3, 353:4, 356:6, 356:17 llp 353:5 loading 378:22 located 368:7 location 388:11 log 363:7, 363:22 loiler 354:3 long 367:16 look 363:22, 367:22, 376:9, 378:3, 379:5, 381:12, 381:15, 388:6, 390:17, 391:16, 400:11, 413:6, 415:4, 416:16, 427:13 looked 362:7, 428:12 looking 375:8, 376:11, 380:11, 391:15, 405:12, 419:21, 431:6, 431:20 lot 365:3, 365:17, 373:16, 373:20, 387:17 lousy 395:10 lower 395:19</p>	<p>lowering 395:21 <hr/>M<hr/>macular 365:3 made 384:22, 401:17, 412:5, 428:11 main 371:19, 373:3, 395:22, 419:5, 419:6 major 365:16 make 372:5, 389:5, 389:13, 407:7, 424:15, 428:9, 442:2 makes 390:22 making 426:7 manner 360:8 manufacturing 372:20 many 363:19, 382:13, 442:15 mark 360:1, 425:7, 425:9 marked 359:22, 360:2, 360:5, 364:5, 376:7, 385:11, 386:10, 399:16, 425:6 marriage 444:20 martin 351:17, 352:5, 355:2, 355:21, 356:5, 357:4, 360:5, 414:2, 439:20, 443:9,</p>	<p>444:6, 444:15 mast 367:18 material 364:20, 365:2, 367:6, 372:8, 372:9, 373:5, 373:7, 373:14, 373:22, 374:3, 390:6, 401:7, 403:20, 409:11, 412:10, 442:10 materials 359:9, 359:15, 359:18, 359:19, 360:7, 362:8, 362:12, 362:18, 363:2, 364:2, 366:12, 366:18, 367:3, 367:11, 368:13, 372:17, 373:10, 373:11, 401:16, 431:17 mating 378:13 matter 356:6, 357:16, 372:12, 401:20, 445:1 matters 362:2 maybe 363:21, 365:21, 367:14, 381:21, 382:1, 383:1, 384:9, 401:4, 422:9, 435:1 mayer 353:14, 356:21 mean 365:15, 366:11, 367:12, 374:6, 378:3, 380:1, 381:11, 382:16, 383:19, 386:17, 388:1, 391:7, 391:8, 392:19, 393:3, 401:5,</p>
---	--	---	--

<p>404:20, 408:2, 408:12, 414:17, 417:17, 421:18, 421:22, 422:10, 428:3, 429:10, 429:11, 429:15, 430:15, 431:19, 435:1, 435:15, 435:16, 436:17, 436:21, 438:13, 438:21 meaning 366:13, 384:11, 429:7, 434:14 meanings 432:14, 432:16, 432:17 means 397:14, 398:18, 401:12, 403:22, 422:20, 423:4 mechanical 377:22, 392:19, 392:22, 393:6, 402:2, 402:9, 410:4, 410:6, 410:9 mechanism 379:1, 382:5, 384:2, 384:14, 397:3, 398:18, 407:5, 407:7, 408:5 mechanisms 391:14, 397:5, 397:7, 406:17, 407:9, 408:13 media 356:4, 413:16, 414:1, 439:19 meetings 417:20 member 378:13, 394:13, 394:15 members 394:14 mention 397:12, 401:12,</p>	<p>416:17, 441:12 mentioned 369:22, 396:21, 406:12, 409:15, 409:16, 411:16, 430:18 met 361:12, 363:5, 363:10, 363:15, 363:16, 363:19, 405:4 metal 401:9, 417:5, 420:8, 420:9, 421:11, 421:12, 423:12, 423:20, 423:22, 424:5, 425:20, 425:21, 433:10, 433:14, 433:20, 433:21, 434:9, 434:20, 435:12, 435:21, 436:9, 436:12, 436:14, 437:4, 437:6, 437:10, 437:16, 438:9, 438:17, 439:1 method 379:13, 411:12 micro 394:22 microbattery 351:8, 353:13, 356:7, 356:22 might 362:12, 366:14, 366:15, 370:1, 373:15, 388:9, 429:16, 431:18, 432:5 mind 397:6, 432:15 minute 439:11 miracle 401:4 missed 360:15, 365:21</p>	<p>misunderstanding 438:16 mixed 388:10 modified 358:21 moment 403:14 monique 351:25, 352:6, 357:2, 444:3, 445:8 monitor 356:10 more 365:14, 366:1, 366:9, 391:7, 402:6, 403:2, 409:3, 423:16, 425:13, 441:19, 443:4 morning 357:9, 440:3 most 358:3, 359:19, 362:22, 377:19, 386:21, 393:5 motion 366:9, 378:1, 378:6, 389:16, 410:6, 424:21 mounding 367:19 mounds 367:14 move 375:15, 381:5, 385:3, 386:13, 399:10, 402:18, 410:14, 413:13, 416:20, 418:14, 421:10, 423:15, 433:1 moving 374:11, 375:11, 421:8 much 368:22, 378:5,</p>	<p>415:19 mueller 353:15, 355:4, 356:20, 357:15, 366:6, 367:8, 368:10, 368:14, 368:19, 369:3, 369:7, 369:13, 370:8, 373:8, 374:5, 377:12, 378:21, 379:3, 379:20, 380:20, 382:12, 383:12, 383:16, 384:7, 384:21, 388:16, 389:20, 391:6, 393:2, 394:8, 396:18, 398:8, 398:14, 399:8, 402:1, 402:15, 405:5, 410:3, 410:11, 413:1, 413:10, 415:14, 415:18, 416:7, 417:18, 418:5, 418:10, 419:12, 426:16, 427:20, 429:9, 430:13, 431:9, 432:8, 434:22, 435:14, 437:13, 439:10, 440:1, 440:19, 443:4 multiple 388:9, 394:14, 395:2, 396:15, 398:3, 399:2 must 398:13 myself 383:20</p> <hr/> <p style="text-align: center;">N</p> <hr/> <p>nafion 366:17 name 356:18, 371:6, 386:18</p>
--	--	--	--

<p>nature 420:11</p> <p>near 380:10, 388:12, 396:3</p> <p>necessarily 380:18</p> <p>necessary 378:14, 409:7</p> <p>need 378:5, 380:5, 383:18, 384:8, 384:15, 395:20, 422:7, 425:9, 432:6</p> <p>negative 364:15</p> <p>never 436:5</p> <p>new 352:8, 353:9, 406:16, 416:21, 417:1, 417:2, 418:18, 421:10, 433:2, 444:5, 445:9</p> <p>next 375:4, 411:1, 421:8</p> <p>nice 402:2, 402:9</p> <p>nick 353:6, 356:18</p> <p>non-conductive 373:9</p> <p>none 360:14, 413:3</p> <p>normal 389:14</p> <p>notary 352:7, 357:5, 444:4, 445:9</p> <p>notch 393:13, 393:21</p> <p>note 396:1, 428:9, 428:11</p> <p>noted 371:20, 443:11</p>	<p>notice 352:6</p> <p>nuances 428:5</p> <p>nucleating 365:9, 365:10, 366:8, 367:1, 368:21, 369:1, 369:19, 442:8, 442:10, 442:15</p> <p>nucleation 366:14</p> <p>number 356:4, 356:8, 362:7, 362:13, 367:20, 369:17, 375:5, 375:17, 378:11, 378:16, 379:16, 387:4, 389:4, 397:5, 407:8, 414:1, 439:19</p> <p>numbers 406:19</p> <hr/> <p style="text-align: center;">O</p> <hr/> <p>objection 366:6, 367:8, 368:10, 368:14, 368:19, 369:3, 369:7, 369:13, 370:8, 373:8, 374:5, 377:12, 378:21, 379:3, 379:20, 380:20, 382:12, 383:12, 383:16, 384:7, 384:21, 388:16, 389:20, 391:6, 393:2, 394:8, 396:18, 398:8, 398:14, 399:8, 402:1, 402:15, 405:5, 410:3, 410:11, 413:1, 413:10, 415:14, 415:18, 416:7, 417:18, 418:5,</p>	<p>418:10, 419:12, 426:16, 427:20, 429:9, 430:13, 431:9, 432:8, 434:22, 435:14, 437:13, 440:15, 441:6, 441:21, 442:1, 442:12</p> <p>obstinate 429:10</p> <p>obvious 392:12</p> <p>obviously 372:1</p> <p>occur 366:14, 371:9, 405:8, 413:4, 414:14, 414:16, 415:12, 419:2</p> <p>occurred 444:15</p> <p>octagonal 418:3, 418:6</p> <p>office 351:1, 356:8, 359:4</p> <p>oh 403:13, 410:21, 439:3</p> <p>okay 360:6, 362:21, 363:18, 364:14, 364:15, 366:7, 366:22, 367:10, 372:5, 372:6, 374:11, 374:20, 374:21, 377:2, 377:19, 380:9, 381:18, 382:14, 383:7, 384:11, 385:3, 388:8, 390:21, 392:16, 394:9, 395:6, 395:9, 396:1, 396:10, 397:18, 398:17, 399:5, 400:10, 401:15, 401:21, 402:18,</p>	<p>403:15, 403:17, 405:3, 406:2, 407:13, 408:2, 408:14, 408:20, 408:22, 409:3, 409:4, 410:13, 410:14, 411:18, 412:5, 413:13, 418:16, 419:7, 419:16, 419:18, 420:1, 420:5, 422:5, 422:9, 423:2, 423:4, 423:15, 424:14, 428:6, 428:22, 429:13, 429:17, 429:22, 430:3, 430:15, 432:20, 433:8, 433:17, 434:6, 434:11, 435:7, 435:18, 436:6, 438:3, 439:5, 439:13, 439:15, 440:14, 440:17, 442:6, 443:4, 443:8</p> <p>once 410:12, 427:21</p> <p>one 359:10, 366:13, 368:11, 372:13, 374:6, 375:17, 376:15, 382:4, 384:14, 384:19, 387:6, 389:8, 394:12, 394:15, 395:9, 395:10, 399:2, 402:6, 404:18, 406:18, 407:7, 407:15, 408:14, 409:3, 417:9, 423:15, 423:18, 423:20, 423:22, 424:1, 424:13, 425:10, 425:20, 433:11, 433:13, 436:21, 437:6, 438:11,</p>
---	---	---	---

<p>438:16, 438:22, 439:2, 440:2, 442:16 only 375:8, 381:2, 381:12, 398:18 open 381:6, 429:12, 430:21 operation 441:5 opinion 384:10, 390:9, 391:4, 394:6, 398:6, 405:7, 413:7, 415:15, 417:16, 419:10, 428:6, 429:5, 430:10, 435:11, 438:10 oppose 392:14 opposed 367:2 order 374:3, 415:13, 435:18, 437:11 ordinary 392:6, 392:10, 414:14, 428:17, 429:6, 431:13, 435:12 orientation 389:8 original 358:8, 362:14, 388:10, 392:9, 393:22, 403:5, 403:9, 403:22, 411:16, 418:14, 441:7 other 359:18, 362:2, 362:11, 364:19, 366:17, 366:18, 371:17, 383:10, 383:19, 384:16, 399:6, 401:16,</p>	<p>404:22, 408:14, 409:20, 416:10, 417:8, 418:2, 418:16, 429:15, 430:16, 430:19, 430:22, 431:3, 432:15, 432:17, 433:14, 435:16, 437:7, 439:4, 440:21 others 386:19 otherwise 433:22, 444:22 out 372:4, 372:22, 392:18, 394:16, 401:10, 405:12, 407:3, 421:11, 422:13, 423:7, 428:19, 430:5, 434:1, 437:18 outcome 444:22 outer 377:4, 381:1 outline 373:3 outlined 358:21 output 396:16, 396:19, 396:21, 397:15, 398:19, 399:6, 422:6, 422:21, 426:6, 429:1, 434:4, 434:8, 435:7, 436:7, 436:20, 438:7 outside 362:19, 394:8 oval 417:21, 418:8 over 362:6, 369:20, 374:9, 377:21, 380:5, 380:6, 381:20, 383:5,</p>	<p>384:16, 390:10, 390:13, 390:19, 390:20, 390:22, 391:3, 392:20, 401:19, 403:12, 406:15, 407:6, 410:1, 410:10, 412:11, 413:6, 416:21, 420:5, 433:4 overall 376:14, 420:4 overlap 391:19, 404:10, 405:3, 405:8, 405:22, 406:7, 420:19 overlapping 404:6, 404:16, 406:10, 410:18, 411:5, 417:8, 420:7 overlaps 404:6, 404:8, 404:11, 404:15, 408:12 own 363:1, 432:13 owner 351:9, 353:12, 356:22, 358:11, 443:5</p> <hr/> <p style="text-align: center;">P</p> <hr/> <p>page 355:2, 355:11, 364:5, 374:12, 374:15, 374:16, 374:19, 375:4, 376:13, 376:21, 376:22, 379:6, 379:8, 380:8, 380:11, 388:7, 388:11, 388:12, 393:9, 396:2, 400:11, 402:20, 403:18, 403:19, 411:1, 415:4,</p>	<p>416:22, 419:17, 419:19, 420:5, 421:9, 423:17, 424:22, 433:4, 440:5, 440:6 pages 351:24, 359:14, 370:19 palmieri 353:6, 355:3, 356:16, 356:18, 357:8, 359:21, 360:1, 375:22, 376:4, 376:8, 376:20, 385:10, 385:14, 385:16, 385:21, 386:2, 386:12, 393:8, 399:13, 410:22, 413:17, 414:4, 424:17, 425:7, 425:15, 439:5, 439:13, 440:15, 441:6, 441:21, 442:1, 442:12, 443:6 pan 377:4 papers 425:11 paragraph 376:9, 376:17, 376:22, 377:2, 380:7, 380:22, 382:9, 383:8, 384:11, 389:1, 391:17, 393:9, 393:11, 393:14, 393:15, 393:16, 394:7, 404:4, 410:15, 413:14, 415:5, 416:21, 420:4, 421:9, 421:16, 421:17, 422:3, 422:4, 423:16, 424:6, 433:1, 433:3, 440:4</p>
---	--	---	---

<p>parallel 417:13</p> <p>parlance 432:12</p> <p>part 364:1, 377:15, 393:22, 403:3, 403:5, 408:12, 410:17, 410:18, 411:3, 411:4, 411:5, 411:7, 411:15, 412:4, 415:9, 416:19, 420:8, 420:9</p> <p>partial 381:2</p> <p>partially 404:6, 404:10, 404:15, 404:20, 417:8</p> <p>particle 372:6, 372:7, 372:13, 372:14</p> <p>particles 373:2</p> <p>particular 359:9, 378:9, 404:2</p> <p>particularly 365:7</p> <p>parties 444:19, 444:21</p> <p>partly 404:8</p> <p>partnership 351:4, 351:5, 353:4, 356:17</p> <p>parts 416:19</p> <p>party 444:12</p> <p>passages 364:19</p> <p>passed 376:12</p> <p>passing 373:12</p> <p>past 377:20</p>	<p>patent 351:1, 351:2, 351:9, 353:12, 355:12, 355:16, 355:17, 356:7, 356:22, 358:11, 376:6, 379:7, 379:8, 380:4, 382:21, 383:6, 384:17, 385:8, 386:10, 387:7, 387:11, 387:14, 388:2, 394:12, 399:15, 399:18, 401:3, 401:6, 403:9, 415:10, 416:1, 416:11, 417:3, 422:1, 423:5, 424:22, 428:1, 428:20, 436:17, 436:18, 443:5</p> <p>patents 378:4, 386:18, 386:21, 387:4, 391:15, 407:9, 408:6, 413:3, 422:13</p> <p>paths 395:18</p> <p>paul 353:7, 356:19</p> <p>pdf 374:19, 376:14, 376:21, 379:6, 380:8, 388:7, 393:10, 400:11, 402:21, 403:19, 416:22, 417:1, 419:17, 419:19, 423:17, 433:4</p> <p>peag 351:4, 353:3, 356:6, 356:17</p> <p>peckerar 351:17, 352:6, 355:2, 355:21, 356:5, 357:4,</p>	<p>357:9, 360:5, 368:5, 377:7, 386:13, 388:15, 399:20, 411:8, 414:2, 414:5, 425:17, 432:4, 439:7, 439:20, 440:2, 443:9, 443:10, 444:6, 444:15</p> <p>peel 395:3, 395:13</p> <p>peel-off 395:10</p> <p>penetrate 372:9</p> <p>penetrating 378:18</p> <p>perfect 377:1</p> <p>perform 426:13, 429:19, 435:9</p> <p>performing 430:11</p> <p>perhaps 409:8, 426:21, 428:22, 431:7</p> <p>period 363:9</p> <p>person 392:5, 392:9, 414:14, 428:17, 429:5, 431:13, 435:11</p> <p>personnel 361:13, 361:17</p> <p>petitioner 351:6, 353:3</p> <p>petitioners 356:16</p> <p>ph 351:17, 352:6, 355:2, 355:21, 357:4, 360:5, 444:6, 444:15</p> <p>phrase 404:19, 426:22,</p>	<p>427:2</p> <p>phraseology 398:22</p> <p>physical 389:11</p> <p>physically 360:2, 389:10</p> <p>piece 385:4, 386:16, 399:11, 422:13, 423:7, 438:4</p> <p>pieces 422:12</p> <p>pierce 373:2</p> <p>place 356:13, 391:16, 419:18, 435:7</p> <p>placing 395:2</p> <p>plane 417:12, 417:13</p> <p>planet 354:2, 354:3, 356:12, 357:2</p> <p>plastic 423:3, 442:4</p> <p>plate 366:9, 373:16</p> <p>plates 364:16, 395:16</p> <p>plating 367:18</p> <p>plaza 353:8, 353:17</p> <p>plc 351:5, 353:4, 356:18</p> <p>please 356:14, 357:3, 386:3, 392:1, 396:4, 402:7, 438:15, 440:10</p> <p>poetic 367:17</p> <p>point 384:6, 389:4, 389:14, 392:18,</p>
--	--	--	---

<p>407:7, 418:8, 435:3, 437:1 pointed 428:19, 430:5 points 395:14, 396:14, 396:15, 398:3, 407:20 polyethylene 380:13 polymer 380:13, 384:1 polymeric 377:6, 378:11, 378:15 polyvinylidene 370:20 poor 394:19 pore 366:15 pores 366:14, 372:16 portion 377:6, 390:20, 390:21, 405:19, 412:11, 415:7, 437:15, 437:20, 437:21 posa 430:21, 431:5, 431:17, 431:20, 432:2, 432:5, 439:4 position 397:19 positions 361:21 possible 360:14, 374:7, 413:7, 416:3, 418:20, 427:7 possibly 425:12 potential 385:2 potentially 409:17</p>	<p>preclude 383:4 predates 398:7 preliminary 357:16, 384:12 preparation 362:9, 362:18, 363:14 prepare 358:14, 362:4, 362:21 prepared 357:16, 357:22, 358:10, 359:5 preparing 358:17, 359:8 present 354:1, 377:22 presented 400:6, 400:7 press 438:6 pressure 378:22, 381:4, 382:15, 382:17, 407:21, 409:9, 412:17, 412:18, 412:19 pressure-loading 378:20, 378:22, 380:15 pressure-release 379:1, 380:15, 382:5, 382:10, 383:9, 383:15 pressurization 419:9 pretty 362:15, 367:4, 368:22 prevent 371:13, 371:17, 378:6, 422:5, 426:6, 435:8, 442:20 preventing 424:3, 427:3,</p>	<p>427:8, 427:10, 427:18, 429:8 prevents 402:12, 426:18, 429:2 previous 357:21, 361:20, 362:1, 387:2 previously 360:16, 373:11, 407:19 primary 358:5, 391:2, 409:17 prior 385:4, 387:1, 403:8 prise 409:4, 409:7 prises 409:14, 412:14 probably 395:12, 400:4, 412:7 problem 364:18, 365:16, 371:12, 371:16, 374:7, 374:8, 374:22, 400:10, 403:13 proceedings 361:14, 375:20 process 364:21 processing 441:8 produced 393:5 produces 416:3 product 428:2 products 428:12 projections 389:12 pronounces 371:6</p>	<p>pronunciation 371:3 proposed 403:4, 417:2 protrude 388:20 protruding 393:12, 393:20, 394:2 provide 378:20, 384:14, 412:16, 431:11 provided 359:1, 384:20, 385:8, 387:14, 403:6, 431:21, 431:22 provides 381:2, 402:11, 405:14, 426:18, 435:8 providing 382:15, 391:10, 417:10, 418:18 proximal 410:16, 410:17, 411:3 prudential 353:17 pub 355:13, 355:18, 376:6, 399:15 public 352:7, 444:4, 445:9 publication 355:15, 386:9 pull 422:12, 422:13, 423:7, 424:15 pulled 394:16, 406:21, 437:18 pulling 401:9 purpose 377:17, 407:4 purposes 431:2, 432:5</p>
---	---	--	---

<p>pursuant 352:6</p> <p>push 412:3</p> <p>put 358:19, 371:11, 438:22</p> <hr/> <p style="text-align: center;">Q</p> <hr/> <p>quantification 416:17</p> <p>question 366:19, 384:19</p> <p>questions 439:6, 443:4, 443:7</p> <p>quick 413:18, 419:18, 424:18</p> <p>quite 397:22, 416:15</p> <hr/> <p style="text-align: center;">R</p> <hr/> <p>radial 395:15, 400:17, 406:11, 407:21, 408:7, 408:15, 409:1, 409:13, 412:16, 412:18, 412:19, 412:21, 413:8, 414:6</p> <p>radially 406:21, 408:11, 411:6, 415:8, 415:12, 415:16, 416:5</p> <p>radius 400:17</p> <p>ragusa 353:7, 356:19</p> <p>raises 412:13</p> <p>rare 373:1, 378:4</p> <p>rarely 407:8</p> <p>rate 364:22, 369:15,</p>	<p>369:16, 369:19</p> <p>read 362:6, 388:1, 401:3, 407:6, 417:4, 421:10, 427:22</p> <p>reading 363:1, 387:8, 387:17, 403:12</p> <p>real 419:18, 424:18</p> <p>really 381:2, 382:22, 428:6, 430:8</p> <p>reason 369:18, 370:1, 370:9, 381:8</p> <p>reasonable 414:15</p> <p>reasons 378:2</p> <p>recall 364:10, 368:13, 368:15, 387:9, 389:12, 397:3, 397:11, 397:14, 399:7, 399:9, 400:1, 400:6, 416:19, 441:16</p> <p>received 387:19</p> <p>recent 358:3, 386:17, 386:21, 387:7</p> <p>recess 386:6, 413:21, 439:17</p> <p>rechargeable 365:18, 365:19</p> <p>recite 393:16, 404:5, 404:9, 423:17</p> <p>recited 431:4, 431:8, 431:14, 431:16, 432:7, 432:17, 432:19, 433:2</p> <p>recites 380:12, 393:11,</p>	<p>418:18</p> <p>reciting 395:20</p> <p>recollection 387:22, 397:9, 400:9, 400:22</p> <p>record 386:3, 386:5, 386:8, 413:18, 413:20, 414:3, 439:14, 439:16, 439:21, 443:10, 444:10</p> <p>records 361:14</p> <p>rectangle 438:5</p> <p>rectangles 379:22</p> <p>reduce 367:7, 395:4</p> <p>reduced 394:4</p> <p>reduction 365:11, 373:15, 398:4</p> <p>refer 358:2, 358:7, 358:8, 362:17, 385:5, 388:22, 389:22, 398:7, 440:3</p> <p>reference 358:2, 360:6, 368:1, 368:12, 370:21, 393:19, 400:3</p> <p>referenced 362:8</p> <p>references 362:14</p> <p>referring 357:21, 376:15, 392:4, 393:14, 394:7</p> <p>refers 380:5, 383:5, 422:3, 422:4</p>	<p>regardless 383:13</p> <p>region 365:6, 369:20, 381:17, 406:20, 406:21, 406:22, 411:21, 417:6, 417:13, 420:18, 442:2</p> <p>regions 369:10, 369:11, 379:22, 417:7, 417:10, 420:8, 420:13, 420:22</p> <p>relate 406:7</p> <p>related 406:4, 444:18</p> <p>relating 363:17, 391:14, 399:1</p> <p>relatively 367:12, 386:17, 387:6</p> <p>relevant 362:11</p> <p>reliability 414:20</p> <p>reliably 406:14</p> <p>relief 382:15, 382:17</p> <p>remedy 374:7</p> <p>remember 367:15, 375:16, 387:18, 391:10, 397:18, 398:22, 401:5, 406:19, 418:11</p> <p>remote 352:5</p> <p>remotely 356:13</p> <p>render 384:10</p> <p>repeat 411:2, 422:16,</p>
--	---	--	--

<p>431:10, 432:12 rephrase 370:4, 384:8 report 359:11, 362:6, 367:15, 368:2, 369:9, 370:16, 384:12, 384:13, 389:1, 394:10, 394:21, 398:21, 405:6, 406:13, 407:6, 411:16, 416:16, 441:7 reported 351:25 reporter 357:1, 357:3, 373:19, 402:5, 402:8, 444:1, 444:4 reports 419:6 represent 356:15, 396:11 representation 394:20 represented 396:12, 444:13 representing 356:12, 357:2 represents 366:16, 393:6, 402:3, 402:10, 402:11, 410:6 reproduce 375:4, 375:5 repulsive 393:21 require 380:19, 421:5 required 380:16, 382:10, 394:16 requirement 378:10 requires 382:14 requisites 365:5</p>	<p>resin 371:11, 371:12, 373:9, 442:4 resistance 394:3, 394:20, 394:22, 395:2, 395:4, 395:5, 395:19, 395:21, 396:8, 398:5 resolve 360:13 respect 401:16, 403:7, 406:21, 411:6, 415:8 respected 395:13 respective 422:20 respectively 421:12, 424:2 rest 382:20, 436:19 restate 422:9 result 365:1, 394:3 return 393:22 review 359:9, 359:18, 360:19, 360:21, 360:22, 363:1, 425:16 reviewed 360:7, 361:2, 362:11, 387:4 reviewing 428:8 revised 403:21, 424:21 rid 367:9 right 357:13, 359:17, 361:3, 368:4, 370:22, 372:1, 372:19, 380:10,</p>	<p>382:7, 382:8, 386:13, 389:3, 390:17, 392:20, 396:3, 396:8, 403:15, 403:20, 404:3, 405:7, 411:9, 412:19, 415:5, 415:10, 415:22, 416:2, 416:6, 416:12, 420:19, 421:3, 421:8, 424:7, 425:21, 426:13, 429:4, 432:19 robert 353:16 rockefeller 353:8 roll 393:12, 393:20 room 357:13 rough 363:19 round 417:6, 417:17, 418:3, 418:4, 418:9 rpr 351:25, 352:7, 445:8</p> <hr/> <p style="text-align: center;">S</p> <hr/> <p>said 363:22, 369:8, 370:16, 377:16, 381:9, 384:12, 387:12, 387:16, 399:1, 405:6, 406:13, 422:10, 422:17, 429:3, 430:15, 431:10, 435:5, 441:11, 442:7 same 368:3, 372:16, 383:9, 400:4, 400:7, 407:4,</p>	<p>415:18, 429:7, 429:14, 429:19, 430:11, 442:1, 443:1 sarah 354:3, 375:22, 385:10, 399:13, 410:22, 424:17, 425:12 saw 400:2, 400:4, 428:13 say 363:21, 365:14, 366:2, 369:9, 369:17, 381:8, 387:3, 388:1, 392:11, 398:15, 402:6, 403:20, 408:21, 416:9, 424:12, 427:13, 431:18 saying 371:2, 380:22, 382:21, 383:18, 383:21, 395:9, 414:13, 423:2 says 377:3, 382:1, 426:17, 428:20, 436:17, 436:18 scaffolding 366:16, 370:2, 442:19, 443:2 scope 394:8, 403:22, 429:3, 431:2 scratch 431:18 screen 359:12, 376:1 screw 379:14 scroll 393:8, 410:22 se 408:15, 441:13 seal 380:14, 380:15,</p>
---	---	--	---

<p>381:1, 381:2, 381:18, 382:5, 382:10, 383:3, 383:4, 383:10, 383:15, 384:18, 384:20, 388:18, 390:2, 391:2, 407:5, 407:22, 417:10 sealed 409:22 sealing 383:22, 384:15, 391:13, 408:5, 409:17, 409:19, 409:21, 410:1, 412:17, 414:7, 419:5 seals 377:21 searching 387:21 second 366:3, 375:18, 407:14, 407:15, 408:12, 410:18, 411:4, 411:7, 415:8, 420:6, 421:12, 421:14, 423:11, 423:20, 423:22, 424:2, 424:5, 425:20, 425:21, 426:12, 429:22, 430:15, 430:17, 433:9, 433:12, 435:6, 442:17 secondary 365:15, 366:10, 408:13, 409:18, 409:21, 410:1, 414:7, 431:22 seconds 386:1 section 359:6, 359:16, 359:17, 359:18, 360:9, 364:2,</p>	<p>364:6, 364:7, 369:8, 370:18, 374:11, 374:13, 374:22, 381:5, 402:20, 403:11, 403:16, 431:6 sections 359:11 see 366:7, 367:13, 375:6, 377:2, 377:6, 380:1, 380:16, 381:8, 382:9, 386:16, 387:1, 388:19, 389:15, 390:16, 390:18, 391:17, 392:19, 395:5, 397:11, 399:22, 401:15, 404:7, 411:8, 413:2, 413:12, 415:9, 416:16, 417:14, 419:17, 420:17, 420:18, 421:2, 421:3, 421:15, 421:16, 421:17, 424:6, 428:17, 430:6, 431:17, 432:14, 434:12, 437:7, 440:5 seeing 425:14 seek 428:17 seemed 401:4 semi-functioning 388:2 sense 435:16 sentence 380:12 separate 378:14, 400:8, 423:19, 423:21, 424:1, 424:2, 425:18, 426:13,</p>	<p>428:14, 429:19 separated 366:12, 417:9 separating 378:1 separation 392:15 separator 366:2, 366:16, 367:3, 367:6, 367:11, 368:7, 368:13, 369:6, 369:21, 370:1, 370:3, 370:5, 370:10, 372:1, 372:9, 372:15, 373:7, 373:10, 373:11, 373:22, 374:2, 390:6, 440:8, 440:20, 441:3, 441:16, 442:10 separators 366:17, 369:4, 426:14, 442:14, 442:18 september 351:20, 356:9, 444:16, 445:4 sequence 433:12, 437:5 serve 370:1, 412:12 served 407:4, 414:6 set 386:21, 397:21, 431:2, 444:7, 445:3 several 388:19 shape 393:22, 407:12, 418:3 shapes 418:2, 418:16 shared 399:13</p>	<p>sharing 429:4 shield 427:6, 427:8 shielded 421:12, 421:18, 421:21, 422:19, 426:22, 427:18, 429:7, 436:6 shielding 422:5, 422:18, 427:10, 429:13 shoot 364:15 shooting 365:13 short 372:4 shorthand 444:1 shorting 372:22 shorts 372:10 should 360:2, 376:13, 384:17, 385:10, 388:11, 396:2, 411:15, 422:9 shouldn't 384:9, 428:22 show 375:12, 400:18, 411:18, 413:3, 413:5, 415:2, 416:4, 418:6 showing 379:11, 395:11, 400:14 shown 375:9, 378:18, 380:3, 388:14 shows 396:7, 399:4 sic 377:5, 404:8, 439:20 side 405:20, 405:21</p>
---	--	---	---

<p>sides 391:19, 418:13, 421:13, 421:21, 424:4, 426:7 signature-plkal 445:6 similar 389:8 simple 407:10, 408:3, 412:9 simply 408:7 since 358:4, 362:1, 388:9 single 378:7, 394:13, 394:15, 396:8, 396:14, 397:20, 399:3, 422:14 sir 385:17 site 365:6, 365:10, 365:11 sites 366:8, 367:1, 368:21, 368:22, 369:1, 369:19, 442:8, 442:10, 442:15, 442:21 sits 390:19, 401:16 size 372:14 sizes 372:6, 372:7, 372:15 skill 392:6, 414:15, 428:17, 429:6, 430:5, 431:13, 435:12 slide 404:17 slight 389:15</p>	<p>sloping 411:22 small 372:18, 373:18, 373:20, 441:2 smaller 395:18 solution 365:8 solve 371:12 some 361:7, 363:3, 365:14, 366:21, 370:15, 371:22, 372:21, 373:15, 374:2, 374:7, 382:14, 383:19, 392:14, 395:12, 403:1, 403:4, 403:7, 406:11, 406:16, 408:7, 412:18, 416:17, 419:8, 425:13, 430:16, 435:16, 437:1, 437:15 somehow 417:20 someone 430:5 something 374:9, 382:19, 411:17 sometimes 364:21 somewhere 433:21 sorry 374:16, 374:21, 375:17, 376:18, 376:20, 385:17, 403:12, 410:17, 410:21, 412:4, 416:22, 419:17, 419:19, 421:17, 423:1, 424:13, 435:1, 435:17, 440:12, 442:13</p>	<p>sort 374:2 sorter 372:14 sources 387:18 space 404:22 specific 367:22, 368:5, 372:14, 376:17, 387:9, 409:19, 413:12, 414:13, 437:2 specifically 362:5, 363:14, 374:8 specifies 377:13 speculate 413:11, 416:8 speculates 381:20 speculating 383:20 speculation 382:3, 385:1, 393:3, 412:5 speed 370:12 spent 359:19 spiral 368:6, 388:20, 390:4, 390:5, 394:11, 396:13, 400:21, 401:10, 421:13, 421:19, 421:22, 423:5, 424:4, 426:7, 436:4, 436:5 spirally 388:18 spots 388:9 spring 389:15, 395:15, 396:8</p>	<p>spring-load 379:12, 389:7, 394:13, 397:18 spring-loading 398:18, 398:20 springs 379:14 squeeze 372:3, 441:9 standard 356:11 start 405:12 started 357:12 starting 388:6 starts 376:5, 433:3 state 356:15, 384:10, 394:9, 394:21, 397:19, 409:3, 413:4, 445:9 stated 398:1, 429:22, 434:7 statement 384:22 states 351:1, 352:8, 393:19, 423:18, 437:3, 444:4 stay 368:3 stetson 353:18 stick 382:22 still 388:2, 427:14, 438:9, 438:19 storage 364:20 straight 405:11, 406:10 strangling 411:14</p>
--	---	---	--

<p>strawman 394:18, 397:21, 398:2 stream 387:7 stress 412:2 structure 406:14 structures 365:13, 367:13, 373:12, 428:2 studying 431:21 stuff 367:16 submitted 404:9 substantive 359:5, 360:8 substitute 402:21, 403:4, 403:21, 404:2, 404:9, 417:2, 424:10, 424:12, 425:2, 425:3, 426:17, 428:9, 428:10, 433:3, 437:2 successful 414:22 sufficient 381:18 suggested 431:5, 431:15, 438:3 suite 353:18 super 440:14 superior 399:4 supplement 394:21 supplemental 355:20, 358:4, 358:10, 358:15, 359:11, 359:13,</p>	<p>360:4, 360:12, 362:6, 362:10, 362:13, 362:16, 362:19, 363:2, 363:3, 364:3, 364:4, 369:9, 386:22, 391:11, 391:15, 394:10, 398:1, 402:19, 403:6, 406:13, 415:5, 419:22, 432:21, 440:4 supplementary 384:13, 389:1 supplied 358:20 supply 378:14, 408:13 support 370:2, 403:8 suppose 366:11 sure 363:22, 376:19, 377:19, 391:8, 398:10, 405:20, 411:11, 414:21, 418:22, 422:18, 437:14, 438:21, 439:11 surely 430:16 surface 367:10, 393:12, 393:20, 394:2, 417:6, 417:7, 417:10, 420:8, 420:12, 420:22, 421:6, 435:8, 442:16 surfaces 422:11 surlyn 380:14, 381:22, 384:13, 384:20 swage 411:17, 412:8 swear 357:3</p>	<p>sworn 357:5, 444:8 <hr/>T<hr/>tab 399:3 table 399:3 tabs 398:17, 399:2 take 371:3, 385:19, 385:22, 400:10, 403:14, 404:19, 413:17, 418:12, 431:19, 439:8, 439:9, 439:10 taken 387:17, 444:9 taking 356:13 talk 401:9, 415:3, 416:17 talked 417:21, 424:8, 440:3, 441:14 talking 381:1, 414:19, 423:8 talks 416:13, 416:14 tape 423:6, 428:14, 428:22, 429:1, 430:7, 430:18, 435:7, 438:4 taught 367:15 teach 380:21 technical 358:20 technician 354:3, 359:21, 376:2, 376:18, 385:12, 385:17, 425:5, 440:10,</p>	<p>440:13 technique 415:17 techniques 408:19, 409:15, 414:18, 414:22 tell 412:6 term 392:6, 404:20, 405:4, 410:4, 417:16, 422:19, 427:18, 429:6, 429:7 terminal 364:16 terminates 405:1 terming 377:21 terms 364:3, 427:4, 427:12, 427:22, 429:12, 431:1 testified 368:20, 373:10, 377:14 testifies 357:6 testimony 361:4, 361:20, 370:10, 414:1, 439:19, 443:9, 444:10 text 425:14, 430:9, 441:1 th 356:9, 445:4 thank 376:5, 395:8, 413:19, 432:20, 440:13 thanks 377:1 themselves 372:9, 372:11, 422:1, 442:18</p>
--	--	--	---

<p>therebetween 417:11, 418:19</p> <p>therein 362:8, 362:12</p> <p>thereon 434:10, 434:19</p> <p>thereto 417:13</p> <p>they'd 372:19</p> <p>thing 408:14, 409:12, 442:16</p> <p>things 369:17, 372:4, 382:18, 382:22, 390:1, 394:9, 395:15, 411:19, 412:5, 430:7, 430:18, 432:14, 442:13, 442:14</p> <p>think 371:15, 373:1, 385:1, 391:21, 395:11, 395:21, 397:5, 405:14, 406:16, 407:8, 407:13, 410:12, 411:14, 412:6, 416:20, 417:19, 430:14, 430:21, 431:17, 432:10, 432:11, 432:15, 439:4, 439:13, 440:11</p> <p>third 407:14, 410:15</p> <p>thought 432:1</p> <p>three 363:21, 415:22, 433:12, 437:3, 437:5, 438:21, 438:22</p> <p>threshold 412:14</p> <p>threw 374:9</p>	<p>through 372:15, 376:11, 381:16, 381:17, 382:16, 398:21, 401:3, 409:10, 416:16, 418:7, 428:1, 432:2, 438:17, 439:2, 442:8</p> <p>throughout 368:2, 384:17, 410:5</p> <p>throwing 381:20</p> <p>time 356:10, 356:11, 359:20, 363:9, 365:18, 367:16, 387:9, 387:18, 393:6, 400:2, 400:4, 400:7, 400:8, 402:6, 406:15, 409:3, 413:15, 423:1, 439:6, 443:11</p> <p>times 362:7, 363:19, 363:21, 371:20</p> <p>today 356:12, 357:1, 357:10, 362:18, 363:12, 439:6, 441:14</p> <p>today's 356:9, 360:22, 362:5</p> <p>together 372:4, 378:15, 379:15, 382:22, 390:1, 406:14, 407:17, 408:16, 418:7, 418:13, 441:9, 441:16</p> <p>token 372:16</p> <p>took 429:13</p> <p>top 372:2, 378:1,</p>	<p>378:7, 378:12, 378:17, 381:15, 389:13, 389:14, 390:13, 390:19, 390:21, 391:21, 392:13, 395:16, 395:17, 396:3, 404:6, 404:11, 404:12, 404:15, 405:2, 405:16, 405:18, 407:2, 407:16, 408:8, 408:12, 409:9, 411:1, 411:22, 412:1, 412:15, 417:13, 420:9, 420:14, 421:9, 423:4, 423:8, 438:5</p> <p>topic 358:5, 440:2</p> <p>topics 368:11</p> <p>touch 440:2</p> <p>touched 402:22</p> <p>towards 398:11</p> <p>trademark 351:1, 356:7</p> <p>transcript 355:10, 361:17, 417:20</p> <p>transcripts 357:19, 357:20, 360:19</p> <p>translation 385:9, 388:10</p> <p>transport 394:17</p> <p>traverse 401:11</p> <p>treatments 367:10</p> <p>tree 365:1, 365:7, 365:10, 370:2</p>	<p>tree-forming 365:6</p> <p>tree-like 365:12</p> <p>trees 364:14, 370:17</p> <p>tremendous 370:13</p> <p>trial 351:2</p> <p>triggered 365:11</p> <p>trouble 425:13</p> <p>true 366:17, 381:10, 444:10</p> <p>truly 381:11, 381:21</p> <p>trying 365:17, 419:18</p> <p>tube 377:6, 378:11, 378:16</p> <p>turn 364:5</p> <p>twice 432:12</p> <p>two 353:17, 357:17, 357:19, 357:22, 360:15, 365:5, 394:9, 394:11, 395:14, 396:10, 399:1, 417:5, 418:13, 421:6, 427:12, 427:22, 429:12, 431:17, 433:15, 436:18, 437:7, 438:22, 442:13, 442:14</p> <p>two-thirds 420:19</p> <p>type 358:19, 373:13, 443:1</p> <p>types 371:18</p>
---	--	--	---

<p>typo 360:15</p> <hr/> <p style="text-align: center;">U</p> <hr/> <p>u-shaped 390:21</p> <p>under 372:2, 419:8, 419:13, 419:15, 441:9</p> <p>underlying 442:21</p> <p>understand 392:6, 402:14, 407:21, 427:17, 429:6, 435:12</p> <p>understanding 395:8, 403:10, 429:17, 441:18</p> <p>unexamined 355:15, 386:9</p> <p>united 351:1</p> <p>uppermost 436:20</p> <p>use 367:10, 367:18, 367:20, 370:20, 381:22, 382:2, 383:1, 422:18, 441:15</p> <p>uses 391:3</p> <p>using 372:17, 383:22, 408:18, 409:14, 410:4, 411:12, 414:18, 416:1</p> <p>usp 351:12, 351:14</p> <p>usually 367:6, 378:7, 380:12</p> <hr/> <p style="text-align: center;">V</p> <hr/> <p>various 364:22, 378:2, 387:19, 395:14,</p>	<p>401:12, 428:2</p> <p>varta 351:8, 353:13, 356:6, 356:22, 358:11, 361:10, 361:12, 361:17, 403:3, 404:9, 406:17, 407:9, 408:6, 408:10, 414:17, 415:6, 416:3, 421:22, 422:12, 423:5</p> <p>varta's 361:21, 363:5, 387:15, 409:18, 414:7, 424:21</p> <p>varying 406:3</p> <p>vein 408:22</p> <p>vent 381:7, 384:5, 419:9</p> <p>vented 382:6</p> <p>venting 381:13, 382:7, 382:16, 384:1, 419:14</p> <p>verbal 441:11</p> <p>versus 356:6</p> <p>vi 402:20, 403:15, 403:16</p> <p>via 444:15</p> <p>video 356:10, 356:13</p> <p>videoconference 444:16</p> <p>videographer 354:2, 356:3, 356:11, 357:1, 386:4, 386:7, 413:15, 413:19, 413:22, 439:15,</p>	<p>439:18, 443:8</p> <p>videotaped 351:17, 352:5, 356:5</p> <p>view 392:10</p> <p>virtually 351:19, 444:15</p> <p>visualizing 423:2</p> <p>voice 432:14</p> <p>voit 353:14, 356:21</p> <p>volume 351:18, 356:4, 414:1, 439:19</p> <p>vouthouris 351:25, 352:7, 357:2, 444:3, 445:8</p> <hr/> <p style="text-align: center;">W</p> <hr/> <p>walk 418:7</p> <p>wall 374:10, 381:20, 389:14, 411:22</p> <p>walls 405:20, 405:21, 406:9</p> <p>want 367:22, 376:9, 381:21, 382:22, 385:21, 386:13, 388:12, 395:1, 399:10, 407:15, 407:19, 409:20, 413:17, 433:1, 434:13, 437:1, 439:8</p> <p>wanted 357:12, 414:10, 415:11, 425:16</p> <p>wave 386:18</p> <p>waxing 367:16</p>	<p>way 364:17, 373:22, 378:3, 381:3, 381:12, 394:17, 401:11, 401:14, 402:16, 402:17, 408:14, 409:5, 420:19, 423:14, 444:21</p> <p>ways 378:12, 378:16</p> <p>we'll 409:19, 421:9</p> <p>we're 375:8, 403:15, 403:16, 423:8, 437:14</p> <p>we've 370:14, 377:21, 380:22, 386:22, 402:22, 407:18, 411:17, 414:19, 423:3, 439:11</p> <p>weld 409:9</p> <p>welded 397:8, 397:10, 397:12</p> <p>welding 401:13</p> <p>welds 401:14</p> <p>well-defined 435:9</p> <p>well-documented 362:16</p> <p>went 430:4, 432:2</p> <p>wes 356:20, 439:8</p> <p>wesley 353:15</p> <p>whereas 427:2</p> <p>whereof 445:3</p> <p>wherever 368:21</p>
--	--	--	--

<p>whether 361:19, 414:8, 414:13, 422:14, 428:4, 431:12, 440:7, 442:9</p> <p>whole 401:11, 409:12</p> <p>wind 394:12, 394:16, 394:17, 396:13, 401:11, 401:12</p> <p>winding 388:20, 395:4, 395:14, 400:21, 421:13, 421:19, 421:22, 424:4, 426:8, 436:4, 436:5</p> <p>within 366:15, 376:20, 390:19, 420:4, 444:4</p> <p>without 380:14, 393:12, 393:21, 411:18, 414:13, 427:8</p> <p>witness 357:3, 385:15, 385:19, 386:1, 402:6, 440:12, 440:14, 444:6, 444:11, 445:3</p> <p>wittmann 353:16, 357:15</p> <p>wondering 392:3</p> <p>word 432:12</p> <p>words 364:12, 364:19, 404:22, 416:12</p> <p>work 362:22, 365:17, 388:5, 398:16, 409:6</p> <p>works 381:3</p> <p>worried 371:10</p>	<p>worth 395:12</p> <p>wouldn't 369:17, 371:16, 372:10, 372:15, 372:16, 372:18, 402:16, 402:17, 413:11, 418:9, 427:13, 429:2, 433:22, 442:4</p> <p>wound 368:6, 388:18, 390:4, 390:5, 400:18, 441:10</p> <p>woven 366:13</p> <p>wrinkling 429:2, 435:8</p> <p>wrong 371:2, 396:5</p> <hr/> <p style="text-align: center;">Y</p> <hr/> <p>yeah 358:22, 363:11, 363:13, 364:4, 367:4, 371:5, 374:20, 374:21, 376:4, 376:16, 376:22, 379:12, 385:21, 386:2, 388:17, 389:7, 389:12, 390:17, 391:21, 392:3, 395:8, 396:3, 396:8, 396:9, 396:20, 400:12, 400:22, 403:17, 403:18, 404:17, 405:20, 408:2, 408:6, 408:9, 411:13, 413:17, 421:1, 421:3, 421:16, 421:17, 422:18, 424:7, 424:13, 424:16, 425:2, 425:14, 425:18, 427:1, 428:14, 428:15,</p>	<p>433:18, 435:20, 436:9, 437:9, 437:18, 437:19, 438:13, 438:21, 439:10</p> <p>yield 414:21</p> <p>yields 419:9</p> <p>york 352:8, 353:9, 444:5</p> <p>yourself 356:14, 440:11</p> <p>yup 379:9, 420:10, 427:16, 432:22</p> <hr/> <p style="text-align: center;">Z</p> <hr/> <p>ziesch 354:2, 356:12</p> <p>zinc 365:18, 365:19</p> <p>zoom 425:12, 444:15</p> <hr/> <p style="text-align: center;">.</p> <hr/> <p>.1 364:6</p> <p>.2500 353:10</p> <p>.5600 353:20</p> <hr/> <p style="text-align: center;">0</p> <hr/> <p>00 376:9</p> <p>0069 376:9, 376:17</p> <p>01211 351:11, 356:8</p> <p>01212 351:11</p> <p>01213 351:13</p> <p>01214 351:13</p> <p>0218356 355:18, 399:16</p>	<p>0233212 355:13, 376:3, 376:7</p> <p>031266 385:16</p> <hr/> <p style="text-align: center;">1</p> <hr/> <p>10 351:20, 356:9, 413:20, 413:21, 414:2, 426:3, 426:22, 429:18, 439:10, 444:16</p> <p>1005 355:12, 375:19, 376:6</p> <p>101 420:8, 420:16</p> <p>10112 353:9</p> <p>102 420:9, 420:14, 420:16</p> <p>103 421:1</p> <p>1039 355:15, 385:5, 385:11, 386:9, 386:14</p> <p>1040 355:17, 399:12, 399:15</p> <p>1041 368:2</p> <p>11 439:15, 439:17, 439:20, 443:10, 443:11, 444:17</p> <p>12 356:8, 374:12, 374:16, 379:5, 445:4</p> <p>120 380:8, 382:9, 383:8</p> <p>13 356:8, 375:4, 440:4, 440:6</p>
---	--	---	--

Transcript of Martin C. Peckerar, Ph.D. (Volume 3)
 Conducted on September 10, 2021

<p>14 356:8, 396:8, 396:10, 396:22 15 376:13, 376:21, 389:1, 424:10, 424:12, 424:22, 427:2, 428:10, 429:19, 439:11 16 396:8, 396:11, 396:22 18 416:22 180 353:18 19 402:21, 403:19, 439:15, 439:17</p>	<p>22 416:22 23 419:19, 420:3, 420:4 26 423:17 27 433:4 28 433:6 29 413:20, 413:21 2nd 360:16</p>	<p>41 386:4, 386:6, 439:17 42 393:9, 393:15, 393:16, 395:5, 395:22, 413:21, 414:2, 423:16 43 374:16, 425:1 439 355:4 44 386:6, 386:7, 433:1, 433:3 445 351:24 46 443:10, 443:11, 444:17 47 391:17 4900 353:18</p>	<p>408:19 7b 408:19, 408:20 7c 375:11, 375:12, 377:3 7d 376:11</p>
<p style="text-align: center;">2</p>	<p style="text-align: center;">3</p>	<p style="text-align: center;">5</p>	<p style="text-align: center;">8</p>
<p>20 380:8 2003 385:16 2005 355:13, 376:3, 376:7 2007 355:18, 399:16 2020 351:11, 351:13, 356:8 2021 351:20, 356:10, 444:16, 445:4 2024 445:10 2050 355:20, 360:2, 360:4, 364:6, 368:3, 370:19, 374:12 21 415:4, 416:22, 419:17 212.408 353:10</p>	<p>30 353:8 312.616 353:20 32 380:12 35 404:4, 410:15, 416:13 351 351:24 357 355:3 360 355:20 376 355:12 38 379:14, 413:14, 415:5, 416:21 386 355:15 39 420:4 395274 351:23 399 355:17 3rd 360:17</p>	<p>41 374:16, 425:1 439 355:4 44 386:6, 386:7, 433:1, 433:3 445 351:24 46 443:10, 443:11, 444:17 47 391:17 4900 353:18</p>	<p style="text-align: center;">8</p> <p>8 351:21, 356:10, 444:17 835 406:19, 407:3 858 417:3, 424:22</p> <p style="text-align: center;">9</p> <p>9 386:4, 386:6, 386:7 9,153,835 351:12 9,496,581 351:12 9,799,858 351:14 9,799,913 351:14</p>
<p style="text-align: center;">4</p>	<p style="text-align: center;">4</p>	<p style="text-align: center;">6</p>	<p style="text-align: center;">7</p>
<p>40 421:9</p>	<p>40 421:9</p>	<p>7a 375:8, 376:11,</p>	