

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

URT UMWELT UND)
RECYCLINGTECHNIK GMBH,)
)
)
Petitioner,)
)
vs.)
)
DUESENFELD GMBH,)
)
)
Patent Owner.)

Case No. IPR2024-00887
U.S. Patent No. 11,050,097

VIDEO-RECORDED DEPOSITION OF VOLKER SPIES
VIA ZOOM
June 16, 2025
Volume 2

Reported by: Dana Peabody, RDR, CRR, CSR No. 6332

Page 127 1 Deposition of Volker Spies, taken on behalf of 2 Patent Owner, via Zoom, commencing at 4:33 p.m., on 3 June 16, 2025, before Dana Peabody, CSR No. 6332. 4 5 APPEARANCES: 6 7 For Petitioner: 8 JONATHAN ROBERTS, ESQ. NIXON VANDERHYE P.C. 9 901 No. Glebe Rd. Arlington, VA 22203 10 jr@nixonvan.com 11 12 For Patent Owner: 13 STEVEN C. CARLSON, ESQ. 14 BELLE V. BOROVIC, ESQ. ROBINS KAPLAN LLP 15 555 Twin Dolphin Drive, Suite 310 Redwood City, CA 94065 16 scarlson@robinskaplan.com 17 MATTHEW A. SMITH, ESQ. SMITH BALUCH LLP 18 700 Pennsylvania Avenue SE, Suite 2600 Washington, DC 20003 19 smith@smithbaluch.com 20 21 22 Also Present: Vani Dantam 23 24 25	Page 129 1 PROCEEDINGS 2 3 THE VIDEOGRAPHER: Good afternoon. We are 4 on the record at 4:33 p.m. on June 16th, 2025. This 5 is Volume 2 of the video-recorded deposition of 6 Mr. Volker Spies in the matter of URT Umwelt and 7 Recyclingtechnik GmbH versus Duesenfeld GmbH. This 8 case was filed in the United States Patent and 9 Trademark Office, Case Number IPR202400887. 10 Please note that this deposition is being 11 conducted virtually. Quality of the recording 12 depends on the quality of the connection and camera 13 of internet participants. 14 My name is Ramon Paraza, a legal 15 videographer from Veritext. 16 At this time, counsel and the court 17 reporter please identify yourselves for the record. 18 MR. SMITH: This is Matthew Smith, Smith 19 Baluch LLP for the Patent Owner Duesenfeld. 20 MR. CARLSON: Also attending for Patent 21 Owner Duesenfeld, Steven Carlson from the Robins 22 Kaplan firm, and with me is Belle Borovik, also from 23 Robins Kaplan. 24 MR. ROBERTS: Jonathan Roberts from the 25 law firm of Nixon & Vanderhye on behalf of
Page 128 1 INDEX 2 3 EXAMINATIONS 4 WITNESS PAGE 5 VOLKER SPIES 130 6 MR. SMITH 166 7 MR. ROBERTS 170 8 MR. CARLSON 9 10 EXHIBITS 11 EXHIBIT DESCRIPTION PAGE 12 Exhibit 1006 First part of "Perry" 144 13 Exhibit 1016 LithoRec 140 14 Exhibit 1026 Uchida 154 15 Exhibit 1030 Spies Declaration 161 16 Exhibit 1032 Mitsubishi 159 17 Exhibit 2012 "Transfers Heat With a Vibrating 160 18 Fluidized Bed." 19 20 21 22 23 24 25	Page 130 1 Petitioner URT. 2 THE REPORTER: Good morning, everyone. My 3 name is Dana Peabody, California CSR Number 6332. 4 Mr. Spies, will you please raise your 5 right hand? 6 7 VOLKER SPIES, 8 having been duly sworn, or affirmed, was examined 9 and testified as follows: 10 11 EXAMINATION 12 BY MR. SMITH: 13 Q. So welcome back, sir. Since we paused the 14 deposition on Friday, have you communicated with 15 anyone about your testimony? 16 A. No. 17 Q. And have you reviewed any documents 18 related to this case since the end of the last 19 session on Friday? 20 A. No. 21 Q. Okay. In the last session, you mentioned 22 that hydrogen fluoride and the exhaust gas of a 23 dryer will pass through a vacuum installation and 24 you have to remove it by other means later on. 25 Do you recall that?

2 (Pages 127 - 130)

Page 131 1 A. Yes. 2 Q. And I wanted to ask you, in the relevant 3 timeframe, what were the means for removing hydrogen 4 fluoride from the exhaust gas stream of a dryer? 5 A. Typically, in the -- I mean -- you mean 6 the time prior to the invention? 7 Q. Yes, the time leading up to the invention. 8 So if you recall, when I say "relevant timeframe," 9 I'm asking up until about the 2015 timeframe when 10 the original patent application was filed. 11 A. So the typical piece of equipment to 12 remove hydrogen fluoride after such an installation 13 is a scrubber. 14 Q. And how does a scrubber work, just in 15 general? 16 A. In fact, it's -- it's typically use spray 17 alkalic solution, water-based alkalic situation, on 18 the HF, and then a fluoride, which is then converted 19 into a salt, insoluble salt, and that's how you get 20 your final content of HF, as in gas form, out of the 21 gas stream. 22 Q. And just for the court reporter, when you 23 say "alkalic," you are saying -- do you mean 24 alkaline, like sodium hydroxide or potassium 25 hydroxide?	Page 133 1 pump," could you elaborate on that? 2 A. Yeah, if you, for example, use oil grease 3 pump, of course. HF is so toxic or reactive, it 4 might react with the oil in the pump. 5 Q. And are there other types of pumps that 6 are not as sensitive to hydrogen fluoride? 7 A. If you use, for example -- I mean, it's a 8 little bit better if you use liquid ring pumps or 9 ejector pumps, then it's a little bit easier to 10 control, but, in fact, the problem of reaction is 11 always there. 12 Q. Can you achieve the same pressures with 13 all of these different kinds of pumps? 14 A. The final pressure levels, yes, you can 15 achieve with these -- yes, you can achieve that, 16 yes. These are more or less standard type of pumps 17 which are available for years on the markets, 18 nothing special. 19 Q. And if a dryer is producing hydrogen 20 fluoride from the material being dried on a 21 consistent basis, how long would you expect a vacuum 22 pump to last? 23 A. Good question. 24 If the -- if there's reaction, for 25 example, with an oil-driven pump, which I would not
Page 132 1 A. For example, yes. 2 Q. Okay. In the relevant timeframe, could 3 you avoid the formation of hydrogen fluoride by 4 excluding water from the dryer? 5 A. It's not only a question of water, it's 6 also a question of temperature. The solution 7 reaction is also temperature driven, so if the 8 temperature exceeds, this promotes the solution of 9 the uncondensable salts. Or association -- I don't 10 know exactly how to call it. 11 Q. Hydrogen fluoride is corrosive, correct? 12 A. It's super corrosive, yes. 13 Q. What kinds of materials did one use for 14 dryers when drying material that may give off 15 hydrogen fluoride? 16 A. Oh, this -- I mean, even if it's super 17 corrosive, normally you use just the -- not the 18 lowest grade of stainless steel, but it's typical in 19 the industry. You'd call it 316L or Ti8. This is 20 sufficient. 21 Q. Are vacuum pumps at all sensitive to 22 hydrogen fluoride? 23 A. Depending on the type of pump, yes, they 24 are. 25 Q. And when you say "depending on the type of	Page 134 1 choose, the time of -- the lifetime of the pump will 2 not be very long, meaning starting from a couple of 3 days where you have to exchange the oil very 4 quickly. 5 Q. I see. 6 How do you know when a vacuum pump has 7 been affected by hydrogen fluoride? 8 A. If you take the oil grease pump, you will 9 hear that very quickly because the oil will get -- 10 the oil will get very viscous, and then the pump 11 just stops, and also corrosion will take place at 12 the move parts. So this is something you recognize 13 quite easily, very quickly. 14 Q. Do you know what the phrase "dew point" 15 means, dew point of a vapor, for example? 16 A. Well, a dew point, yes. 17 Q. What does it mean to you? 18 A. That's the point where the vapor gets into 19 the liquid phase. 20 Q. That's a temperature, correct? 21 A. Temperature and concentration, yes. 22 Q. Temperature and concentration? 23 A. Uh-huh. 24 Q. Okay. And when you say "temperature and 25 concentration," do you mean concentration of the

Page 135 1 vapor? 2 A. Concentration -- yeah -- and also 3 there's -- also -- pressure is also related to the 4 dew point. 5 Q. Right. So if you change pressure, you 6 change the dew point, correct? 7 A. Yes. 8 Q. Sorry. If you change the pressure of the 9 vapor, you change the dew point, correct? 10 A. Yes. 11 Q. Okay. And is it true that the vapor will 12 have a lower dew point at higher pressure? 13 MR. ROBERTS: Objection. Scope, 14 relevance, foundation. 15 MR. SMITH: You can answer. 16 THE WITNESS: I got lost. That objection 17 brought me out of order. 18 BY MR. SMITH: 19 Q. No problem. 20 MR. SMITH: Jonathan, I'm just going to 21 repeat the question, so I'll assume your 22 objection -- 23 MR. ROBERTS: Same objection. 24 BY MR. SMITH: 25 Q. Is it true that a solvent vapor will have	Page 137 1 a lower pressure, you need a lower temperature of 2 cooling media to condense it, correct? 3 A. Yes. 4 Q. And, conversely, at a higher pressure, you 5 can use a higher temperature to condense it at the 6 same rate? 7 A. Uh-huh. 8 Q. Did you say yes? 9 A. Yes, yes. 10 Q. Okay. Now, we discussed last time 11 possible dryers in the relevant timeframe for 12 lithium-ion battery recycling, and I think you said 13 there were a large number potentially available, and 14 I wanted to ask you a few questions about that. 15 Did different types of dryers available in 16 the relevant timeframe have similar capabilities to 17 operate at different temperatures and pressures? 18 A. Yes, that's -- that's not inventive, and 19 these dryers exist for a long time. 20 Q. Are you saying that all of the dryers 21 available had similar capabilities? 22 A. No, there's a -- there has been, and there 23 is still, a long, large number of different types of 24 dryers available, yes. 25 Q. Okay. And some of them are better at
Page 136 1 a lower dew point at a higher pressure? 2 A. No, at a lower pressure. The lower the 3 pressure is, the lower the dew point is. 4 Q. So at a lower pressure, it is harder 5 essentially to cool something down and transition it 6 into the vapor phase -- sorry -- into the liquid 7 phase? 8 MR. ROBERTS: Same objections. 9 THE WITNESS: The lower the pressure is, 10 the lower the dew point is. So this means you need 11 cooler -- cooler cooling water to transfer it 12 into -- into the liquid phase coming from the gas 13 part of the -- 14 BY MR. SMITH: 15 Q. I see. 16 Where does the cooling water come from? 17 A. That's known typically an external source. 18 Q. I see. 19 Is the cooling water typically cooled at a 20 recycling installation? 21 A. That's one option, yes. 22 Q. Okay. 23 A. Yes. 24 Q. So at a -- presumably, if you have a 25 solvent in vapor phase in the exhaust gas stream at	Page 138 1 different temperature ranges and different pressure 2 ranges. Is that correct? 3 A. Yeah, more or less, every dryer has its 4 justification, so there's certain -- yeah, it's 5 true. It has a certain application where you see 6 that this is advantages and more than the other 7 type. 8 Q. Okay. Sir, what is your understanding of 9 the term "result-effective variable"? 10 MR. ROBERTS: Objection -- 11 BY MR. SMITH: 12 Q. Hold on. Jonathan has an objection. 13 MR. ROBERTS: Objection to the extent that 14 this calls for a legal conclusion. I'll object on 15 that basis. 16 MR. SMITH: Did you say calls for a -- 17 MR. ROBERTS: To the extent that it calls 18 for a legal conclusion, I'll object on that basis. 19 BY MR. SMITH: 20 Q. So with the objection that it potentially 21 calls for a legal conclusion, what is your 22 understanding of the term "result-effective 23 variable"? 24 A. I don't know that term. 25 Q. What is your understanding of the term

Page 139 1 "outcome-effective variable"? 2 A. Maybe I know, but in this, let's say, 3 content, maybe it's a question of translation, so I 4 don't know what you mean by that. 5 Q. Okay. Did you say in this context or in 6 this consent -- 7 A. No, actually, I don't know what's -- what 8 this should be no, I don't know. 9 Q. Okay. Do you have an understanding of 10 what the term "PO" means? I'm spelling it, P-O. 11 A. PO? 12 Q. Yes. 13 MR. ROBERTS: Objection. Foundation, 14 vague. 15 THE WITNESS: Are you meaning -- somewhere 16 I've read this as a patent owners. Is that what you 17 mean? 18 BY MR. SMITH: 19 Q. No, that's fine. I'll ask a different 20 question. 21 Sir, what is the Wayback Machine? 22 A. Wayback Machine? 23 Q. Yes. 24 A. I don't know. 25 Q. Okay. I am going to put into the -- let	Page 141 1 correct? 2 A. Yes. 3 Q. Is it true, sir, that LithoRec does not 4 specify any particular pressure range under which 5 drying is performed? 6 A. Yes, in this section, there's not a 7 pressure range mentioned, yes, that's correct. 8 Q. Okay. Could you turn to Figure G-1, which 9 I believe we looked at on Friday too. It's on the 10 247th page of the PDF and has the Page Number 230. 11 A. Yes, it's in front of me. 12 Q. Okay. You remember this diagram? 13 A. Yes. 14 Q. And can you see the box labeled "Dryer"? 15 A. Yes. 16 Q. Isn't it true, sir, that this system would 17 need a fan located on the outlet side of the dryer? 18 A. This dryer section, yes, it's -- there's 19 the fan mentioned over there, yes. 20 Q. It would need an additional fan, right, at 21 the outlet, correct? 22 A. Depending on which type of dryer you use, 23 yes. 24 Q. And if it's using a vibratory fluidized 25 bed dryer, would it need a fan at the outlet?
Page 140 1 me just see what this folder is called -- "Marked 2 Exhibits" folder the LithoRec reference again. 3 A. I have to see. I have no screen to view 4 anything over here. I think maybe I need to open 5 that. 6 Q. Okay. 7 A. I log into Exhibit Share? 8 MR. SMITH: Actually, Jonathan, do you 9 mind if we go off the record for a second? 10 MR. ROBERTS: No problem. 11 THE VIDEOGRAPHER: We are off the record 12 at 4:48 p.m. 13 (Discussion off the record.) 14 THE VIDEOGRAPHER: We are on the record at 15 5:05 p.m. 16 (Exhibit 1016 marked for identification.) 17 BY MR. SMITH: 18 Q. Welcome back, Mr. Spies. Thank you for 19 bearing with us with the technology. 20 You now have access to the LithoRec 21 reference which was previously introduced in English 22 translation as Exhibit 1016, correct? 23 A. Yes. 24 Q. Great. 25 And you're familiar with this reference,	Page 142 1 A. Typically -- yes. 2 Q. And do you see that to the left of the 3 dryer in the diagram of Figure G-1, there's a dashed 4 arrow pointing into the dryer? 5 A. There's a dash pointing into the dryer, 6 yes. 7 Q. And do you see that the dashed line also 8 points into the rotary valve, the cross-flow hogger, 9 and the double swing flap? 10 A. Uh-huh, it does, yes. 11 Q. What is your interpretation of what this 12 dashed line represents? 13 A. This dashed line represents the purging of 14 this complete system with nitrogen. 15 Q. How does the nitrogen enter the vibratory 16 fluidized bed dryer? 17 A. Typically nitrogen enters fluidized bed 18 dryers from underneath the dryer. Typically on 19 the -- outside the dryer there's a separate fan 20 which drives the air through the bed. 21 Q. Is the nitrogen constantly flowing then? 22 A. In the fluidized bed dryer, you mean? 23 Q. Yes. 24 A. Air or nitrogen must be constantly driven 25 through the bed in order to function, yes.

Page 143 1 Q. Okay. Why would they flush the system 2 with nitrogen? 3 A. To avoid or make it a safe environment, 4 things like we discussed on Friday, explosion 5 protection. 6 Q. Does that work? 7 A. You mean fluidized bed dryer like drawn 8 over here? Is that your question? 9 Q. I mean flushing the system with nitrogen 10 for explosion protection. 11 MR. ROBERTS: Objection. 12 MR. SMITH: Jonathan, what was your 13 objection? 14 THE REPORTER: I didn't hear the answer. 15 MR. ROBERTS: Incomplete hypothetical, 16 vague. 17 BY MR. SMITH: 18 Q. And what was your answer, sir -- I'll ask 19 the question again: 20 MR. ROBERTS: And it will be the same 21 objections. 22 MR. SMITH: No problem. 23 BY MR. SMITH: 24 Q. Does it work to avoid explosion to flush 25 the vibratory fluidized bed dryer with nitrogen?	Page 145 1 Q. What is this exhibit, by the way? 2 MR. ROBERTS: Objection. Asked and 3 answered. I believe this was discussed in his 4 original declaration. It's beyond the scope of this 5 deposition. 6 BY MR. SMITH: 7 Q. You can answer the question. 8 A. I think I had this question on Friday 9 already. 10 Q. It's a very simple question. Could you 11 answer it, please? 12 A. That's a standard -- standard volume book 13 for chemical engineers -- 14 Q. Okay. 15 A. -- collecting a lot of know-how chemical 16 engineers need for their daily work. 17 Q. Do you know when it was published? 18 A. Sorry? 19 Q. Do you know when it was published? 20 A. When? 21 Q. Yes. 22 A. Oh, there are various versions. When the 23 first version was, I don't know. I'm working with 24 this since -- since I was in university. 25 Q. With this particular copy you've been
Page 144 1 A. Flushing the fluidized bed dryer with 2 nitrogen is not sufficient. 3 Q. What else would one have to do? 4 A. You have to completely run the fluidized 5 bed dryer under nitrogen to lower the oxygen 6 content. So air plus nitrogen is not sufficient. 7 Q. That sounds dangerous. 8 A. It is dangerous, indeed. 9 Q. Okay. So in order to avoid explosion, you 10 would have to run the vibratory fluidized bed dryer 11 under nitrogen, correct? 12 A. Yes, correct. 13 (Exhibit 1006 marked for identification.) 14 BY MR. SMITH: 15 Q. Let me put into the exhibit folder the 16 next exhibit. And this exhibit is the Perry 17 reference, and this is Exhibit 1006. It was filed 18 in two parts, and this is actually just the first 19 part. Because that's all that's relevant to my 20 questioning. 21 It's a big exhibit, so it might take a 22 second to come up. Let me know when you see it. 23 A. It's on my screen, yes. 24 Q. Okay. You recall this exhibit, correct? 25 A. Yes.	Page 146 1 working since you were university? 2 A. Which edition it is? Maybe -- I can't 3 remember which edition I was working with. 4 Q. Okay. Could you turn to page 12-65 in the 5 original document, which is -- the page in the PDF 6 document Number 1196. 7 A. 12-65? 8 Q. Yeah. The actual PDF page is 1196, but 9 it's labeled 12-65. 10 A. 1196. Uh-huh. 11 Q. I believe it's actually 1195. Go to the 12 prior page. 13 A. Uh-huh. 14 Q. Do you see the section that states "Batch 15 Vacuum Rotary Dryers"? 16 A. Uh-huh. 17 Q. Yes, please, go ahead. 18 A. No, I just wanted to say yes, I see it. 19 Q. Is this section talking about dryers in 20 general for any application? 21 A. This section is talking about this 22 specific batch vacuum rotary dryer. 23 Q. And is it specific to any particular 24 application? 25 A. No, it describes the type of dryer. It's

Page 147 1 not specific to any application. 2 Q. And these can be used in different 3 industries, correct? 4 A. Yes. 5 Q. What is your understanding of how a batch 6 vacuum rotary dryer works? 7 A. Typically, there is a -- there are two -- 8 let's say, two versions of how this dryer may work, 9 either with a -- with rotating drum or with a drum 10 that is fixed and with paddles inside. So there's 11 always a batch volume, and it is sealed off against 12 atmosphere, the pressure is lowered and heated from 13 outside, and that's how drying takes place. 14 Q. How does the heating occur? 15 A. Typically you have a jacketed vessel, and 16 there's -- in this outside jacket, you apply the 17 heating media and create a temperature difference 18 towards the inner, let's say, working volume. 19 Q. And how would the lowered pressure be 20 established? 21 A. The pressure would be established from 22 outside. You always need something like what is 23 called vacuum installation typically consisting of 24 heat exchanger and the vacuum pump. 25 Q. So you'd need a vacuum pump, and I think	Page 149 1 given volume and you lower the pressure, what 2 happens? 3 A. The pressure is more or less a question 4 which type of vacuum pump you use. 5 Q. With a given vacuum pump. So everything 6 else remaining equal, if the pressure is lower, does 7 it take longer to establish the vacuum? 8 A. Not really because those vacuum pumps, 9 they are dedicated to a certain minimum level, and 10 it's a question how good you build your dryer. If 11 it's tight, then it will go faster. If you don't 12 have any leakage, air going inside or -- or in 13 this -- like in this case, purged with nitrogen, 14 there's a certain amount of nitrogen purge necessary 15 to have an inert atmosphere inside. There's a, 16 let's say, standard procedure to balance this. 17 Q. Okay. So I'm not sure I'm understanding 18 your answer. If you have the same dryer and the 19 same vacuum installation, and you set the vacuum to 20 a higher vacuum, will that take longer to achieve 21 with the vacuum pump than a lower vacuum? 22 A. You're just referring to the time when you 23 need the final desired vacuum? I understood you 24 correctly? 25 Q. Yes.
Page 148 1 you said the drum would be sealed to atmosphere? 2 A. The drum is sealed to atmosphere, yes. 3 Q. Okay. And how long does it typically take 4 to establish the working vacuum? 5 A. How long? 6 Q. Yes, in time, how long. 7 A. That is dependent on two factors: First, 8 size of the dryer and strength of your vacuum pump. 9 Q. Okay. So a larger dryer with a stronger 10 vacuum will take more time. Is that right? 11 A. Smaller dryer with large vacuum time, no. 12 Q. No, let me ask you again. 13 A larger dryer volume with a stronger 14 vacuum will generally take more time than a smaller 15 dryer volume with a weaker vacuum, correct? 16 A. You cannot say like that. It's really 17 depending. Normally, if you have a -- you cannot 18 vary two parameters. You either vary one, the size, 19 and keep the vacuum pump size constant or the other 20 way around. 21 Q. Great. Let me -- please finish your 22 answer. 23 A. If you have a given vacuum pump and you 24 lower the volume, then the evacuation is faster. 25 Q. And if you have a given vacuum pump and a	Page 150 1 A. The higher -- higher, lower -- 2 Q. I'll rephrase the question. I'll just use 3 it in terms of pressure instead of vacuum, okay? 4 Maybe that will make it easier. 5 If you have a dryer and a vacuum 6 installation, will it take longer to achieve a lower 7 pressure within the dryer than it will to achieve a 8 relatively higher pressure within the dryer? 9 A. With a higher pressure, you will achieve 10 faster. If you lower the pressure, for then, you go 11 from, let's say, ambient pressure down to vacuum, 12 and you certainly pass the other pressure level. 13 Q. In a batch vacuum rotary dryer, would you 14 be continuously flushing with nitrogen? 15 A. Yes, in order to avoid -- here, and in 16 order to avoid combustible atmosphere, that's 17 standard technology, yes. 18 Q. Okay. So the batch vacuum rotary dryer 19 isn't completely -- there's incoming nitrogen during 20 the drying, correct? 21 MR. ROBERTS: Objection, form; objection, 22 incomplete hypothetical. 23 THE WITNESS: Yes, there is a flash of 24 nitrogen during drying, yes, constant. 25 ///

Page 151 1 BY MR. SMITH: 2 Q. Is it continuous? 3 A. It's continuous, yes. 4 Q. Okay. So what are the steps that would be 5 involved in operating a batch vacuum rotary dryer in 6 a lithium-ion battery recycling process? 7 A. Typical steps are the first step is you 8 need to create an inert atmosphere, get rid of all 9 air and related oxygen. So there is inertization 10 necessary, then you add the material, you start 11 heating, and then the drying starts. 12 Q. How do you add the material without 13 removing the inertness of the atmosphere? 14 A. Outside the dryer and the gates you have, 15 everything must be inert as well. 16 Q. Okay. 17 A. Must be under completely inert atmosphere. 18 Q. And at what point do you establish the 19 vacuum? 20 A. After you fill the -- or the typical 21 vacuum for drying is established after you fill the 22 material. 23 Q. Okay. 24 A. That's the typical way how you do it in 25 this type of dryers. Fill in the material, and then	Page 153 1 pressure rate at the end of the drying. 2 So, for example, if you have a little bit 3 of leakage in your system, then the pressure -- the 4 pressure will rise. So that's the, let's say, way 5 of optimizing such a drying. 6 Q. What does a statement mean when it says 7 "large vapor volumes thereby created"? 8 A. In the beginning, you have a high amount 9 of moisture in your drying good. Then you increase 10 the temperature, you lower the pressure, and this 11 means you have a very strong evaporation. So this 12 is a large vapor volume. 13 Q. That affects the pressure operating inside 14 the dryer, correct? 15 A. Yes, automatically there's -- it does by 16 itself. There's nothing you need to do. It -- 17 automatically, you get to a certain pressure. And 18 typically you do like that, that you size the heat 19 exchanger in such a way that it can cope with the 20 initial large vapor volumes. 21 Q. Okay. I'd like to introduce now the 22 Uchida reference which was previously introduced as 23 Exhibit 1026. 24 Do you see this in the folder, sir? 25 A. It's loading, yes.
Page 152 1 you establish a vacuum. 2 Q. So if I'm understanding you correctly, you 3 start with a, more or less, empty dryer, make sure 4 the atmosphere is inert by flushing it, put in the 5 material to be dried in a way that preserves the 6 inertness of the atmosphere, seal the dryer, 7 establish the vacuum, and proceed with drying. Is 8 that correct? 9 A. Yes. 10 Q. Okay. Can you turn to the next page of 11 this document? In the left-hand column in the first 12 full paragraph it states, quote, "It is not always 13 economical, however, to reduce the internal pressure 14 to extremely low levels because of the large vapor 15 volumes thereby created. It is necessary to 16 compromise on operating pressure considering 17 leakage, condensation problems, and the size of the 18 vapor lines and pumping system." 19 What is your understanding of this 20 statement? 21 A. Typically you operate on different 22 pressure levels. In the beginning, where you will 23 have a large evaporation rate, and this typically 24 means that you also have a -- you operate with a 25 higher -- higher pressure range, not the final	Page 154 1 (Exhibit 1026 marked for identification.) 2 BY MR. SMITH: 3 Q. Okay. Can you look at the first page of 4 this, and in the upper right-hand corner, would you 5 agree with me that this was published on February 6 28, 2008? 7 A. That's what's written over there, yes. 8 Q. When was the last time -- well, I know the 9 last time you saw this reference because we talked 10 about it on Friday, so I won't ask you that 11 question. 12 Can you look at Figure 1? 13 A. Figure 1, yeah, I got it. 14 Q. Okay. And would you agree that Uchida's 15 process, as shown in Figure 1, begins with 16 electrolyte removal? 17 A. That's written on top of the figure, yes. 18 Q. I wonder if you could look at paragraph 71 19 of Uchida. 20 A. Now I've got it, yes. I've got it now. 21 Q. I apologize, sir. Can you go to paragraph 22 76? 23 A. Uh-huh. 24 Q. Can you tell me which drying temperatures 25 are used in Uchida?

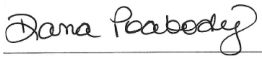
Page 155 1 A. That's gradually increased from room 2 temperature to about 85 degrees. 3 Q. And then is there a second stage? 4 A. Yeah, then it's maintained for 30 5 seconds -- 30 minutes. 6 Q. You see the sentence at the end that says, 7 "Next, the temperature in the furnace is raised 8 further and maintained at 102 degrees centigrade for 9 30 minutes"? 10 A. The 102 degrees? That's not here. In 11 paragraph 76? 12 Q. At the end of paragraph 76. 13 A. Yes, in the lower part, yes. 14 Q. So it's initially operating at 85 degrees 15 centigrade for 30 minutes, and then 102 degrees 16 centigrade for 30 minutes -- 17 A. Uh-huh. 18 Q. -- correct? 19 A. Yes. 20 Q. Okay. Can you look at the paragraph 21 immediately above that in paragraph 75? At the end 22 of that paragraph, it states -- this is the 23 second-to-last sentence. "It is possible to 24 volatilize the organic solvent from the secondary 25 battery with high efficiency," and then the last	Page 157 1 A. That's not how I know it, no. It's lower 2 than that. 3 Q. I believe you said on Friday it was about 4 100 degrees Celsius. Is that correct? 5 A. Yes, exactly, somewhere in that range. 6 Q. Would that have anything to do with the 7 fact that this is from 2008? 8 A. No, I wouldn't say so because this 9 hexafluorophosphate is the same. Don't know how 10 long this substance exists, how they come to that 11 figure, I don't know. 12 Q. We just don't know. Okay. 13 A. We just don't know. 14 Q. And when -- in paragraph 79, Uchida says, 15 "The temperature in the furnace is maintained at a 16 temperature range equal to or greater than the 17 thermal decomposition temperature of lithium 18 hexafluorophosphate." 19 Do you understand that to mean that Uchida 20 is intentionally decomposing lithium 21 hexafluorophosphate? 22 A. No. In the beginning, they keep it at 80 23 and 100 degrees in order to get rid of the 24 electrolytes, and nobody from -- if he doesn't has 25 to, tries to decompose lithium hexafluorophosphate.
Page 156 1 sentence is, "Note that at normal pressure, the 2 boiling point of DMC is 90 degrees C, and the 3 boiling point of EMC is 107 degrees C." 4 Do you see that? 5 A. Yes. 6 Q. Do you agree with those numbers? 7 A. I don't know exactly the boiling point of 8 these two components, but let's say I would say the 9 area is reasonable. 10 Q. Okay. 11 A. I don't know the exact boiling point of 12 DMC at normal pressure. 13 Q. Could you look at paragraph 79, please? 14 A. Yes. 15 Q. It's a long paragraph, but if you go about 16 seven lines down where it says, "Figure 6, the 17 temperature in the furnace is maintained in a 18 temperature range equal to or greater than the 19 thermal decomposition temperature, about 160 degrees 20 Celsius, of lithium hexafluorophosphate." 21 Do you see that? 22 A. Yep, yes. 23 Q. And do you agree that the thermal 24 decomposition temperature of lithium 25 hexafluorophosphate is about 160 degrees Celsius?	Page 158 1 Q. So why does Uchida say that the furnace is 2 maintained in a temperature range equal to or 3 greater than the thermal decomposition temperature, 4 about 160 degrees of lithium hexafluorophosphate? 5 MR. ROBERTS: Objection. Scope, calls for 6 speculation. 7 THE WITNESS: I don't know. I can't 8 answer that -- I don't know why they say something 9 like that. 10 BY MR. SMITH: 11 Q. So, in your view, Uchida is not trying to 12 decompose the lithium hexafluorophosphate? 13 MR. ROBERTS: Objection. Misstates prior 14 testimony, scope. 15 THE WITNESS: I can't add anything else, 16 so I don't know. 17 BY MR. SMITH: 18 Q. If you read further in the paragraph, do 19 you see the sentence that begins with "Thereby," 20 "thereby, the lithium hexafluorophosphate is 21 thermally decomposed"? 22 A. Paragraph 79, you say? 23 Q. Correct. A few lines under where we were 24 just reading. 25 A. I see decomposed and mainly lithium

Page 159 1 fluoride -- uh-huh, I've got that one sentence, yes. 2 Q. Does that change your opinion as to 3 whether Uchida is intentionally thermally 4 decomposing the lithium hexafluorophosphate? 5 A. I mean, if you heat to that temperature, 6 it will automatically decompose, so -- 7 Q. Does it appear to be accidental to you 8 that this is happening in Uchida's process? 9 A. No, if they specifically heat to that 10 temperature, it's not accidentally. 11 (Exhibit 1032 marked for identification.) 12 BY MR. SMITH: 13 Q. Mr. Spies, I'm moving another exhibit into 14 the marked exhibit folders. This is the Mitsubishi 15 reference which was introduced in English 16 translation as Exhibit 1032. 17 Let me know when that appears for you, 18 please. 19 A. Yes, I see it. 20 Q. Okay. And just a couple questions here. 21 Could you turn to paragraph 16, please? 22 A. 16. On which page is this? 23 Q. It's on the fourth PDF page, paragraph 24 0016, begins at the bottom and continues to the 25 fifth PDF page.	Page 161 1 Heat With a Vibrating Fluidized Bed." 2 Have you seen this document before, sir? 3 A. I've seen this document before, yes. 4 Q. Oh, okay. In what context? 5 A. Within the context of the testing memory 6 of Mr. Dantam. 7 Q. And if you will bear with me for a second, 8 I'm going to introduce another exhibit. And this 9 exhibit is Exhibit 1030, also previously introduced. 10 Let me know when it shows up for you, please. 11 A. 1030. Yes, it shows up. 12 (Exhibit 1030 marked for identification.) 13 BY MR. SMITH: 14 Q. Okay. And what is this document, sir? 15 A. That's called the Mitsubishi patent, yes. 16 Q. Exhibit 1030? 17 A. 1030, yes. 18 Q. That should be a declaration, not the 19 Mitsubishi patent. 20 A. "Japanese Unexamined Patent Application 21 Publication" is written over there in Exhibit 10030. 22 Q. I'm going to pull it up from the Exhibit 23 Share. 24 MR. ROBERTS: I'm wondering, did you click 25 close versus view exhibit?
Page 160 1 A. Page 4. 2 Q. Okay. And do you see a paragraph at the 3 bottom marked 0016? 4 A. 0016. It starts on page 3? 5 Q. Oh, okay. I wanted to ask you about 6 Mitsubishi's process. 7 Is the drying in Mitsubishi performed 8 before any comminution takes place? 9 A. Yes. 10 Q. I'll give you as a reference paragraph 25 11 for the next section. Next question. 12 What are the temperature and pressure 13 conditions of the drying? 14 A. Paragraph 25? Vacuum dryer is set to 0.1 15 megapascal preferably or lower. 16 Q. And what is the -- what are the 17 temperature conditions, sir? 18 A. 80 to 120 degrees. That's mentioned. 19 (Exhibit 2012 marked for identification.) 20 BY MR. SMITH: 21 Q. Okay. I'm introducing another exhibit 22 which was previously marked as Exhibit 2012. Will 23 you let me know when that shows up for you? 24 A. 2012. Yes. 25 Q. And this is a document entitled "Transfers	Page 162 1 MR. SMITH: Yes, that's quite possible. 2 MR. ROBERTS: Sorry for the technical 3 interval. 4 BY MR. SMITH: 5 Q. Mr. Spies, on Friday, you had copies of 6 your declarations with you. Do you have a copy of 7 the declaration that you submitted in conjunction 8 with the Reply to the -- sorry -- the Opposition to 9 the Motion to Amend, Exhibit 1030? 10 A. I think so, yes. Can you please repeat 11 exactly which document you'd like to ask me about? 12 Q. Yes, it should be marked Exhibit 1030 in 13 the lower right corner or possibly on the title page 14 as well. 15 A. 1030, yes. 16 Q. Okay. And is that your declaration? 17 A. Yes. 18 Q. Okay. And is this a document that you 19 wrote yourself, sir? 20 A. Like I said on Friday, yes. 21 Q. Sorry. This is actually a different 22 declaration than the one we were talking about on 23 Friday. 24 A. Okay. Maybe I'm confused. 25 Q. No problem.

10 (Pages 159 - 162)

Page 163 1 So just to make sure your answer is 2 correct for this document, and feel free to take a 3 look at it, is this a document that you wrote 4 yourself? 5 A. Yes. 6 Q. Okay. And did anyone else provide input 7 into this document? 8 MR. ROBERTS: Objection -- 9 THE WITNESS: No, it's not -- 10 MR. ROBERTS: -- privilege, work product. 11 The witness can answer yes or no. 12 THE WITNESS: Yes. 13 BY MR. SMITH: 14 Q. Okay. And when did you sign this 15 document, sir? 16 A. May 7th, 2025. 17 Q. And do you know approximately when you 18 wrote it? 19 A. No, I can't tell you. 20 Q. Would it have been around -- 21 A. Sorry. 22 Q. Would it have been before May 7, 2025? 23 A. Yes, of course. 24 Q. How long did it take you to write it? 25 A. I can't recall. Started and stopped	Page 165 1 no. 2 BY MR. SMITH: 3 Q. Did BHS work on a battery recycling plant 4 for Hydrovolt in Norway? 5 A. Yes. 6 Q. And that was in Kortbolgen in Fredrikstad, 7 Norway? 8 A. Could be, yes. 9 Q. Did that plant have any problems complying 10 with the limit values for emissions of volatile 11 organic compounds? 12 A. I can't answer this question because I was 13 not -- I was not -- only, in parts, involved in that 14 plant. The details about the emissions, I don't 15 know. I was not part of the project team. 16 Q. Okay. And did BHS deliver a dryer to 17 Elemental Strategic Materials [sic] in Poland? 18 A. Not directly. 19 Q. Was it indirectly? 20 A. Through URT, we delivered, yes. 21 Q. I see. 22 Are you aware that there was a fire at 23 Elemental Strategic Metals in January of 2024? 24 MR. ROBERTS: Objection. Scope, 25 relevance, assumes facts not in evidence.
Page 164 1 again. Really, I can't -- I don't know. I can't 2 answer this question. 3 Q. Okay. I just have a few more questions, 4 and then we'll be done here. 5 Do you recall from your testimony on 6 Friday about whether BHS had any thermal events, 7 such as fires or explosions, arising from the 8 battery recycling plants that BHS has helped to 9 build worldwide? 10 A. I remember one event where we had a fire, 11 yes. 12 Q. And I believe you said that was related to 13 the comminution unit, correct? 14 A. Yes. 15 Q. And there haven't been any others that you 16 know of? 17 A. No. 18 Q. Have recycling plants that BHS has worked 19 on experienced any other problems resulting in 20 environmental compliance issues? 21 MR. ROBERTS: Objection. Scope, 22 relevance. 23 THE WITNESS: I mean, typically these type 24 of plants, you have to take care about environmental 25 issues, but not -- no, I can't -- not dedicatedly,	Page 166 1 THE WITNESS: No, I'm not aware of that. 2 MR. SMITH: Okay. I have no further 3 questions, thank you. 4 MR. ROBERTS: All right. If that will 5 conclude for patent owner's side, could we take a 6 15-minute break? I may have a couple of questions 7 on redirect. 8 MR. SMITH: Okay. That's fine with me. 9 Steve? 10 MR. CARLSON: That's fine. 11 THE VIDEOGRAPHER: We are off the record 12 at 5:49 p.m. 13 (Recess.) 14 THE VIDEOGRAPHER: We are back on the 15 record at 6:07 p.m. 16 17 EXAMINATION 18 BY MR. ROBERTS: 19 Q. And thank you. This is Jonathan Roberts 20 taking over on redirect. 21 Thank you, Mr. Spies, for your time. 22 Appreciate the sticking with it over these couple of 23 days and dealing with the technology. 24 I just want to ask you a couple questions 25 here.

Page 167 1 A. Okay. 2 Q. Do you remember way back on Friday talking 3 about your CV and, in particular, your work at BHS? 4 A. Yes, I remember that one, yes. Yeah, my 5 major work for BHS is technology develop -- 6 technology development in various applications, and 7 specifically during the time I joined, I worked on 8 batteries recycling technologies. 9 Q. Has that been a key point over the last 10 six years you've been at BHS? 11 A. Yes, it's -- it's an application which is 12 constantly -- I would say it's constantly creating 13 work. 14 Q. Okay. Okay. Fair enough. What was your 15 focus before that? 16 A. Before that, I was working in various 17 companies dealing with founder handling, mixing and 18 drying technology in various pieces of equipment. 19 Q. Did you focus on a particular industry? 20 A. I was working in various industry from 21 recycling industry, chemical -- mostly chemical, 22 food, pharma, various applications, but technologies 23 used over there, they are always the same. 24 Q. What do you mean by that, they're always 25 the same?	Page 169 1 A. No, for example, if you optimize time and 2 pressure, you have -- you are able to control the 3 flammability as well, and energy consumption is 4 through a combination between time and temperature, 5 temperature difference. If you optimize one, the 6 others will follow. 7 Q. Okay. And if I'm not mistaken, you 8 mentioned that -- a number of different 9 electrolytes. 10 A. Yes. There is a large -- large number of 11 electrolytes, like we discussed, over here as well. 12 The most important -- one of the most important 13 components are EMC and DMC to be evaporated. They 14 are important. 15 Q. Great. 16 And Mr. Smith on Friday and earlier today 17 asked you a lot of questions about different rates 18 and different compositions. 19 Do you remember that discussion or those 20 discussions? 21 A. Yes, I remember those discussions, and, 22 more or less, all those points are a variation of 23 the optimization factors: Time, pressure, and 24 temperature, and has to be viewed in this -- under 25 this circumstances.
Page 168 1 A. It doesn't matter whether you go, let's 2 say, for -- let's take the example of a vacuum batch 3 dryer. It's working in the same way in the chemical 4 industry like it does in battery recycling. 5 Q. Okay. Way back on Friday you were asked 6 about whether LithoRec discloses a vacuum 7 installation. 8 Do you remember that? 9 A. Yes, I remember that, yes, vacuum 10 installation is inevitably necessary to create a 11 vacuum. Otherwise -- without vacuum installation, 12 no vacuum operation. 13 Q. Okay. And on Friday and a little bit 14 today, we talked about some considerations like 15 safety, energy consumption, typical solvent 16 components. 17 Do you remember that discussion or those 18 discussions? 19 A. Yes, I remember, I remember those 20 discussions, yes. 21 If I would need to judge, the most 22 important parameters are pressure, time, and 23 temperature, which need to be optimized, and the, 24 let's say, other components will follow. 25 Q. And -- and how -- please, go ahead.	Page 170 1 MR. ROBERTS: Okay, I'm done. Thank you 2 very much. 3 Ready to pass the witness for any 4 potential recross. 5 MR. CARLSON: One question. 6 7 EXAMINATION 8 BY MR. CARLSON: 9 Q. Did you talk with your counsel, Mr. Spies, 10 about this line of questioning before engaging in 11 it? 12 MR. ROBERTS: Objection. Privileged work 13 product. 14 The witness can answer yes or no, Steve. 15 I can save you some time, and we can look at the 16 Practice Guide on that topic, if you like. 17 THE WITNESS: I did not understand. It 18 was too fast. 19 MR. ROBERTS: Sorry. You can answer yes 20 or no to the question. That's it. 21 THE WITNESS: Yes. 22 MR. CARLSON: I have no further questions. 23 MR. SMITH: I have no questions either. 24 Thank you. 25 MR. ROBERTS: All right.

Page 171 1 THE VIDEOGRAPHER: This is the end of 2 Volume 2 of the video-recorded deposition of 3 Mr. Volker Spies. We are off the record at 4 6:13 p.m. Total number of media used was three, and 5 it will be retained by Veritext. Thank you. 6 (At 6:13 p.m., the deposition was 7 concluded.) 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25	Page 173 1 Veritext Legal Solutions 2 1100 Superior Ave 3 Suite 1820 4 Cleveland, Ohio 44114 5 Phone: 216-523-1313 6 7 June 17, 2025 8 9 To: Jonathan Roberts, Esq. 10 11 Case Name: Urt Umwelt Und Recyclingtechnik Gmbh v. Duesenfeld Gmbh 12 13 Veritext Reference Number: 7433783 14 15 Witness: Volker Spies , Volume 2 Deposition Date: 6/16/2025 16 17 Dear Sir/Madam: 18 19 Enclosed please find a deposition transcript. Please have the witness 20 review the transcript and note any changes or corrections on the 21 included errata sheet, indicating the page, line number, change, and 22 the reason for the change. Have the witness' signature notarized and 23 forward the completed page(s) back to us at the Production address 24 shown 25 above, or email to production-midwest@veritext.com. If the errata is not returned within thirty days of your receipt of this letter, the reading and signing will be deemed waived. Sincerely, Production Department NO NOTARY REQUIRED IN CA
Page 172 1 2 CERTIFICATE 3 4 I, Dana Peabody, a California Certified 5 Shorthand Reporter, do hereby certify: 6 That prior to being examined, the witness in 7 the foregoing proceedings was by me duly sworn to 8 testify to the truth, the whole truth, and nothing but 9 the truth; 10 That said proceedings were taken before me at 11 the time and place therein set forth and were taken 12 down by me in shorthand and thereafter transcribed into 13 typewriting under my direction and supervision; 14 I further certify that I am neither counsel 15 for, nor related to, any party to said proceedings, nor 16 in any way interested in the outcome thereof. 17 18 In witness whereof, I have hereunto 19 subscribed my name at Yuma, Arizona, this 16th day of 20 June, 2025. 21  22 Dana Peabody 23 CSR No. 6332 24 25	Page 174 1 DEPOSITION REVIEW 2 CERTIFICATION OF WITNESS 3 4 ASSIGNMENT REFERENCE NO: 7433783 5 CASE NAME: Urt Umwelt Und Recyclingtechnik Gmbh v. Duesenfeld 6 Gmbh 7 DATE OF DEPOSITION: 6/16/2025 8 WITNESS' NAME: Volker Spies , Volume 2 9 In accordance with the Rules of Civil 10 Procedure, I have read the entire transcript of 11 my testimony or it has been read to me. 12 I have made no changes to the testimony 13 as transcribed by the court reporter. 14 15 16 Date Volker Spies , Volume 2 17 Sworn to and subscribed before me, a 18 Notary Public in and for the State and County, 19 the referenced witness did personally appear 20 and acknowledge that: 21 22 They have read the transcript; 23 They signed the foregoing Sworn 24 Statement; and 25 Their execution of this Statement is of their free act and deed. I have affixed my name and official seal this ____ day of _____, 20 ____. Notary Public Commission Expiration Date

1 DEPOSITION REVIEW 2 CERTIFICATION OF WITNESS 3 ASSIGNMENT REFERENCE NO: 7433783 4 CASE NAME: Urt Umwelt Und Recyclingtechnik Gmbh v. Duesenfeld 5 Gmbh 6 DATE OF DEPOSITION: 6/16/2025 7 WITNESS' NAME: Volker Spies , Volume 2 8 In accordance with the Rules of Civil 9 Procedure, I have read the entire transcript of 10 my testimony or it has been read to me. 11 I have listed my changes on the attached 12 Errata Sheet, listing page and line numbers as 13 well as the reason(s) for the change(s). 14 I request that these changes be entered 15 as part of the record of my testimony. 16 I have executed the Errata Sheet, as well 17 as this Certificate, and request and authorize 18 that both be appended to the transcript of my 19 testimony and be incorporated therein. 20 _____ 21 Date Volker Spies , Volume 2 22 Sworn to and subscribed before me, a 23 Notary Public in and for the State and County, 24 the referenced witness did personally appear 25 and acknowledge that: They have read the transcript; They have listed all of their corrections in the appended Errata Sheet; They signed the foregoing Sworn Statement; and Their execution of this Statement is of their free act and deed. I have affixed my name and official seal this _____ day of _____, 20____. _____ Notary Public _____ Commission Expiration Date	Page 175
1 ERRATA SHEET 2 VERITEXT LEGAL SOLUTIONS MIDWEST 3 ASSIGNMENT NO: 7433783 4 PAGE/LINE(S) / CHANGE /REASON 5 _____ 6 _____ 7 _____ 8 _____ 9 _____ 10 _____ 11 _____ 12 _____ 13 _____ 14 _____ 15 _____ 16 _____ 17 _____ 18 _____ 19 _____ 20 _____ 21 Date Volker Spies , Volume 2 22 SUBSCRIBED AND SWORN TO BEFORE ME THIS _____ 23 DAY OF _____, 20____. 24 _____ 25 Notary Public _____ Commission Expiration Date	Page 176

&	120 160:18	2015 131:9	6
& 129:25	130 128:5	2024 165:23	6 156:16
0	140 128:11	2025 126:18	6/16/2025
0.1 160:14	144 128:10	127:3 129:4	173:8 174:3
0016 159:24	15 166:6	163:16,22	175:3
160:3,4	154 128:13	172:19 173:4	6332 126:23
1	159 128:16	216-523-1313	127:3 130:3
1 141:8 142:3	16 126:18	173:3	172:22
154:12,13,15	127:3 159:21	22203 127:9	6:07 166:15
100 157:4,23	159:22	230 141:10	6:13 171:4,6
10030 161:21	160 128:17	247th 141:10	7
1006 128:10	156:19,25	25 160:10,14	7 163:22
144:13,17	158:4	2600 127:17	700 127:17
1016 128:11	161 128:14	28 154:6	71 154:18
140:16,22	166 128:6	28850 172:21	7433783 173:7
102 155:8,10,15	16th 129:4	3	174:2 175:2
1026 128:13	172:18	3 160:4	176:2
153:23 154:1	17 173:4	30 155:4,5,9,15	75 155:21
1030 128:14	170 128:6	155:16	76 154:22
161:9,11,12,16	1820 173:2	310 127:14	155:11,12
161:17 162:9	2	316l 132:19	79 156:13
162:12,15	2 126:19 129:5	4	157:14 158:22
1032 128:16	171:2 173:8	4 160:1	7th 163:16
159:11,16	174:4,9 175:4	44114 173:2	8
107 156:3	175:13 176:20	4:33 127:2	80 157:22
11,050,097	20 174:16	129:4	160:18
126:12	175:22 176:22	4:48 140:12	85 155:2,14
1100 173:1	20003 127:17	5	9
1195 146:11	2008 154:6	555 127:14	90 156:2
1196 146:6,8,10	157:7	5:05 140:15	901 127:9
12-65 146:4,7,9	2012 128:17	5:49 166:12	94065 127:14
	160:19,22,24		

a able 169:2 above 155:21 173:17 access 140:20 accidental 159:7 accidentally 159:10 accordance 174:5 175:5 achieve 133:12 133:15,15 149:20 150:6,7 150:9 acknowledge 174:11 175:16 act 174:14 175:20 actual 146:8 actually 139:7 140:8 144:18 146:11 162:21 add 151:10,12 158:15 additional 141:20 address 173:15 advantages 138:6 affected 134:7 affects 153:13	affirmed 130:8 affixed 174:15 175:21 afternoon 129:3 agree 154:5,14 156:6,23 ahead 146:17 168:25 air 142:20,24 144:6 149:12 151:9 alkalic 131:17 131:17,23 alkaline 131:24 ambient 150:11 amend 162:9 amount 149:14 153:8 answer 135:15 143:14,18 145:7,11 148:22 149:18 158:8 163:1,11 164:2 165:12 170:14,19 answered 145:3 apologize 154:21 appeal 126:2 appear 159:7 174:11 175:15	appearances 127:5 appears 159:17 appended 175:11,18 application 131:10 138:5 146:20,24 147:1 161:20 167:11 applications 167:6,22 apply 147:16 appreciate 166:22 approximately 163:17 area 156:9 arising 164:7 arizona 172:18 arlington 127:9 arrow 142:4 asked 145:2 168:5 169:17 asking 131:9 assignment 174:2 175:2 176:2 association 132:9 assume 135:21 assumes 165:25 atmosphere 147:12 148:1,2	149:15 150:16 151:8,13,17 152:4,6 attached 175:7 attending 129:20 authorize 175:11 automatically 153:15,17 159:6 available 133:17 137:13 137:15,21,24 ave 173:1 avenue 127:17 avoid 132:3 143:3,24 144:9 150:15,16 aware 165:22 166:1 b b 128:8 back 130:13 140:18 166:14 167:2 168:5 173:15 balance 149:16 baluch 127:16 129:19 based 131:17 basis 133:21 138:15,18
--	--	--	---

batch 146:14 146:22 147:5 147:11 150:13 150:18 151:5 168:2 batteries 167:8 battery 137:12 151:6 155:25 164:8 165:3 168:4 bear 161:7 bearing 140:19 bed 128:18 141:25 142:16 142:17,20,22 142:25 143:7 143:25 144:1,5 144:10 161:1 beginning 152:22 153:8 157:22 begins 154:15 158:19 159:24 behalf 127:1 129:25 believe 141:9 145:3 146:11 157:3 164:12 belle 127:13 129:22 better 133:8 137:25 beyond 145:4	bhs 164:6,8,18 165:3,16 167:3 167:5,10 big 144:21 bit 133:8,9 153:2 168:13 board 126:2 boiling 156:2,3 156:7,11 book 145:12 borovic 127:13 borovik 129:22 bottom 159:24 160:3 box 141:14 break 166:6 brought 135:17 build 149:10 164:9	camera 129:12 capabilities 137:16,21 care 164:24 carlson 127:12 128:6 129:20 129:21 166:10 170:5,8,22 case 126:12 129:8,9 130:18 149:13 173:6 174:3 175:3 celsius 156:20 156:25 157:4 centigrade 155:8,15,16 certain 138:4,5 149:9,14 153:17 certainly 150:12 certificate 172:1 175:11 certification 174:1 175:1 certified 172:3 certify 172:4,13 change 135:5,6 135:8,9 159:2 173:13,14 175:8 176:3 changes 173:12 174:7 175:7,9	chemical 145:13,15 167:21,21 168:3 choose 134:1 circumstances 169:25 city 127:14 civil 174:5 175:5 cleveland 173:2 click 161:24 close 161:25 collecting 145:15 column 152:11 combination 169:4 combustible 150:16 come 136:16 144:22 157:10 coming 136:12 commencing 127:2 comminution 160:8 164:13 commission 174:19 175:25 176:25 communicated 130:14 companies 167:17
	c		
	c 127:12 156:2 156:3 ca 127:14 173:25 california 130:3 172:3 call 132:10,19 called 140:1 147:23 161:15 calls 138:14,16 138:17,21 158:5		

complete 142:14 completed 173:15 completely 144:4 150:19 151:17 compliance 164:20 complying 165:9 components 156:8 168:16 168:24 169:13 compositions 169:18 compounds 165:11 compromise 152:16 concentration 134:21,22,25 134:25 135:2 conclude 166:5 concluded 171:7 conclusion 138:14,18,21 condensation 152:17 condense 137:2 137:5 conditions 160:13,17	conducted 129:11 confused 162:24 conjunction 162:7 connection 129:12 consent 139:6 considerations 168:14 considering 152:16 consistent 133:21 consisting 147:23 constant 148:19 150:24 constantly 142:21,24 167:12,12 consumption 168:15 169:3 content 131:20 139:3 144:6 context 139:5 161:4,5 continues 159:24 continuous 151:2,3 continuously 150:14	control 133:10 169:2 conversely 137:4 converted 131:18 cool 136:5 cooled 136:19 cooler 136:11 136:11 cooling 136:11 136:16,19 137:2 cope 153:19 copies 162:5 copy 145:25 162:6 corner 154:4 162:13 correct 132:11 134:20 135:6,9 137:2 138:2 140:22 141:1,7 141:21 144:11 144:12,24 147:3 148:15 150:20 152:8 153:14 155:18 157:4 158:23 163:2 164:13 corrections 173:12 175:17 correctly 149:24 152:2	corrosion 134:11 corrosive 132:11,12,17 counsel 129:16 170:9 172:13 county 174:10 175:15 couple 134:2 159:20 166:6 166:22,24 course 133:3 163:23 court 129:16 131:22 174:7 create 147:17 151:8 168:10 created 152:15 153:7 creating 167:12 cross 142:8 crr 126:23 csr 126:23 127:3 130:3 172:22 cv 167:3
d			
d 128:1 daily 145:16 dana 126:23 127:3 130:3 172:3,22			

dangerous 144:7,8 dantam 127:22 161:6 dash 142:5 dashed 142:3,7 142:12,13 date 173:8 174:3,9,19 175:3,13,25 176:20,25 day 172:18 174:16 175:22 176:22 days 134:3 166:23 173:18 dc 127:17 dealing 166:23 167:17 dear 173:10 declaration 128:14 145:4 161:18 162:7 162:16,22 declarations 162:6 decompose 157:25 158:12 159:6 decomposed 158:21,25 decomposing 157:20 159:4	decomposition 156:19,24 157:17 158:3 dedicated 149:9 dedicatedly 164:25 deed 174:14 175:20 deemed 173:19 degrees 155:2,8 155:10,14,15 156:2,3,19,25 157:4,23 158:4 160:18 deliver 165:16 delivered 165:20 department 173:22 dependent 148:7 depending 132:23,25 141:22 148:17 depends 129:12 deposition 126:16 127:1 129:5,10 130:14 145:5 171:2,6 173:8 173:11 174:1,3 175:1,3	describes 146:25 description 128:9 desired 149:23 details 165:14 develop 167:5 development 167:6 dew 134:14,15 134:16 135:4,6 135:9,12 136:1 136:3,10 diagram 141:12 142:3 difference 147:17 169:5 different 133:13 137:15 137:17,23 138:1,1 139:19 147:2 152:21 162:21 169:8 169:17,18 direction 172:12 directly 165:18 discloses 168:6 discussed 137:10 143:4 145:3 169:11 discussion 140:13 168:17 169:19	discussions 168:18,20 169:20,21 dmc 156:2,12 169:13 document 146:5,6 152:11 160:25 161:2,3 161:14 162:11 162:18 163:2,3 163:7,15 documents 130:17 dolphin 127:14 double 142:9 drawn 143:7 dried 133:20 152:5 drive 127:14 driven 132:7 133:25 142:24 drives 142:20 drum 147:9,9 148:1,2 dryer 130:23 131:4 132:4 133:19 138:3 141:14,17,18 141:22,25 142:3,4,5,16,18 142:19,22 143:7,25 144:1 144:5,10 146:22,25
--	--	--	--

147:6,8 148:8 148:9,11,13,15 149:10,18 150:5,7,8,13,18 151:5,14 152:3 152:6 153:14 160:14 165:16 168:3 dryers 132:14 137:11,15,19 137:20,24 142:18 146:15 146:19 151:25 drying 132:14 141:5 147:13 150:20,24 151:11,21 152:7 153:1,5 153:9 154:24 160:7,13 167:18 duesenfeld 126:8 129:7,19 129:21 173:6 174:3 175:3 duly 130:8 172:6	easily 134:13 economical 152:13 edition 146:2,3 effective 138:9 138:22 139:1 efficiency 155:25 either 147:9 148:18 170:23 ejector 133:9 elaborate 133:1 electrolyte 154:16 electrolytes 157:24 169:9 169:11 elemental 165:17,23 email 173:17 emc 156:3 169:13 emissions 165:10,14 empty 152:3 enclosed 173:11 energy 168:15 169:3 engaging 170:10 engineers 145:13,16	english 140:21 159:15 enter 142:15 entered 175:9 enters 142:17 entire 174:5 175:5 entitled 160:25 environment 143:3 environmental 164:20,24 equal 149:6 156:18 157:16 158:2 equipment 131:11 167:18 errata 173:13 173:18 175:7 175:10,18 176:1 esq 127:8,12,13 127:16 173:5 essentially 136:5 establish 148:4 149:7 151:18 152:1,7 established 147:20,21 151:21 evacuation 148:24	evaporated 169:13 evaporation 152:23 153:11 event 164:10 events 164:6 evidence 165:25 exact 156:11 exactly 132:10 156:7 157:5 162:11 examination 130:11 166:17 170:7 examined 130:8 172:5 example 132:1 133:2,7,25 134:15 153:2 168:2 169:1 exceeds 132:8 exchange 134:3 exchanger 147:24 153:19 excluding 132:4 executed 175:10 execution 174:14 175:19 exhaust 130:22 131:4 136:25
e			
e 128:1,3,8 earlier 169:16 easier 133:9 150:4			

exhibit 128:9 128:10,11,13 128:14,16,17 140:7,16,22 144:13,15,16 144:16,17,21 144:24 145:1 153:23 154:1 159:11,13,14 159:16 160:19 160:21,22 161:8,9,9,12,16 161:21,22,25 162:9,12 exhibits 140:2 exist 137:19 exists 157:10 expect 133:21 experienced 164:19 expiration 174:19 175:25 176:25 explosion 143:4 143:10,24 144:9 explosions 164:7 extent 138:13 138:17 external 136:17 extremely 152:14	f	fire 164:10 165:22 fires 164:7 firm 129:22,25 first 128:10 144:18 145:23 148:7 151:7 152:11 154:3 fixed 147:10 flammability 169:3 flap 142:9 flash 150:23 flow 142:8 flowing 142:21 fluidized 128:18 141:24 142:16,17,22 143:7,25 144:1 144:4,10 161:1 fluoride 130:22 131:4,12,18 132:3,11,15,22 133:6,20 134:7 159:1 flush 143:1,24 flushing 143:9 144:1 150:14 152:4 focus 167:15,19 folder 140:1,2 144:15 153:24 folders 159:14	follow 168:24 169:6 follows 130:9 food 167:22 foregoing 172:6 174:13 175:18 form 131:20 150:21 formation 132:3 forth 172:10 forward 173:15 foundation 135:14 139:13 founder 167:17 fourth 159:23 fredrikstad 165:6 free 163:2 174:14 175:20 friday 130:14 130:19 141:9 143:4 145:8 154:10 157:3 162:5,20,23 164:6 167:2 168:5,13 169:16 front 141:11 full 152:12 function 142:25

furnace 155:7 156:17 157:15 158:1 further 155:8 158:18 166:2 170:22 172:13	good 129:3 130:2 133:23 149:10 153:9 grade 132:18 gradually 155:1 grease 133:2 134:8 great 140:24 148:21 169:15 greater 156:18 157:16 158:3 guide 170:16	hereunto 172:17 hexafluoroph... 156:20,25 157:9,18,21,25 158:4,12,20 159:4 hf 131:18,20 133:3 high 153:8 155:25 higher 135:12 136:1 137:4,5 149:20 150:1,1 150:8,9 152:25 152:25 hogger 142:8 hold 138:12 huh 134:23 137:7 142:10 146:10,13,16 154:23 155:17 159:1 hydrogen 130:22 131:3 131:12 132:3 132:11,15,22 133:6,19 134:7 hydrovolt 165:4 hydroxide 131:24,25 hypothetical 143:15 150:22	i identification 140:16 144:13 154:1 159:11 160:19 161:12 identify 129:17 immediately 155:21 important 168:22 169:12 169:12,14 included 173:13 incoming 150:19 incomplete 143:15 150:22 incorporated 175:12 increase 153:9 increased 155:1 indicating 173:13 indirectly 165:19 industries 147:3 industry 132:19 167:19 167:20,21 168:4
g	h		
g 141:8 142:3 gas 130:22 131:4,20,21 136:12,25 gates 151:14 general 131:15 146:20 generally 148:14 give 132:14 160:10 given 148:23 148:25 149:1,5 glebe 127:9 gmbh 126:5,8 129:7,7 173:6 173:6 174:3,3 175:3,3 go 140:9 146:11,17 149:11 150:10 154:21 156:15 168:1,25 going 135:20 139:25 149:12 161:8,22	h 128:8 hand 130:5 152:11 154:4 handling 167:17 happening 159:8 happens 149:2 harder 136:4 hear 134:9 143:14 heat 128:17 147:24 153:18 159:5,9 161:1 heated 147:12 heating 147:14 147:17 151:11 helped 164:8		

inert 149:15 151:8,15,17 152:4 inertization 151:9 inertness 151:13 152:6 inevitably 168:10 initial 153:20 initially 155:14 inner 147:18 input 163:6 inside 147:10 149:12,15 153:13 insoluble 131:19 installation 130:23 131:12 136:20 147:23 149:19 150:6 168:7,10,11 intentionally 157:20 159:3 interested 172:15 internal 152:13 internet 129:13 interpretation 142:11 interval 162:3 introduce 153:21 161:8	introduced 140:21 153:22 159:15 161:9 introducing 160:21 invention 131:6 131:7 inventive 137:18 involved 151:5 165:13 ion 137:12 151:6 ipr2024-00887 126:12 ipr202400887 129:9 issues 164:20 164:25	jr 127:10 judge 168:21 june 126:18 127:3 129:4 172:19 173:4 justification 138:4	l labeled 141:14 146:9 large 137:13,23 148:11 152:14 152:23 153:7 153:12,20 169:10,10 larger 148:9,13 law 129:25 leading 131:7 leakage 149:12 152:17 153:3 left 142:2 152:11 legal 129:14 138:14,18,21 173:1 176:1 letter 173:19 level 149:9 150:12 levels 133:14 152:14,22 lifetime 134:1 limit 165:10 line 142:7,12 142:13 170:10 173:13 175:7 176:3 lines 152:18 156:16 158:23 liquid 133:8 134:19 136:6
		k kaplan 127:13 129:22,23 keep 148:19 157:22 key 167:9 kinds 132:13 133:13 know 132:10 134:6,14 138:24 139:2,4 139:7,8,24 144:22 145:15 145:17,19,23 154:8 156:7,11 157:1,9,11,12 157:13 158:7,8 158:16 159:17 160:23 161:10 163:17 164:1 164:16 165:15 known 136:17 kortbolgen 165:6	

136:12 listed 175:7,17 listing 175:7 lithium 137:12 151:6 156:20 156:24 157:17 157:20,25 158:4,12,20,25 159:4 lithorec 128:11 140:2,20 141:3 168:6 little 133:8,9 153:2 168:13 llp 127:13,16 129:19 loading 153:25 located 141:17 log 140:7 long 133:21 134:2 137:19 137:23 148:3,5 148:6 156:15 157:10 163:24 longer 149:7,20 150:6 look 154:3,12 154:18 155:20 156:13 163:3 170:15 looked 141:9 lost 135:16 lot 145:15 169:17	low 152:14 lower 135:12 136:1,2,2,3,4,9 136:10 137:1,1 144:5 148:24 149:1,6,21 150:1,6,10 153:10 155:13 157:1 160:15 162:13 lowered 147:12 147:19 lowest 132:18	markets 133:17 material 132:14 133:20 151:10,12,22 151:25 152:5 materials 132:13 165:17 matter 129:6 168:1 matthew 127:16 129:18 mean 131:5,5 131:23 132:16 133:7 134:17 134:25 139:4 139:17 142:22 143:7,9 153:6 157:19 159:5 164:23 167:24 meaning 134:2 139:15 means 130:24 131:3 134:15 136:10 139:10 152:24 153:11 media 137:2 147:17 171:4 megapascal 160:15 memory 161:5 mentioned 130:21 141:7 141:19 160:18 169:8	metals 165:23 midwest 173:17 176:1 mind 140:9 minimum 149:9 minute 166:6 minutes 155:5 155:9,15,16 misstates 158:13 mistaken 169:7 mitsubishi 128:16 159:14 160:7 161:15 161:19 mitsubishi's 160:6 mixing 167:17 moisture 153:9 morning 130:2 motion 162:9 move 134:12 moving 159:13
	m		
	m 128:3 machine 139:21,22 madam 173:10 made 174:7 maintained 155:4,8 156:17 157:15 158:2 major 167:5 make 143:3 150:4 152:3 163:1 marked 140:1 140:16 144:13 154:1 159:11 159:14 160:3 160:19,22 161:12 162:12		
			n
			n 128:1,3,3 name 129:14 130:3 172:18 173:6 174:3,4 174:15 175:3,4 175:21 necessary 149:14 151:10

152:15 168:10 need 136:10 137:1 140:4 141:17,20,25 145:16 147:22 147:25 149:23 151:8 153:16 168:21,23 neither 172:13 nitrogen 142:14,15,17 142:21,24 143:2,9,25 144:2,5,6,11 149:13,14 150:14,19,24 nixon 127:8 129:25 nixonvan.com 127:10 normal 156:1 156:12 normally 132:17 148:17 norway 165:4,7 notarized 173:14 notary 173:25 174:10,18 175:15,23 176:23 note 129:10 156:1 173:12	number 129:9 130:3 137:13 137:23 141:10 146:6 169:8,10 171:4 173:7,13 numbers 156:6 175:7	oil 133:2,4,25 134:3,8,9,10 okay 130:21 132:2 134:24 135:11 136:22 137:10,25 138:8 139:5,9 139:25 140:6 141:8,12 143:1 144:9,24 145:14 146:4 148:3,9 149:17 150:3,18 151:4 151:16,23 152:10 153:21 154:3,14 155:20 156:10 157:12 159:20 160:2,5,21 161:4,14 162:16,18,24 163:6,14 164:3 165:16 166:2,8 167:1,14,14 168:5,13 169:7 170:1 open 140:4 operate 137:17 152:21,24 operating 151:5 152:16 153:13 155:14 operation 168:12	opinion 159:2 opposition 162:8 optimization 169:23 optimize 169:1 169:5 optimized 168:23 optimizing 153:5 option 136:21 order 135:17 142:25 144:9 150:15,16 157:23 organic 155:24 165:11 original 131:10 145:4 146:5 outcome 139:1 172:15 outlet 141:17 141:21,25 outside 142:19 147:13,16,22 151:14 owner 126:10 127:2,11 129:19,21 owner's 166:5 owners 139:16 oxygen 144:5 151:9
	number 129:9 130:3 137:13 137:23 141:10 146:6 169:8,10 171:4 173:7,13 numbers 156:6 175:7		
	o		
	o 128:3 139:10 object 138:14 138:18 objection 135:13,16,22 135:23 138:10 138:12,13,20 139:13 143:11 143:13 145:2 150:21,21 158:5,13 163:8 164:21 165:24 170:12 objections 136:8 143:21 occur 147:14 office 126:1 129:9 official 174:15 175:21 oh 132:16 145:22 160:5 161:4 ohio 173:2		

p	participants	petitioner	pointing 142:4
p 139:10	129:13	126:6 127:7	142:5
p.c. 127:8	particular	130:1	points 142:8
p.m. 127:2	141:4 145:25	pharma 167:22	169:22
129:4 140:12	146:23 167:3	phase 134:19	poland 165:17
140:15 166:12	167:19	136:6,7,12,25	possible 137:11
166:15 171:4,6	parts 134:12	phone 173:3	155:23 162:1
paddles 147:10	144:18 165:13	phrase 134:14	possibly 162:13
page 128:4,9	party 172:14	piece 131:11	potassium
141:10,10	pass 130:23	pieces 167:18	131:24
146:4,5,8,12	150:12 170:3	place 134:11	potential 170:4
152:10 154:3	patent 126:1,2	147:13 160:8	potentially
159:22,23,25	126:10,12	172:10	137:13 138:20
160:1,4 162:13	127:2,11 129:8	plant 165:3,9	practice 170:16
173:13,15	129:19,20	165:14	preferably
175:7 176:3	131:10 139:16	plants 164:8,18	160:15
paragraph	161:15,19,20	164:24	present 127:22
152:12 154:18	166:5	please 129:10	preserves
154:21 155:11	paused 130:13	129:17 130:4	152:5
155:12,20,21	pdf 141:10	145:11 146:17	pressure
155:22 156:13	146:5,8 159:23	148:21 156:13	133:14 135:3,5
156:15 157:14	159:25	159:18,21	135:8,12 136:1
158:18,22	peabody	161:10 162:10	136:2,3,4,9
159:21,23	126:23 127:3	168:25 173:11	137:1,4 138:1
160:2,10,14	130:3 172:3,22	173:11	141:4,7 147:12
parameters	pennsylvania	plus 144:6	147:19,21
148:18 168:22	127:17	po 139:10,11	149:1,3,6
paraza 129:14	performed	point 134:14,15	150:3,7,8,9,10
part 128:10	141:5 160:7	134:16,18	150:11,12
136:13 144:19	perry 128:10	135:4,6,9,12	152:13,16,22
155:13 165:15	144:16	136:1,3,10	152:25 153:1,3
175:9	personally	151:18 156:2,3	153:4,10,13,17
	174:11 175:15	156:7,11 167:9	156:1,12
			160:12 168:22

169:2,23 pressures 133:12 137:17 presumably 136:24 previously 140:21 153:22 160:22 161:9 prior 131:6 146:12 158:13 172:5 privilege 163:10 privileged 170:12 problem 133:10 135:19 140:10 143:22 162:25 problems 152:17 164:19 165:9 procedure 149:16 174:5 175:5 proceed 152:7 proceedings 129:1 172:6,9 172:14 process 151:6 154:15 159:8 160:6 producing 133:19	product 163:10 170:13 production 173:15,17,22 project 165:15 promotes 132:8 protection 143:5,10 provide 163:6 public 174:10 174:18 175:15 175:23 176:23 publication 161:21 published 145:17,19 154:5 pull 161:22 pump 132:23 133:1,3,4,22,25 134:1,6,8,10 147:24,25 148:8,19,23,25 149:4,5,21 pumping 152:18 pumps 132:21 133:5,8,9,13,16 149:8 purge 149:14 purged 149:13 purging 142:13 put 139:25 144:15 152:4	q quality 129:11 129:12 question 132:5 132:6 133:23 135:21 139:3 139:20 143:8 143:19 145:7,8 145:10 149:3 149:10 150:2 154:11 160:11 164:2 165:12 170:5,20 questioning 144:20 170:10 questions 137:14 159:20 164:3 166:3,6 166:24 169:17 170:22,23 quickly 134:4,9 134:13 quite 134:13 162:1 quote 152:12	ranges 138:1,2 rate 137:6 152:23 153:1 rates 169:17 rd 127:9 rdr 126:23 react 133:4 reaction 132:7 133:10,24 reactive 133:3 read 139:16 158:18 174:5,6 174:12 175:5,6 175:17 reading 158:24 173:19 ready 170:3 really 148:16 149:8 164:1 reason 173:14 175:8 176:3 reasonable 156:9 recall 130:25 131:8 144:24 163:25 164:5 receipt 173:18 recess 166:13 recognize 134:12 record 129:4 129:17 140:9 140:11,13,14 166:11,15
		r raise 130:4 raised 155:7 ramon 129:14 range 141:4,7 152:25 156:18 157:5,16 158:2	

171:3 175:9 recorded 126:16 129:5 171:2 recording 129:11 recross 170:4 recycling 136:20 137:12 151:6 164:8,18 165:3 167:8,21 168:4 recyclingtech... 126:5 129:7 173:6 174:3 175:3 redirect 166:7 166:20 reduce 152:13 redwood 127:14 reference 140:2 140:21,25 144:17 153:22 154:9 159:15 160:10 173:7 174:2 175:2 referenced 174:11 175:15 referring 149:22 related 130:18 135:3 151:9 164:12 172:14	relatively 150:8 relevance 135:14 164:22 165:25 relevant 131:2 131:8 132:2 137:11,16 144:19 remaining 149:6 remember 141:12 146:3 164:10 167:2,4 168:8,9,17,19 168:19 169:19 169:21 removal 154:16 remove 130:24 131:12 removing 131:3 151:13 repeat 135:21 162:10 rephrase 150:2 reply 162:8 reported 126:23 reporter 129:17 130:2 131:22 143:14 172:4 174:7 represents 142:12,13	request 175:9 175:11 required 173:25 result 138:9,22 resulting 164:19 retained 171:5 returned 173:18 review 173:12 174:1 175:1 reviewed 130:17 rid 151:8 157:23 right 130:5 135:5 141:20 148:10 154:4 162:13 166:4 170:25 ring 133:8 rise 153:4 roberts 127:8 128:6 129:24 129:24 135:13 135:23 136:8 138:10,13,17 139:13 140:10 143:11,15,20 145:2 150:21 158:5,13 161:24 162:2 163:8,10	164:21 165:24 166:4,18,19 170:1,12,19,25 173:5 robins 127:13 129:21,23 robinskaplan.... 127:15 room 155:1 rotary 142:8 146:15,22 147:6 150:13 150:18 151:5 rotating 147:9 rules 174:5 175:5 run 144:4,10
			s
			s 128:3,8 173:15 175:8,8 176:3 safe 143:3 safety 168:15 salt 131:19,19 salts 132:9 save 170:15 saw 154:9 saying 131:23 137:20 says 153:6 155:6 156:16 157:14

scarlson 127:15 scope 135:13 145:4 158:5,14 164:21 165:24 screen 140:3 144:23 scrubber 131:13,14 se 127:17 seal 152:6 174:15 175:21 sealed 147:11 148:1,2 second 140:9 144:22 155:3 155:23 161:7 secondary 155:24 seconds 155:5 section 141:6 141:18 146:14 146:19,21 160:11 see 134:5 136:15,18 138:5 140:1,3 141:14 142:2,7 144:22 146:14 146:18 153:24 155:6 156:4,21 158:19,25 159:19 160:2 165:21	seen 161:2,3 sensitive 132:21 133:6 sentence 155:6 155:23 156:1 158:19 159:1 separate 142:19 session 130:19 130:21 set 149:19 160:14 172:10 seven 156:16 share 140:7 161:23 sheet 173:13 175:7,10,18 176:1 shorthand 172:4,11 shown 154:15 173:16 shows 160:23 161:10,11 sic 165:17 side 141:17 166:5 sign 163:14 signature 172:21 173:14 signed 174:13 175:18 signing 173:19	similar 137:16 137:21 simple 145:10 sincerely 173:21 sir 130:13 138:8 139:21 141:3,16 143:18 153:24 154:21 160:17 161:2,14 162:19 163:15 173:10 situation 131:17 six 167:10 size 148:8,18 148:19 152:17 153:18 smaller 148:11 148:14 smith 127:16 127:16,18 128:5 129:18 129:18,18 130:12 135:15 135:18,20,24 136:14 138:11 138:16,19 139:18 140:8 140:17 143:12 143:17,22,23 144:14 145:6 151:1 154:2	158:10,17 159:12 160:20 161:13 162:1,4 163:13 165:2 166:2,8 169:16 170:23 smithbaluch.... 127:18 sodium 131:24 solution 131:17 132:6,8 solutions 173:1 176:1 solvent 135:25 136:25 155:24 168:15 sorry 135:8 136:6 145:18 162:2,8,21 163:21 170:19 sounds 144:7 source 136:17 special 133:18 specific 146:22 146:23 147:1 specifically 159:9 167:7 specify 141:4 speculation 158:6 spelling 139:10 spies 126:16 127:1 128:5,14 129:6 130:4,7
--	---	--	--

140:18 159:13 162:5 166:21 170:9 171:3 173:8 174:4,9 175:4,13 176:20 spray 131:16 stage 155:3 stainless 132:18 standard 133:16 145:12 145:12 149:16 150:17 start 151:10 152:3 started 163:25 starting 134:2 starts 151:11 160:4 state 174:10 175:15 statement 152:20 153:6 174:13,14 175:19,19 states 126:1 129:8 146:14 152:12 155:22 steel 132:18 step 151:7 steps 151:4,7 steve 166:9 170:14	steven 127:12 129:21 sticking 166:22 stopped 163:25 stops 134:11 strategic 165:17,23 stream 131:4 131:21 136:25 strength 148:8 strong 153:11 stronger 148:9 148:13 submitted 162:7 subscribed 172:18 174:10 175:14 176:21 substance 157:10 sufficient 132:20 144:2,6 suite 127:14,17 173:2 super 132:12 132:16 superior 173:1 supervision 172:12 sure 149:17 152:3 163:1 swing 142:9 sworn 130:8 172:6 174:10	174:13 175:14 175:18 176:21 system 141:16 142:14 143:1,9 152:18 153:3 t t 128:3,8 take 134:8,11 144:21 148:3 148:10,14 149:7,20 150:6 163:2,24 164:24 166:5 168:2 taken 127:1 172:9,10 takes 147:13 160:8 talk 170:9 talked 154:9 168:14 talking 146:19 146:21 162:22 167:2 team 165:15 technical 162:2 technologies 167:8,22 technology 140:19 150:17 166:23 167:5,6 167:18	tell 154:24 163:19 temperature 132:6,7,8 134:20,21,22 134:24 137:1,5 138:1 147:17 153:10 155:2,7 156:17,18,19 156:24 157:15 157:16,17 158:2,3 159:5 159:10 160:12 160:17 168:23 169:4,5,24 temperatures 137:17 154:24 term 138:9,22 138:24,25 139:10 terms 150:3 testified 130:9 testify 172:7 testimony 130:15 158:14 164:5 174:6,7 175:6,9,12 testing 161:5 thank 140:18 166:3,19,21 170:1,24 171:5 thereof 172:15 thermal 156:19 156:23 157:17
---	--	--	--

158:3 164:6 thermally 158:21 159:3 things 143:4 think 137:12 140:4 145:8 147:25 162:10 thirty 173:18 three 171:4 ti8 132:19 tight 149:11 time 129:16 131:6,7 134:1 137:10,19 148:6,10,11,14 149:22 154:8,9 166:21 167:7 168:22 169:1,4 169:23 170:15 172:10 timeframe 131:3,8,9 132:2 137:11 137:16 title 162:13 today 168:14 169:16 top 154:17 topic 170:16 total 171:4 towards 147:18 toxic 133:3 trademark 126:1 129:9	transcribed 172:11 174:7 transcript 173:11,12 174:5,12 175:5 175:11,17 transfer 136:11 transfers 128:17 160:25 transition 136:5 translation 139:3 140:22 159:16 trial 126:2 tries 157:25 true 135:11,25 138:5 141:3,16 truth 172:7,7,8 trying 158:11 turn 141:8 146:4 152:10 159:21 twin 127:14 two 144:18 147:7,8 148:7 148:18 156:8 type 132:23,25 133:16 138:7 141:22 146:25 149:4 151:25 164:23 types 133:5 137:15,23	typewriting 172:12 typical 131:11 132:18 151:7 151:20,24 168:15 typically 131:5 131:16 136:17 136:19 142:1 142:17,18 147:7,15,23 148:3 152:21 152:23 153:18 164:23	und 126:4 173:6 174:3 175:3 under 141:4 144:5,11 151:17 158:23 169:24 172:12 underneath 142:18 understand 157:19 170:17 understanding 138:8,22,25 139:9 147:5 149:17 152:2 152:19 understood 149:23 unexamined 161:20 unit 164:13 united 126:1 129:8 university 145:24 146:1 upper 154:4 urt 126:4 129:6 130:1 165:20 173:6 174:3 175:3 use 131:16 132:13,17 133:2,7,8 137:5 141:22
		u	
		u.s. 126:12 uchida 128:13 153:22 154:19 154:25 157:14 157:19 158:1 158:11 159:3 uchida's 154:14 159:8 uh 134:23 137:7 142:10 146:10,13,16 154:23 155:17 159:1 umwelt 126:4 129:6 173:6 174:3 175:3 unconductive 132:9	

149:4 150:2 used 147:2 154:25 167:23 171:4 using 141:24	vani 127:22 vapor 134:15 134:18 135:1,9 135:11,25 136:6,25 152:14,18 153:7,12,20 variable 138:9 138:23 139:1 variation 169:22 various 145:22 167:6,16,18,20 167:22 vary 148:18,18 veritext 129:15 171:5 173:1,7 176:1 veritext.com. 173:17 version 145:23 versions 145:22 147:8 versus 129:7 161:25 vessel 147:15 vibrating 128:17 161:1 vibratory 141:24 142:15 143:25 144:10 video 126:16 129:5 171:2	videographer 129:3,15 140:11,14 166:11,14 171:1 view 140:3 158:11 161:25 viewed 169:24 virtually 129:11 viscous 134:10 volatile 165:10 volatilize 155:24 volker 126:16 127:1 128:5 129:6 130:7 171:3 173:8 174:4,9 175:4 175:13 176:20 volume 126:19 129:5 145:12 147:11,18 148:13,15,24 149:1 153:12 171:2 173:8 174:4,9 175:4 175:13 176:20 volumes 152:15 153:7,20 vs 126:7	w waived 173:19 want 166:24 wanted 131:2 137:14 146:18 160:5 washington 127:17 water 131:17 132:4,5 136:11 136:16,19 way 145:1 148:20 151:24 152:5 153:4,19 167:2 168:3,5 172:15 wayback 139:21,22 weaker 148:15 welcome 130:13 140:18 whereof 172:17 witness 128:4 135:16 136:9 139:15 150:23 158:7,15 163:9 163:11,12 164:23 166:1 170:3,14,17,21 172:5,17 173:8 173:11 174:1,4 174:11 175:1,4 175:15
---	--	---	---

witness' 173:14 wonder 154:18 wondering 161:24 work 131:14 143:6,24 145:16 147:8 163:10 165:3 167:3,5,13 170:12 worked 164:18 167:7 working 145:23 146:1,3 147:18 148:4 167:16,20 168:3 works 147:6 worldwide 164:9 write 163:24 written 154:7 154:17 161:21 wrote 162:19 163:3,18	years 133:17 167:10 yep 156:22 yuma 172:18
	z
	zoom 126:17 127:2
x	
x 128:1,3,8	
y	
yeah 133:2 135:2 138:3,4 146:8 154:13 155:4 167:4	

Federal Rules of Civil Procedure

Rule 30

(e) Review By the Witness; Changes.

(1) Review; Statement of Changes. On request by the deponent or a party before the deposition is completed, the deponent must be allowed 30 days after being notified by the officer that the transcript or recording is available in which:

(A) to review the transcript or recording; and

(B) if there are changes in form or substance, to sign a statement listing the changes and the reasons for making them.

(2) Changes Indicated in the Officer's Certificate. The officer must note in the certificate prescribed by Rule 30(f)(1) whether a review was requested and, if so, must attach any changes the deponent makes during the 30-day period.

DISCLAIMER: THE FOREGOING FEDERAL PROCEDURE RULES ARE PROVIDED FOR INFORMATIONAL PURPOSES ONLY.

THE ABOVE RULES ARE CURRENT AS OF APRIL 1, 2019. PLEASE REFER TO THE APPLICABLE FEDERAL RULES OF CIVIL PROCEDURE FOR UP-TO-DATE INFORMATION.

VERITEXT LEGAL SOLUTIONS

COMPANY CERTIFICATE AND DISCLOSURE STATEMENT

Veritext Legal Solutions represents that the foregoing transcript is a true, correct and complete transcript of the colloquies, questions and answers as submitted by the court reporter. Veritext Legal Solutions further represents that the attached exhibits, if any, are true, correct and complete documents as submitted by the court reporter and/or attorneys in relation to this deposition and that the documents were processed in accordance with our litigation support and production standards.

Veritext Legal Solutions is committed to maintaining the confidentiality of client and witness information, in accordance with the regulations promulgated under the Health Insurance Portability and Accountability Act (HIPAA), as amended with respect to protected health information and the Gramm-Leach-Bliley Act, as amended, with respect to Personally Identifiable Information (PII). Physical transcripts and exhibits are managed under strict facility and personnel access controls. Electronic files of documents are stored in encrypted form and are transmitted in an encrypted

fashion to authenticated parties who are permitted to access the material. Our data is hosted in a Tier 4 SSAE 16 certified facility.

Veritext Legal Solutions complies with all federal and State regulations with respect to the provision of court reporting services, and maintains its neutrality and independence regardless of relationship or the financial outcome of any litigation. Veritext requires adherence to the foregoing professional and ethical standards from all of its subcontractors in their independent contractor agreements.

Inquiries about Veritext Legal Solutions' confidentiality and security policies and practices should be directed to Veritext's Client Services Associates indicated on the cover of this document or at www.veritext.com.