

LOCO CRAZY GOOD COOKERS, INC.,)
)
Petitioner,)
)
vs.) IPR2024-00642
)
NORTH ATLANTIC IMPORTS, LLC,)
)
Patent Owner.)

EX2011
North Atlantic Imports, LLC
IPR2024-00642

1 There were present at the taking of this
2 deposition the following counsel:

3 (Appeared via videoconference)

4 POLSINELLI LAW FIRM by

5 MR. JAMES P. MURPHY

6 MS. BOBBIE JO HOROCOFFSKY

7 1000 Louisiana Street, Suite 6400

8 Houston, Texas 77002

9 (713) 374-1600

10 jpmurphy@polsinelli.com

11 bhorocofsky@polsinelli.com

12 -and-

13 (Appeared via videoconference)

14 POLSINELLI LAW FIRM by

15 MR. MICHAEL P. DULIN

16 1401 Lawrence Street, Suite 2300

17 Denver, Colorado 80202

18 (303) 583-8239

19 mdulin@polsinelli.com

20 on behalf of the Petitioner;

21 (Appeared via videoconference)

22 FOLEY & LARDNER, LLP by

23 MR. JARED J. BRAITHWAITE

24 95 South State Street, Suite 2500

 Salt Lake City, Utah 84111

 (801) 401-8900

 jbraithwaite@foley.com

 -and-

 (Appeared via videoconference)

 FOLEY & LARDNER, LLP by

 MR. NICHOLAS LAGERWALL

 150 East Gilman Street, Suite 500

 Madison, Wisconsin 53703

 (608) 257-5035

 nlagerwall@foley.com

 on behalf of the Patent Owner;

DEPOSITION OF GLENN E. VALLEE, Ph.D., P.E.
TAKEN JANUARY 14, 2025

EXAMINATION BY	PAGE
Mr. Jared J. Braithwaite	4

EXHIBITS

	PAGE
DEPOSITION EXHIBIT 1 Curriculum Vitae	8

DEPOSITION EXHIBIT 2 Declaration of Dr. Glenn E. Vallee	37
--	----

DEPOSITION EXHIBIT 3 United States Patent 3,747,509 Hinkle	47
--	----

DEPOSITION EXHIBIT 4 United States Patent 6,389,960 Williams	54
--	----

DEPOSITION EXHIBIT 5 Annotated version of United States Patent 6,389,960, Williams	64
--	----

DEPOSITION EXHIBIT 6 United States Patent 5,676,043 Best	100
--	-----

DEPOSITION EXHIBIT 7 United States Patent 5,890,482 Farnsworth	115
--	-----

1 THE REPORTER: Before we begin will counsel please
2 stipulate for the record that the reporter may swear the
3 witness in remotely.

4 MR. BRAITHWAITE: Yes.

5 MR. MURPHY: Bobbie Jo is going to handle it from
6 our end. Do you want to agree to that, Bobbie?

7 MS. HOROCOFSKY: Yes.

8 GLENN E. VALLEE, Ph.D., P.E.,
9 called as a witness herein, having been first duly
10 sworn, was examined upon oral interrogatories and
11 testified as follows:

12 EXAMINATION

13 by Mr. Braithwaite:

14 MR. BRAITHWAITE: Q All right. For the record, my
15 name is Jared Braithwaite. I'm with the law firm of
16 Foley & Lardner. I represent North American -- North
17 Atlantic Imports in this matter, who's the patent owner.

18 MS. HOROCOFSKY: Hi, good morning. For the record,
19 my name is Bobbie Jo Horocofsky with Polsinelli, and I
20 represent LoCo Crazy Good Cookers.

21 MR. BRAITHWAITE: Good morning -- Oh, go ahead.

22 MR. DULIN: Good morning. This is Michael Dulin.
23 I'm also here on behalf of LoCo. I'm going to be coming
24 in and out of this deposition. So I'm just going to

1 leave my video off, but I appreciate you letting me
2 attend.

3 MR. MURPHY: And this is James Murphy of Polsinelli,
4 lead counsel on the IPR. I'm also just going to be
5 attending.

6 MR. BRAITHWAITE: Great. I'll note that Nick
7 Lagerwall from Foley & Lardner is also attending with me
8 today. And David Wright may also be joining at some
9 point just in attendance.

10 All right. Dr. Vallee -- Is it Vallee? Am I
11 saying that correctly?

12 A Vallee, like Rudy Vallee, Frankie Vallee.

13 Q Vallee, great. I've been saying it wrong for
14 months now.

15 A It took me a few years to get it right myself.

16 Q Dr. Vallee, you've been deposed before, correct?

17 A Correct.

18 Q All right. Just very briefly then, I need to
19 assume that you understand my questions unless you tell
20 me otherwise. Please feel free to ask me to restate a
21 question if you don't understand it or if you don't hear
22 it.

23 Of course we need to answer questions verbally.
24 Even though we're on video, I can see your head nod, but

1 the court reporter can't necessarily take that down. So
2 I may ask you to answer verbally if I don't hear a
3 verbal answer.

4 If you need a break at any time, please let me
5 know.

6 Let's see. Other than those brief
7 instructions, do you know of any reason today that you
8 cannot testify truthfully?

9 A No.

10 Q Great. Then will you state your full name for
11 the record.

12 A Glenn Edward Vallee.

13 Q Where are you located right now, Dr. Vallee?

14 A I'm in Westbrook, Connecticut.

15 Q Are you in your office?

16 A Correct.

17 Q Okay. Is that located at Western New England
18 University?

19 A No, that's my place of employment. I'm in my
20 home.

21 Q Oh, okay, your home office. Is anyone in the
22 room with you?

23 A No.

24 Q And before we begin, you said you have printed

1 copies of your declaration and the materials you relied
2 upon in this matter; is that right?

3 A Correct.

4 Q Other than those materials, do you have other
5 documents around you for reference during this
6 deposition?

7 A I do not.

8 Q On your computer do you have any files displayed
9 on your screen other than the videoconference display
10 used for this deposition?

11 A No.

12 Q Will you agree during this deposition not to use
13 any e-mail or chat functions until we've concluded the
14 deposition?

15 A Agreed.

16 Q Just a second. I'll drop the first document
17 into the Zoom chat.

18 THE REPORTER: I'm not sure if that function is
19 going to work. I think Veritext might have taken that
20 away.

21 MR. BRAITHWAITE: All right. Well, let's take a
22 quick look.

23 All right. Well, for the benefit of those
24 others in attendance, can I just request that we log in

1 to the login.agile.com link that I sent, along with the
2 nine-digit PIN number. I see that Mr. Murphy has logged
3 in.

4 THE WITNESS: And will I need to log in as well
5 since I have hard copies?

6 MR. BRAITHWAITE: You don't have to. It just might
7 help to verify that you're looking at what I'm looking
8 at. I want to be on the same page. Please feel free to
9 use your hard copies as well.

10 MS. HOROCOFSKY: Dr. Vallee, why don't we go ahead
11 and get you logged in just in case there's something.

12 THE WITNESS: I'm in the process.

13 MS. HOROCOFSKY: Thank you.

14 THE WITNESS: Oh, we need a user account, don't we?

15 MR. BRAITHWAITE: No, no, no, you should just be
16 able to enter in the nine-digit PIN number.

17 (Discussion had off the record
18 regarding technical issues.)

19 MR. BRAITHWAITE: Q All right. I believe I've got
20 everybody. I'm going to mark our first document as
21 Deposition Exhibit 1.

22 (Document marked as Deposition
23 Exhibit 1 for identification.)

24 Q Tell me when you have that in front of you.

1 A Would that be my CV?

2 Q Yes. So you recognize this as a copy of your
3 CV?

4 A I'll just scroll through it quickly. Yes, that
5 is my CV.

6 Q And, for the record, this is marked in the
7 bottom left-hand corner with Exhibit No. 1003 for the
8 exhibit number in the IPR proceedings.

9 A Correct.

10 Q All right. Dr. Vallee, can you tell me what
11 work you -- or product design you've done in the past
12 with respect to products, including heat elements?

13 A Okay. There are a number. So I started with my
14 work at Remington as director of engineering. We might
15 as well stay with the order on my CV.

16 Q Okay.

17 A And as I look at that, the CV says chair of the
18 department.

19 If we can go down to -- I'll go to -- On my CV
20 let me go to page -- This will be the bottom of page 2,
21 Remington Products.

22 Q Okay.

23 A I was involved in the design of hairdryers and
24 hair setters that used micro heating elements. There

1 were also facial spas and other devices that heated
2 liquids up for aroma therapy.

3 My work at Stanley-Bostitch, which is on the
4 bottom of page 3, I worked in the development of
5 propane-fired or propane-actuated fastening tools. And
6 while that didn't specifically have a heating element,
7 it did have sparkplugs and -- Well, it did have -- I
8 take that back. It did have a resistive element where
9 the propane came in. It was a coil that would help
10 ignite things. So that was a long time ago that I was
11 involved with that.

12 If we move to now page 1, which talks about my
13 work at the university, I teach a course in machine
14 design where we design -- I teach students how to design
15 a wide range of devices, including structural members
16 and beams and ribs and things like that. And heating
17 elements are involved with that because they're often
18 used in electromechanical design, which is another one
19 of my research areas.

20 We also teach a materials science course, which
21 is involved with selecting materials used in a variety
22 of things, including heating elements. Also devices
23 that have to heat food or are in contact with food, food
24 grade devices, food grade material.

1 Then I teach a Product Development and
2 Innovation course. And this course teams engineering
3 and business students to develop viable -- commercially
4 viable products. And products that were involved in
5 that included a food delivery box, which was basically
6 used for -- The box has a heating element in the back of
7 it, actually a ceramic heating element, and an airflow
8 structure to allow food to be placed in the box and then
9 remain at a desirable temperature. A device like that
10 could be used for delivery of everything from pizzas to
11 Door Dash and things like that.

12 Other products involved heating elements, there
13 was a -- It was called a doggy dryer. It was for -- It
14 could be used with pets and pet shops. So it had an
15 airflow -- It was like a drying system, but also allowed
16 heat to be given to the animal so that -- It wouldn't be
17 like a hairdryer, which would be too hot. It was
18 controlled like that.

19 I was also involved in the analysis of designs
20 of quite a number of products, including barbecue grills
21 that had propane-fired heating elements. There were
22 e-cigarettes that had coiled heating elements. There
23 were -- I'm just going to scroll through down here.
24 Just bear with me please.

1 I already mentioned e-cigarettes. There were
2 barbecue fire pits that are used outdoors. Those were
3 like the Solo Stoves that ported air around the heat
4 generation system, which could be generally wood or
5 charcoal or something like that.

6 Also -- I'll scroll down. And for reference,
7 I'm sorry, I'm going from page 4 to 5. I'm in the
8 consulting arena now. There were also -- I discussed
9 there were attachments for barbecue grills, which
10 involved the design of a device that generated heat in
11 one section of the grill to use a smoker. It provided
12 airflow into the main body of the grill and then over
13 the propane heating elements.

14 Let's see. I think those are the majority of
15 the products. I'll add one other thing, that there were
16 two products in the innovation course that were
17 developed that dealt with heating elements that had to
18 do with a temperature sensor on a griddle that allowed
19 you to monitor the temperature of the griddle so the
20 chef could determine if the griddle was at the proper
21 temperature for either searing or for simmering, et
22 cetera. Another alarm system that would let the
23 operator know if the griddle became too hot and to warn
24 of some other things in a situation.

1 I think those are the majority of the ones
2 that involved products that had to do with heating
3 elements.

4 Q Okay. Stepping back to your work at Remington
5 then, the hairdryers that you worked on, what was their
6 operating temperature?

7 A Oh. Well, the operating temperature of the
8 hairdryer had to be about -- below 160 degrees as not to
9 burn someone. There was variation of that of course.
10 And they had different settings, although the lowest
11 setting I think was -- There was a cool shot setting,
12 which was basically room temperature approximately.
13 Then there's -- Depending on the model, there were low,
14 medium, high settings. But we tried to keep the output
15 air below 160. That's the threshold of pain generally.

16 Q Good to know. For the hair setters, is it
17 similarly the maximum intended operating temperature
18 would be below 160 degrees?

19 A Much below actually. Again, this is going back
20 30 years almost. Hair setters were on the order of 120
21 to 160 as I recall back then.

22 Q And that's Fahrenheit, correct?

23 A Oh, yes. I'm sorry. Yeah, yeah, Fahrenheit.
24 There was a range. Every product had a different range.

1 Q Facial spas would similarly be below 160
2 Fahrenheit for maximum intended operating temperature,
3 right?

4 A Well, they actually dealt with vaporizing oils.
5 So they operated at a higher temperature. That was
6 closer to 180 to 190. And I forget the exact numbers,
7 but it was a higher range.

8 Q Fair to say it was less than 200 degrees
9 Fahrenheit?

10 A Yes, because they didn't want the water boiling
11 temperature to swell. The oil was higher, but they
12 definitely wanted to keep it below. The idea was not to
13 have your face in the oil. You create vapor and that
14 comes up in your face. And, again, I'm going from
15 memory from 20 to 30 years ago, but it was in that
16 range.

17 Q And were the aroma therapy devices similar to
18 facial spas, operational temperatures below 200 degrees
19 Fahrenheit?

20 A I'm sorry, they're the same thing. Facial spa
21 used for aroma therapy.

22 Q With respect to your work at Stanley and the
23 propane-actuated fastening tools, were the tools
24 themselves heated?

1 A Well, they became heated upon use as you can
2 imagine, but the tools were not heated. They were --
3 The combustion of the propane is what generated the
4 energy and that, as a result, heated the unit.

5 Q And do you recall how hot those tools would get
6 in terms of their intended operating temperature?

7 A Well, I do recall the external temperature could
8 not exceed -- It was in the range of, well, about 120
9 degrees, in that range. They didn't want it to get
10 anywhere near the threshold of pain.

11 And, again, there was much variation depending
12 on the operating conditions. If you were using it on a
13 roof, that would be different than if you were using it
14 in the winter in your barn or something like that.

15 Q With respect to your work -- What was the name
16 of the product design course?

17 A It's called Product Development and Innovation.
18 And you're referring to the course where I described
19 there were teams of mechanical engineers and business
20 people, correct?

21 Q Yes. And it was in that course that you
22 developed a food delivery box?

23 A Actually, I think that product, as I think back,
24 that was a few years ago, may have started with the

1 senior design project course. That is a capsule course
2 mechanical engineers take which requires that they find
3 a problem -- Often that one was actually given to us by
4 a sponsor.

5 You'd go through the engineering process to
6 solve the problem and come up with a viable solution.
7 In that case, it was a product, which was the food
8 delivery box. I believe that was in that senior design
9 project course.

10 Q And the food delivery box was intended not to
11 cook food, but to keep it warm during delivery, right?

12 A Correct.

13 Q Do you recall what the maximum intended
14 operating temperature of the food delivery box was?

15 A They were shooting for 100 to 120. It varied as
16 time went on and how long the delivery was and what the
17 ambient conditions were during delivery.

18 Q You also mentioned a doggy dryer. What was the
19 maximum intended operating temperature of the doggy
20 dryer?

21 A As I recall, it was only 80 to a hundred degrees
22 Fahrenheit. It was low.

23 Q Oh, nice for the dogs and the people, right?

24 A You did not want to hurt the dogs.

1 Q In connection with your consulting work, you
2 mentioned work in connection with barbecue grills or
3 attachments for barbecue grills. Is that the same or
4 are there two different matters that you're thinking
5 about?

6 A Well, the specific case that I was retained for
7 as an expert, it was a patent litigation involving, as I
8 recall, Char-Broil. That was attachments to a barbecue
9 grill.

10 The Solo Stove case had to do with those
11 outdoor stoves that were used, among other things, for
12 heat and grilling because you can put a grate over the
13 top of the stove or a plate and you can cook on it.

14 Q So in the Char-Broil case, your work involved
15 stamping or punching of sheet steel, right, for movement
16 of smoke into the grill chamber?

17 A That is right.

18 Q What were the intended operating temperatures of
19 the smoker?

20 A Oh, without going back to my report, I believe
21 that was somewhere around 2017 or so, I don't recall
22 what the temperatures were. I'd have to look at my
23 report and go through all that information.

24 Q Would you agree with me that cooking using smoke

1 is generally performed at lower temperatures than
2 general grilling or griddling of food?

3 A Well, not necessarily. If you're purely
4 smoking, that's a low temperature operation. The idea
5 is to very slowly infuse the flavor. That's why it
6 takes hours. But often the smoke in that device as I
7 recall -- And, I'm sorry, you're talking about just
8 smoking in general?

9 Q Yes, let's start there.

10 A Actually, could you just repeat the question?
11 Let's start from the beginning.

12 Q Well, I think the more pertinent question is the
13 specific device that you were -- performed work with in
14 connection with the Char-Broil litigation or IPR matter,
15 what sort of temperatures were -- do you recall being
16 used around that device?

17 MS. HOROCOFSKY: Objection to form.

18 THE WITNESS: So, again, this goes back seven or
19 eight years now. I don't recall exactly what the
20 temperature was in that device.

21 But I do recall that those kinds of grills
22 would be -- attached a smoker. You could also utilize
23 the smoker just to -- While you're grilling at a normal
24 grilling temperature, you could add some -- a bit of

1 smoke flavor, right? It's akin to taking hickory chips
2 or mesquite and just kind of throwing them -- you can
3 buy them where you can just throw them on your barbecue
4 grill.

5 MR. BRAITHWAITE: Q And the issue --

6 A I'm sorry, I was just going to say but I don't
7 remember the exact temperature in that case.

8 Q And the issue in that case was about the vent
9 that allowed smoke to come into the grill chamber,
10 right?

11 A It had to do with how that would affect the
12 performance of the attachment as the flow went from the
13 attachment into the grill and how it was vented and
14 how -- how the flow could be restricted.

15 Q And that was in 2017; is that right?

16 A Oh --

17 Q I think that's on page 5 of your CV.

18 A Yeah, it must be in the CV here. It would be,
19 yes, 2017, around that timeframe.

20 Q The e-cigarettes that you analyzed in connection
21 with the consulting work, what was their maximum
22 intended operating temperature?

23 A Oh, in that case I don't recall exactly what it
24 was. It was a resistive coil heating element. And

1 there was alleged infringement of the products that had
2 different kinds of heaters. Some had a coil. Some had
3 ceramic heaters. I don't remember the details of that.
4 They were different. I'd have to go back to my
5 documentation to find that out.

6 Q Would those be similar to the facial spas, aroma
7 therapy, it generally would be less than 200 degrees
8 Fahrenheit?

9 A Again, I'd have to go through and see that. I
10 don't recall.

11 Q Okay. What was the issue in connection with
12 your work for Solo Stoves?

13 A As I recall, that was around 20 -- Let me just
14 check. Okay, yeah. It's on the bottom of page 4. I
15 believe that started in '21 -- late 2021 into '22. That
16 was an infringement case where one company was
17 infringing on the patents and I was analyzing the
18 claims, and I was given the devices to test to see if
19 performance was equivalent. It was that kind of thing.

20 Q And what did your testing involve?

21 A Well, first of all, we would actually fire up,
22 no pun intended, the device and I would record how -- I
23 would do smoke studies to try to see how the smoke went
24 into the device, to try to track the airflow, to see if

1 the competing devices were in fact equivalent.

2 And I took measurements, did a physical
3 inspection, a photographic inspection, and do what I
4 usually do in an infringement case where I took the
5 asserted claims and I analyzed them versus the
6 infringing device, that kind of thing.

7 Q And what was the particular issue involved?

8 A Well, that one competitor of Solo was infringing
9 on one of the Solo patents. I'd have to go back and
10 look at the patent. I don't remember all the details.

11 Q Were you involved at all in designing those fire
12 pits that you were analyzing?

13 A No, I was -- My job was to analyze it. I was
14 involved in the design in that respect.

15 Q And then the same question with respect to the
16 Char-Broil grills and smoker combination. Were you
17 involved in actually designing the products at issue in
18 that matter?

19 A Do you mean like was I working for the company
20 and actually designing things like that; is that what
21 you mean?

22 Q Yeah. Did you give input that affected how the
23 end products were actually designed and manufactured?

24 A No. My input was with respect to analyzing the

1 design of the products.

2 Q Let's -- I want to move back up around page 2 of
3 your CV. I just have some general questions about the
4 courses that you taught.

5 Is it correct that you haven't taught courses
6 in thermodynamics?

7 A I don't teach the thermodynamic courses. What I
8 do is -- Mechanical engineering design is so broad. I
9 introduce thermodynamic topics in that course when it's
10 needed. So I teach thermodynamics. I just don't teach
11 an entire thermodynamics course. We have other faculty
12 to do that.

13 Q There's a heat transfer course at your
14 university, right?

15 A There is.

16 Q And have you ever taught that course?

17 A It's the same situation. I teach many topics of
18 heat transfer in my machine design course. Again,
19 because when we're designing mechanical devices, you
20 can't, for example, just ignore what if heat is a factor
21 or what if the mechanical device actually has heat flow.

22 Like an automobile engine is a great example,
23 right, where in a machine design course, in designing
24 components of an automobile engine, you have to

1 understand heat transfer, how the function of the device
2 actually creates different temperature profiles within
3 the engine. But I do not teach the entire heat transfer
4 course.

5 Q In that machine design course what are the
6 considerations, on a broad level, that a mechanical
7 engineer goes through when heat transfer is a potential?

8 A Could you rephrase that? I'm not sure I
9 understand the question.

10 Q Yeah, yeah.

11 MS. HOROCOFSKY: Sorry. Objection to form.

12 MR. BRAITHWAITE: Q That's okay. I'm re-asking
13 it.

14 So when you're dealing with something like a
15 car engine where there's going to be significant heat
16 transfer, what are the things that a mechanical engineer
17 needs to consider? And I mean on a broad level.

18 A Well, first of all --

19 MS. HOROCOFSKY: Objection.

20 THE WITNESS: First of all, a mechanical engineer
21 has to consider the thermal characteristics of the
22 materials involved in the design. The thermal
23 capacitance, the conductance. The convective heat
24 transfer would be important in something like an engine,

1 for example, because it will convect heat away from the
2 source, which in an engine would be the combustion
3 chamber. It could also be the exhaust system. So
4 convection, conduction. In certain instances it could
5 be radiation, if there's radiating heat transfer going
6 on.

7 And the flow in the -- For example, human flow
8 coupled with the heat transfer has to be involved too.
9 A radiator, for example, where a convection --
10 convective heat transfer from a block to the coolant,
11 which is then sent to the radiator, it loses some energy
12 as it does that, and once it hits the radiator, then
13 convection -- forced convection, because you typically
14 have a fan, dissipates the heat flow from the radiator.
15 So there's conduction, convection.

16 There's also, you know, mass analysis that has
17 to be done to perform a heat transfer analysis. In my
18 machine design course we use finite element analysis to
19 numerically calculate the heat transfer out of the
20 mechanical component when heat -- as in an engine, would
21 be important. Does that answer your question?

22 MR. BRAITHWAITE: Q It does. I did some finite
23 element analysis in my own coursework, and I've got some
24 questions about that.

1 So what's involved in a mass analysis?

2 A Well, when I say mass analysis, I'm not talking
3 about a mass flow analysis. I'm talking about taking a
4 look at the bulk mass of a device or a component and
5 using that mass in the geometry in particular to analyze
6 the heat transfer, considering the conductive and the
7 heat capacitance of the material, those kinds of
8 properties in material. That will dictate how much heat
9 it held and how quickly heat will be moved or conducted
10 throughout the component.

11 Q Fair to say that changes in an object's shape
12 will affect how heat is held in the object, right?

13 MS. HOROCOFSKY: Objection to form.

14 THE WITNESS: The shape --

15 MR. BRAITHWAITE: Q Let me back this out and be
16 more simple. If you have a simplistic mass that's
17 either a circle or a square, a sphere or a cube,
18 something like that, a very simple mass, there will be a
19 certain aspect of that mass to hold heat and how heat is
20 dissipated from it. And my question is, will changes to
21 the shape of that mass that's a cube change how heat is
22 dissipated or held in the mass?

23 A It could. It depends on what the changes in the
24 shape are.

1 Q Isn't that why you do the finite element
2 analysis, to account for an object's shape and run an
3 analysis of multiple points in the shape to figure out
4 how the object's going to hold on to heat or lose heat?

5 A I'm sorry, I thought your question was a very
6 simplistic shape. A cube, I wouldn't have to perform a
7 finite element analysis for something like that. But
8 something more complicated you would want the heat
9 distribution. But simple shapes, even plates -- For
10 example, there are plate theories that allows you to
11 hand calculate those kind of issues. That finite
12 element in my experience tends to be used for more
13 complicated geometry.

14 Q And you mentioned in your machine design course
15 dealing with structural members like beams and ribs. Is
16 that something you would use a finite element analysis
17 on?

18 A It depends on the complexity of the design of
19 the beam or the rib. In very simple structures you may
20 not. In more complicated ones you may decide to perform
21 a numerical analysis.

22 Q In your machine design course what specific
23 applications do you address for the structural members
24 you mentioned, beams, ribs, et cetera?

1 A I'm sorry, which specific --

2 Q Applications.

3 A Applications? Oh, well, you could start with
4 trusses. Truss members requiring reinforcement, for
5 example, you may use that. Ductwork, you would use that
6 where ribs would be designed to channel flow. Any
7 number of structural applications.

8 I try to give different projects in different
9 years for a number of reasons. It's more interesting
10 for me and it keeps the students from the previous year
11 from copying the solutions for a project the following
12 year. So over the years I've had many different
13 projects that I'm sure used ribs and beams like that.

14 I teach a mechanics of materials course where
15 they first are introduced to beams, beam failure.
16 That's a sophomore year course. It depends on the
17 project and the year. There are all kinds of
18 situations.

19 Q Throughout the years have any of those projects
20 specifically been grills or griddles in your coursework?

21 A As I recall, there were projects that involved
22 thick plates, and I see no reason why those thick plates
23 couldn't be used, for example, as a grill.

24 Again, I've been there 23 years. I do recall

1 dealing with plates because I remember in the machine
2 shop buying cold rolled steel plates to do these kinds
3 of projects. They would put strain gauges, they would
4 take those plates, they'd make them, and one assignment
5 may be to put strain gauges on them to try to compare
6 the theory with an actual test result.

7 Q So if not grills or griddles, what products did
8 the plates involve?

9 MS. HOROCOFSKY: Objection to form.

10 THE WITNESS: Again, I think some of those plates
11 could have been used for griddles for sure. But other
12 things would be -- We have a -- We're members of the
13 SAE, Society for Automotive Engineering, Baja project,
14 which is like a dune buggy. And Baja requires many
15 things, among which are plates, to shield the underside
16 of the vehicle to protect the operator. And we did an
17 analysis on those plates as well for the vehicle. That
18 one comes to mind.

19 MR. BRAITHWAITE: Q Are there any others that come
20 to mind on the products that were actually addressed in
21 your coursework that used plates?

22 A Well, again, we have a 23-year history. Oh,
23 there was another analysis of a plate that was used as
24 an energy-generating tile.

1 Now, what that is, is the idea was to have a
2 plate that's located on a floor and when people step on
3 it, the small deflector of the plate is used to collect
4 energy, and if you have enough plates, you can actually
5 collect a reasonable amount of energy. That's another
6 one I was involved in.

7 I mean, plates are so common. If I went
8 through my records, I'm sure I could find many more.
9 But those spring to mind because they were either unique
10 or very important to what -- the work we were doing at
11 the university. And, again, those are only -- You were
12 only asking about my university projects, correct?

13 Q Right. All right. So with respect to your
14 university projects and coursework, would you agree with
15 me then that none of the products you actually addressed
16 in your coursework were grills or griddles?

17 A Well, no, I disagree because we spoke earlier of
18 my product development course where I'm trying to teach
19 students the entire process, the same process that would
20 be used if you were going to design and manufacture a
21 griddle, an outdoor griddle to be used outdoors, where
22 we teach them, you know, everything from consumer
23 surveys to ideation, how we keep the consumer in the
24 loop throughout the design process, surveys, the

1 construction of prototypes, testing, design for
2 manufacture.

3 And the two griddle projects I spoke of
4 earlier were the griddle project where they were trying
5 to monitor the temperature of the griddle for proper
6 cooking and food delivery, and the other one was the
7 alarm system for, hey, I overheated this thing. It's a
8 pay attention kind of device.

9 Q Okay. Those were temperature sensors for use in
10 grilling applications?

11 A Yes. And, you know, the heating of the griddle
12 surfaces was obviously key to both of those projects.

13 Q And did the design for the temperature
14 sensors -- Well, let's start with the temperature sensor
15 first and we'll move to the alarm later. Did the design
16 for the temperature sensor involve design of an actual
17 grill or griddle itself?

18 A Yes, it did because we had to select a proper
19 griddle so we could insert thermocouples within it. So
20 they would take as a start an existing griddle and they
21 would design modifications to that so they could insert
22 the thermocouples and perform a thermal analysis so they
23 could actually correlate what was read out on the
24 digital display with the distribution on the griddle

1 itself.

2 It's like taking a -- If I were going to
3 manufacture my own griddle, I'd start with a piece of
4 plate stock, right, so I could find whatever -- someone
5 to design the plate stock and then I would modify that
6 to suit my needs.

7 Q Okay. So then if they started with a
8 pre-existing grill or griddle, do you recall what it
9 was?

10 A Oh, that was a griddle for sure. And I forget
11 where -- But the base of the product was -- they bought.

12 Q Okay.

13 A Because we don't have facilities --

14 Q How did they modify --

15 A I'm sorry. We don't have facilities to stamp
16 and do the forging of plates like that. And then they
17 would modify that.

18 Q Okay. And what modifications did the students
19 make?

20 A Again, they would insert -- They would -- They
21 would have drilled holes depending on the depth or
22 counterbore surfaces so they could put a thermocouple
23 in. And they modified -- I'm trying to recall. Then
24 they would have to design the periphery of the griddle

1 so that they could insert the visual display. That was
2 on one of them.

3 The other one -- And that was probably around
4 2014-ish. The other one also had a pressure sensor to
5 determine if food was taken off the griddle, if someone
6 left the griddle on -- Which is never good because you
7 can get warping when that happens. You overheat it.
8 They did quite a few modifications on that. I don't
9 recall exactly what all the specifics are at this point.
10 It's going on 11 years ago now.

11 Q Was it the goal of the students in developing
12 the temperature sensor or alarm system to prevent
13 warping in the griddle?

14 A Yes, particularly with the alarm sensor. The
15 idea was to prevent warping through overheating.

16 Q Did the students' work involve anything -- any
17 mechanical reinforcement to prevent warping in the
18 griddle or was it limited to detection of the conditions
19 under which warping might occur?

20 A If I recall -- Again, this was quite a while
21 ago. The additions were made so that they could mount
22 some of these devices and the pressure sensors within
23 the -- some electronics that have to be insulated.

24 So they had to add things for mounting that

1 stiffened despite the nature of adding -- Actually, it
2 was later. It was like -- It was like a rib-like
3 structure they added on the top of it in order to modify
4 that. And that certainly would have increased the
5 stiffness.

6 Q Can you describe the rib-like structure that
7 they added on the top?

8 A Oh, it was basically a piece of sheet metal that
9 was bent to match the contour of the grill. I seem to
10 recall it had two prototypes. So it was a piece of
11 sheet metal.

12 Q And the piece of sheet metal was laid flat on
13 top of the griddle surface?

14 A No, it was normal -- somewhat lower to the
15 surface because you had to monitor it. You know, if it
16 were flat -- See, you had to have a surface you can put
17 electronics behind it to protect it.

18 Q So the sheet metal was mounted on top of the
19 griddle surface or diagonal to the griddle surface?

20 A I don't recall if it was mounted on top. I
21 believe it was on top. I don't recall exactly how they
22 did it. But it was on an edge. Obviously you couldn't
23 put it in the middle of the cooking surface. It was on
24 the periphery somewhere.

1 Q How did that sheet metal on the griddle
2 reinforce the griddle surface?

3 MS. HOROCOFSKY: Objection to form.

4 THE WITNESS: The position -- And, again, we didn't
5 test to see if it reinforced. The fact of the design
6 tells me that it must have reinforced it because of the
7 way it was connected, again, I believe to the top. But
8 it increases the area of moment of inertia so that it's
9 more resistant to bending in that area.

10 MR. BRAITHWAITE: Q All right. Can you give me
11 any description of the magnitude by which its moment of
12 inertia was increased or how much its resistance to
13 warping was increased by a piece of sheet metal?

14 MS. HOROCOFSKY: Objection, form.

15 THE WITNESS: And I don't believe I said sheet
16 metal.

17 MR. BRAITHWAITE: Q Okay.

18 A I believe it was bent bar stock. But, again,
19 this is a long time ago. I don't recall the design
20 calculations. I just don't recall sitting here without
21 trying to go back through the documentation, if in fact
22 I still have it.

23 Q I'm going to draw an objection here, but it's
24 just for fun. Was it on the order of magnitude like a

1 drop of water raises the level of the ocean or more like
2 Jehovah causing the rains to come and flood the entire
3 Earth, sort of raising of the ocean?

4 MS. HOROCOFSKY: Objection.

5 MR. LAGERWALL: Q How much stiffening are we
6 talking about, Dr. Vallee?

7 A Again, I don't recall without going through the
8 documentation and the design file.

9 Q Well, you said you didn't test the level of
10 stiffening that this bent bar -- It was bent bar stock
11 as far as you're recalling right now?

12 A Yes, something like that.

13 Q And then you didn't test how much that added to
14 warp resistance, right?

15 A Well, we tested the device and found out, i.e.,
16 that it didn't warp. So that was kind of a go/no-go
17 system. You don't really need to quantify how much it
18 will strengthen so long as you know it strengthens
19 enough.

20 Q Well, how do you know what enough is?

21 A Under the highest heat we tested it, it didn't
22 warp. So that was enough.

23 See, we had to test the device to make sure we
24 didn't cook the electronics that were connected. It was

1 complicated to insulate the sensors in a device used for
2 grilling. That was an important part of that project.

3 Q At the highest temperature that you mentioned
4 would the griddle have warped without the addition of
5 the bent bar?

6 MS. HOROCOFSKY: Objection, form.

7 THE WITNESS: I don't recall if we tried to test it
8 without it. I don't recall sitting here whether it
9 would have or not or even if we tested it without. I
10 just don't recall.

11 MR. BRAITHWAITE: Q And then you don't have any
12 recollection of whether the addition of the bar allowed
13 the griddle to get 10 degrees hotter without warping or
14 a hundred degrees hotter without warping?

15 A No. Again, it was close to 11 years ago. I
16 just don't remember sitting here.

17 Q But you know it did something?

18 A Well, I know it did nothing bad.

19 Q All right. Did any of the griddles that you
20 worked with, did any of them have baffles underneath?

21 A The two products I just discussed did not. I
22 believe in the Char-Broil case there were baffles in
23 that device. Again, I'd have to go back and look. But
24 I think -- I do recall baffling in those devices because

1 airflow was an important part of that case.

2 Q Do you have an estimate of how thick the baffles
3 were in the Char-Broil grill?

4 A No. Again, I'd have to go back seven or eight
5 years. I'd have to review that file. I don't recall.
6 I believe it was sheet metal. That's all I can say.

7 Q When you refer to sheet metal, what's the
8 typical thickness of sheet metal that you're referring
9 to?

10 MS. HOROCOFSKY: Objection, form.

11 THE WITNESS: Again, there's no typical. There's
12 all kinds. So, again, I don't recall what thickness it
13 would be or what would be typical. I'd have to go back
14 and take a look at all the documentation for that case.

15 MR. BRAITHWAITE: Q I'll mark our next document.
16 This we'll mark as Deposition Exhibit No. 2. This was
17 submitted as Exhibit 1002 in connection with the IPR.
18 And I'll just represent to you it's a copy of your
19 declaration submitted with the petition for IPR.

20 (Document marked as Deposition
21 Exhibit 2 for identification.)

22 Q Do you recognize this as a copy of your
23 declaration, Dr. Vallee?

24 A Let me just take a quick scan here. I'll just

1 quickly compare it to the hard copy to make sure we're
2 all on the same page. Yes, this is my declaration.

3 Q All right. I'm turning to page 8 of your
4 declaration. The heading at the top says Materials
5 Reviewed. Can you let me know when you're there.

6 A Okay. I am on page 8.

7 Q Your Materials Reviewed table, starting on page
8 8, flows over to page 9.

9 A It does?

10 Q Is that a complete list of the materials you
11 reviewed and considered for this matter?

12 A Yes, this is a complete list as far as I can
13 tell of the materials reviewed that helped me form my
14 opinions.

15 Q At the top of page 9 there's reference to
16 Shigley's Mechanical Engineering, 10th Edition.

17 A I see that.

18 Q Are you familiar with that text?

19 A That would be Exhibit 18 -- 1018, correct?

20 Q Yes.

21 A Okay.

22 Q Are you familiar with Shigley's Mechanical
23 Engineering Design?

24 A I am.

1 Q Do you use that text in your coursework?

2 A Among other things, yes. That's our primary
3 text.

4 Q Is that a primary text for many mechanical
5 engineering courses at universities?

6 A Well, it was actually back in 1985, when I took
7 the course, we used Shigley's Mechanical Engineering
8 Design. And I know of a number of other universities
9 that use it. It's one of the standard texts for machine
10 design.

11 Q Okay. Any reason to distrust what Shigley's
12 Mechanical Engineering Design teaches?

13 A To distrust it?

14 Q Yes.

15 A There could have been some typos that I found
16 over the years. I think the answer to that is no, we
17 trust Shigley's.

18 Q Also down listed as Exhibit 1023 is a reference
19 to the name Callister and a text entitled Fundamentals
20 of Materials Science and Engineering, an Integrated
21 Approach. Are you familiar with that text?

22 A I am.

23 Q Is that one you use in your coursework?

24 A Yes, I use that one when I taught -- when I

1 teach materials science.

2 Q Any reason to distrust what's taught by
3 Fundamentals of Materials Science and Engineering, an
4 Integrated Approach?

5 A Well, again, notwithstanding any typos and
6 things that may be on an errata some place, no, we trust
7 Callister.

8 Q Let's go to paragraph 39 of your declaration.

9 A Okay.

10 Q It starts on page 18 and flows over on to page
11 19. If you could review that and let me know when
12 you're done.

13 A Okay. This is my section regarding State of the
14 Art. Okay. Just bear with me please. I'm sorry, was
15 it only paragraph 39 you wanted me to read?

16 Q Please feel free to read more or less if you
17 want. I just want to ask a particular question about
18 some of the text in paragraph 39.

19 Specifically you make reference to a griddle
20 must be easy to manufacture to reduce fabrication costs.
21 What do you mean by that?

22 A Well, a griddle for resale, I'm sure you'd want
23 to minimize the cost. What I mean by that is that it
24 needs to be straightforward with manufacturers such that

1 the process is straightforward and not prone to errors.
2 It could be manufactured in a minimal number of steps to
3 afford you the proper tolerances you want in or that is
4 required by the design.

5 Q Does the ease of manufacturing always reduce
6 fabrication costs?

7 A It typically does because something that's
8 easier to make is typically less expensive.

9 Q And why is that a mandatory requirement in your
10 opinion?

11 A I'm sorry, the requirement being ease of
12 manufacturing?

13 Q Yes.

14 A Well, as I stated earlier, ease of manufacturing
15 is required so that you can minimize the cost of the
16 component to make it more favorably looked upon in the
17 competitive market. Keep costs down.

18 Q Okay.

19 A And I'll add just one thing to that. And ease
20 of manufacturing, which still provides the proper amount
21 of tolerance, you know, allows the component to meet the
22 tolerance. If it's easy to make and it's easier to have
23 those tolerances, you also reduce the inspection costs
24 and things like that because you're more capable. The

1 physical process control is tighter. So that reduces
2 the cost of fabrication. Okay, that's it.

3 Q And how does a designer go about evaluating
4 whether cost reductions are in line with the product's
5 tolerances?

6 A Typically what's done in a manufacturing
7 environment is you would select the manufacturing
8 process and you would use that process to create a
9 sample, a pilot run, of a component. You would do a
10 statistical process capability study and you would
11 evaluate how that process allowed you to fabricate the
12 sample, the run, within the specified tolerances.

13 And typically you start with a certain setup
14 for manufacturing. You have to adjust it to tune the
15 dimensions into -- Typically people shoot for the
16 nominal of most dimensions, but depending on what it is,
17 if it's material safe or not.

18 So you do a production run. You adjust so you
19 think you have your parameters correctly. You run a
20 lot, which could be typically 100 to 200 pieces, and
21 then you would evaluate -- you'd measure all the
22 critical dimensions. Actually, on a pilot run you would
23 measure all dimensions and determine if your process is
24 capable.

1 Q I'm going to move back to your work with finite
2 element analysis. Can you give me any description of
3 when changes to the shape of a product would counsel you
4 to perform a finite element analysis versus when it
5 wouldn't matter?

6 A You'd have to give me more specifics on what
7 product. Every product will be a little different. And
8 any changes that would constitute performing a numerical
9 analysis are really product dependent.

10 Q In your coursework with the food delivery box,
11 did you or your students perform any finite element
12 analysis for that?

13 A Oh, I'm trying to recall if there were any
14 components that required that. I don't recall sitting
15 here. I'd have to go through the final reports and
16 design files to determine if we did that. Part of that
17 system was a mounting system as well. But I don't
18 recall sitting here. So many projects over the years.

19 Q How about for the temperature sensor? Do you
20 recall specifically whether there was any finite element
21 analysis in connection with the work on the temperature
22 sensor for a griddle?

23 A You mean a griddle that had an integrated
24 temperature display that allowed you to monitor when the

1 griddle was hot enough to cook different foods on that
2 product?

3 Q Yes.

4 A I'm trying to recall. I'd have to look at the
5 design files. Typically a semester I run five or six of
6 these projects, and I've been doing it since 2009. So
7 there are a lot of projects. I'm trying to recall all
8 the specific details and it's very difficult. And I
9 don't recall sitting here. We may have.

10 Q For example, would a finite element analysis aid
11 in telling you how much of the addition of a bar would
12 help prevent warping on a griddle surface?

13 MS. HOROCOFSKY: Objection, form.

14 THE WITNESS: I'm sorry, could you -- One more time
15 please.

16 MR. BRAITHWAITE: Q Yeah. And I think previously
17 we were talking about in connection with the temperature
18 display there was some component mounted onto a griddle
19 surface, whether it was a bar or sheet metal or
20 something like that, that, if I understood you
21 correctly, you say added to the warp resistance of the
22 griddle surface. Do I have that right?

23 A Something like that, yeah.

24 Q Would a finite element analysis help inform you

1 to the magnitude of additional warp resistance added by
2 the bar?

3 A Depending on the design, performing a finite
4 element analysis -- and depending on which analysis you
5 were to perform, that could tell you that. It would
6 typically be a coupled thermal stress analysis.

7 Q What are the steps involved in a coupled thermal
8 stress analysis?

9 A There are a number of steps. They're more
10 typical than the standard analysis. Most finite element
11 analyses are stress analyses. So as with any -- I mean,
12 do you want me to try to list every step involved? It
13 could take quite a while.

14 Q Yeah. Well, yeah, I want to know what the
15 considerations are. If you have two pieces of material
16 that you're joining together and you want to perform a
17 thermal stress analysis, what factors are you taking
18 into account?

19 A Many factors. First of all, we assess what is
20 the goal of the analysis, then how accurately do we need
21 the results. That will dictate how we import a solid
22 model typically.

23 And, again, many of these things you don't need
24 to do a finite element analysis. But if you're asking

1 me if we were to choose to perform one, you'd have to
2 set out what your goals and constraints of the analysis
3 were. How accurate, what output do you want from the
4 analysis, what input into the model.

5 And when I say model, I mean a finite element
6 model, which includes the geometry, material property,
7 both the elastic and thermal, the heat transfer
8 coefficient, which is a heat transfer property that's
9 surrounding the ambient condition. You have to
10 determine all those.

11 So it really depends on the analysis that you
12 want to perform. To say just generally you do one, two,
13 three, four, five, that wouldn't be accurate. You'd
14 really have to give me a case, for example, that you
15 want me to comment on.

16 Q But at least you would consider the geometry of
17 the joined system, correct?

18 A Well, there are certain analyses where we
19 actually did what are called infinite elements. What
20 that means is we only need to analyze some portion of
21 the total component. And we used -- There would be
22 differing elements or we used appropriate boundary
23 conditions on the model so that the analysis would not
24 be affected by the lack of the complete geometry.

1 So if I wanted to analyze a hundred foot beam
2 with a diameter of one inch, for example, a circular
3 beam, I would not try to include that whole beam for a
4 number of reasons. I wouldn't be able to fit it on the
5 screen. And numerically you can do all this calculation
6 and have all this overhead when really all you may be
7 interested in is a hole in the center of that rock. So
8 we use those kinds of techniques to focus in on what we
9 need.

10 Again, this is very dependent on exactly what
11 the goal of the analysis is and exactly what the
12 component is that we're dealing with.

13 MR. BRAITHWAITE: Understood. Now might be a good
14 time for a quick five-minute break, if that's okay with
15 you.

16 THE WITNESS: Sure.

17 MR. BRAITHWAITE: Let's go off the record.

18 (Recess was taken.)

19 MR. BRAITHWAITE: Q Back on the record.

20 Okay. I'm going to mark our next document here
21 Deposition Exhibit No. 3. This is United States Patent
22 3,747,509, Hinkle. And it was submitted by LoCo Cookers
23 as Exhibit 1013 in the IPR petition.

24 (Document marked as Deposition

1 Exhibit 3 for identification.)

2 Q Do you have a copy of that in front of you,
3 whether the hard copy or the electronic copy?

4 A Yeah, I'm going to refer to this electronic
5 copy. So I have it in front of me, the '509 patent.

6 Q Yes. And take a moment, if you need to, to flip
7 through the pages, but do you recognize this as one of
8 the patents you considered in forming your opinions
9 expressed in the declaration?

10 A That is correct.

11 Q And I'll -- The '509 patent here marked as
12 Deposition Exhibit 3 was addressing the addition of ribs
13 to a griddle surface to help prevent warping; is that
14 right?

15 A Let me just quickly review this. It's been a
16 while since I've seen this.

17 Q Maybe I can also help walk through it a little
18 bit step by step.

19 Moving to the text of the '509 patent, in
20 column 1, around the paragraph that's on line No. 10 to
21 15, it states, another problem is the griddle tends to
22 warp due to heating. Warpage problem is particularly
23 troublesome with large griddles.

24 A Okay. Bear with me just a second --

1 Q No problem.

2 A -- so I can review this section. Okay. I'm
3 good.

4 Q All right. I want to look at column 3 and ask
5 you about some of these statements made in this patent.

6 There's a paragraph at approximately line 8 to
7 line 18. Maybe you can read that paragraph. Let me
8 know when you're done.

9 A I'll just read a little before so I can get some
10 context.

11 Q Sure.

12 A If you'll allow me, what I like to do is when I
13 go through a patent, I have the figures in front of me
14 on one side and the text on the other so I don't have to
15 scroll back and forth. I'll pull out the hard copy.

16 And you wanted me to focus on column 3,
17 beginning with line 8, correct?

18 Q The paragraph 8 to 18, I have some questions
19 about that. If you need to look at other portions for
20 context, that's fine by me.

21 A Okay. I'll just read through this paragraph
22 here. Okay, all set. Thank you.

23 Q The '509 patent, Hinkle, talks about using ribs
24 to distribute heat around the griddle plate, right?

1 A Correct.

2 Q And that the system of ribs also serves to
3 stiffen the griddle plate against warping or bending?

4 A Correct.

5 Q And it talks about using the ribs in a
6 transverse pattern. And my question is, on -- does
7 figure 3 of the '509 patent show the ribs in the
8 transverse pattern?

9 A Figure 3 shows the underside. This is what it's
10 describing as the transverse pattern.

11 Q Why would you put ribs in a transverse pattern
12 to strengthen or prevent warping of the griddle plate?

13 A As opposed to any other pattern?

14 Q Yeah. I guess, for example, why use a
15 transverse pattern to strengthen a griddle plate against
16 warping as opposed to just putting ribs in parallel?

17 A Well, if I read Hinkle correctly, it's trying
18 to -- I'm at column 3, line 15. Hinkle is trying to
19 stiffen the bottom wall against bending in both
20 direction. That's 23 and 25.

21 So that tells me he's trying to stiffen in two
22 directions. If I'm looking at this as a two-dimensional
23 figure, and we'll let the X axis be horizontal for
24 right, Y vertical to the left, he's trying to stiffen in

1 both the X and the Y direction.

2 Q Okay. And to stiffen in both directions, you
3 would use ribs in the grid pattern?

4 A Well, that's one way of doing it. You could,
5 yeah.

6 Q And ribs only in one direction would only
7 stiffen in one direction; is that right?

8 A In his description, with the ribs that he
9 employs for are particularly stiffened. If he only had
10 the ribs 23, he would only reduce bending along --
11 Bending movement is usually you use the right hand more.
12 So you curl your fingers in the direction of bending
13 like this. So those ribs prevent or lessen bending
14 about the X, whereas ribs 25 would lessen bending about
15 the -- of a Y.

16 Q In order to have a stiffening effect, how deep
17 do ribs need to be on a griddle plate? Or, in other
18 words -- Let me restate that whole thing.

19 On a -- And you can use Hinkle or not, but on a
20 griddle plate, if you're using ribs to stiffen the
21 griddle plate, how far off of the griddle plate do they
22 need to extend to have that stiffening effect?

23 A What exactly do you mean by how far off? You
24 mean in which direction, for example?

1 Q Yeah. So in figure 3, and we're looking at the
2 underside of a griddle plate, and I guess if we're
3 talking about the Z axis going straight through the
4 page, so it would be extending off of the page, how far
5 in the Z direction would those ribs need to extend off
6 the griddle plate in order to have a stiffening effect?

7 A Well, you'd need to know the geometry of the
8 plate, the thickness, the height of the ribs. But then
9 you have to quantify exactly what do you mean by
10 stiffening effect. You know, we have to decide what a
11 stiffening effect is. So you'd have to give me more
12 detail on the geometry before I could really answer that
13 question.

14 Q You'd need all those parameters to figure that
15 out?

16 A Yeah. Just looking at this figure with no
17 geometry, without knowing the depth or anything like
18 that, is -- Before I would give an answer to a question
19 like that I'd need to know this information.

20 Q Okay. Maybe I can say it this way. If the
21 griddle plate itself was an inch thick, would there be
22 an appreciable difference between ribs that extended
23 below the griddle plate one inch as opposed to four
24 inches?

1 A Well, again, you'd have to define what the term
2 appreciable means, and then I'd need to do a
3 calculation. You know, I'd have to find -- I'd have to
4 go to the plate theory and I'd have to do the entire
5 calculation to figure that out.

6 Q Would it be correct to describe the ribs in the
7 Hinkle patent on figure 3 as baffles underneath the
8 griddle plate?

9 A Well, I'd have to reread Hinkle to answer that
10 question in view of Hinkle. But I don't believe he uses
11 the term baffle if I recall.

12 Q Maybe that's another way to say it. At least as
13 to your memory, the Hinkle patent does not describe the
14 ribs as baffles, right?

15 A Hey, does this Veritext allow you to search? I
16 could simply search for the word baffle. I don't know
17 if you could do that. I'm afraid I might -- something
18 may explode if I try.

19 Q Oh, I don't think it will be explode. This is a
20 device intended for attorneys. We're not very good at
21 anything. But I am not sure how to search within the
22 document.

23 All right. But at least to the best of your
24 knowledge, without fully reading Hinkle here today,

1 you're not aware of Hinkle talking about baffles used to
2 strengthen its griddle plate?

3 A Again, I'd have to read it all. I don't recall.

4 Q Okay. Let's turn to our next document.

5 A I can put Hinkle away?

6 Q Yes.

7 A Because I'm afraid if I don't, it will -- who
8 knows where it will end up. Okay.

9 Q I've marked the next document as Deposition
10 Exhibit 4. This was submitted by LoCo Cookers as
11 Exhibit 1005 in connection with the IPR petition. This
12 is United States Patent 6,389,960 to Williams.

13 (Document marked as Deposition
14 Exhibit 4 for identification.)

15 Q Let me know when you have that in front of you.

16 A I'll use the same approach. I'll have the text
17 on the screen, but I'll have the hard copy of the patent
18 in front of me. Okay. I'm ready.

19 Q Do you agree with me that the teachings of the
20 Williams patent are to create a zone of relatively
21 stagnant flow beneath a griddle surface in order to more
22 efficiently heat it?

23 A And are you citing a portion of the patent or --

24 Q I'm just asking about what your memory and

1 understanding of Williams is.

2 A Okay. Just bear with me.

3 Q In column 1 there's a paragraph, Summary of the
4 Invention, that might help.

5 A Well, I don't see the word stagnant unless I
6 missed it.

7 Q You probably did. It's on line 37 to be exact.

8 A Did I miss it? Oh, I'm sorry.

9 Q That's okay.

10 A Oh, okay. I'm reading from line 35. The upper
11 zones have sidewalls and downwardly extending rear
12 flow-restricting walls or dams that cooperate to create
13 a zone of relatively stagnant flow. Yes, relatively
14 stagnant flow.

15 Q Right. And it's --

16 A I'm sorry, your question was?

17 Q My question was, it's generally the purpose of
18 Williams to reduce airflow in a section below the
19 griddle to more efficiently heat the griddle surface,
20 right?

21 A Well, I think when you read the patent, what
22 he's trying to do is in a normal grill, without any of
23 these features, they are just a hole, and he's trying to
24 for a longer time hold the heated air in one zone and

1 coax it toward the back to exit. So that's why I think
2 he says relatively stagnant. He's trying to hold air on
3 a particular temperature or zone before it escapes.

4 Q And what do you understand by the word
5 relatively stagnant?

6 A Not completely stagnant. It's allowed to flow.

7 Q And would you agree that while it is allowed to
8 flow, the general teachings of Williams are to slow or
9 prevent that flow to a degree?

10 A I think Williams is more aimed at dividing up
11 the other side, dividing up the regions around the
12 burners into partitioned zones using ribs so that the
13 air is not -- can't move so much left to right, from
14 zone to zone, as it can from front to back. That's what
15 I think that is referring to.

16 Q And is that --

17 A And that -- Oh, I'm sorry, I paused.

18 Q No, no, please continue. Sorry.

19 A And that may slow flow. Because the flow can't
20 go side to side, it could flow slower. But I think the
21 main intent of Williams is to create these heat zones to
22 allow individual portions of the griddle surface to be
23 heated at different temperatures if desired. And
24 slowing of the flow may be a byproduct of that.

1 So it's relatively stagnant. It's not
2 designed just to hold the air and not let it move
3 anywhere because the air would cool, it would drop, and
4 it wouldn't do any -- it wouldn't improve the
5 performance of what he's trying to create here.

6 Q Let me ask you a couple of questions about that.
7 Turning to figure 2, there's elements called sidewalls
8 and they're labeled with the numerals 44, right?

9 A Correct.

10 Q Is your understanding that there are gaps
11 between those sidewalls that would allow, for example,
12 air to flow from left to the center or the center to the
13 right and vice versa?

14 A You mean between heating zones or just within a
15 zone?

16 Q Yeah, I'm looking at the depiction in figure 2.
17 Do you see the elements labeled with the numerals 44?

18 A I do.

19 Q Are those elements drawn to create a complete
20 gapless wall in between the left zone and the center
21 zone or is there -- is it your understanding that there
22 are gaps in that wall between the left zone and the
23 center?

24 A Gaps in the wall? My understanding is that

1 these longitudinal ribs 44, I'll call them that, as I do
2 in my report, substantially prevent air from moving
3 around 44 into another compartment. I believe he
4 doesn't say anything about any gaps that may exist as I
5 recall, because the intent is to channel the flow and
6 keep it within the space -- the volume between rib 44,
7 heater 44, to keep it in that zone. And I don't believe
8 he discusses the gaps.

9 Q And you called them longitudinal ribs. You
10 would agree with me that Williams doesn't call them
11 longitudinal ribs, right?

12 A Well, I believe he just used the term -- What
13 did he call those? 44. Sidewalls, yes.

14 Q And my question is, you agree that Williams does
15 not refer to the sidewalls as ribs, right?

16 A He calls them sidewalls. But as I look at the
17 patent, to me, they're ribs.

18 Q And the front dam wall and the rear dam wall are
19 not referred to as ribs, right?

20 A Correct. But, I mean, I don't define -- A rib,
21 to me, in the context of this patent where your intent
22 is to channel a flow is the part of the structure that
23 basically acts as a boundary, okay, like a duct almost.
24 It forms part of a duct. And when I look at 44, 42, and

1 even 46, to me, those would be considered ribs.

2 Q All right. And those -- You said the front dam
3 wall, the rear dam wall, the sidewalls are meant to
4 channel flow and be part of a duct. Did I understand
5 that right?

6 A I used the term duct. They're really to
7 partition out the heat, to separate, you know, those
8 from each other and from -- in the case of a front dam,
9 to keep it from passing through the front toward the
10 upper portion.

11 Q You say that those are ribs to you. Why?

12 A I believe I just explained that, this context of
13 rib. To me, a rib is just -- You know, I read the word
14 rib in the context of Williams and, you know, the '473
15 patent where a rib is basically a boundary that defines
16 the features that are in both the '473 patent and the
17 Williams patent. And I discuss this in my report when
18 I'm talking about -- Let's see. Bear with me for a
19 second.

20 I'm going to refer to my opening report. And I
21 discuss this -- -- And, again, this discussion, for
22 example, in paragraph 68, which is on page 34 -- I'm
23 sorry, can you still hear me when I'm looking in this
24 direction?

1 Q I can. Yes, I can.

2 A More importantly, can our court reporter? She's
3 nodding yes. Okay.

4 Yeah, I discuss that beginning on 68 with the
5 illustration of where the front rib is. That's my
6 figure 2 on page 35. And this is where I discuss where
7 it acts as a rib. So, I'm sorry, your original question
8 was?

9 Q Why you call the sidewalls and dams ribs.

10 MS. HOROCOFSKY: Objection, asked and answered.

11 THE WITNESS: Again, a rib to me in the context of
12 these patents is like a partition or a boundary that
13 either holds, channels, or creates one of the heat
14 zones. And when I look at Williams, I look at that and
15 say, well, yeah, that's exactly what items 44, the
16 sidewalls and the front rib dams, do.

17 MR. BRAITHWAITE: Q Okay. You were looking at
18 your declaration there. Let's turn to page 46.

19 A Okay. I'm there.

20 Q If I'm understanding paragraph 87, you say that
21 the weight of the griddle plate -- Well, let's back up.
22 The sidewalls in Williams are not integrally formed with
23 the griddle plate, right?

24 A Just bear with me. Let me get a little context

1 here from this section. This relates to claim 10,
2 element 7, wherein the front rib and the multiple
3 lateral ribs are integrally formed with the underside of
4 the surface. Okay. I'll just give this a quick read
5 please.

6 Q Yes.

7 A I'm on paragraph 85. So Williams defines at
8 least the front dam and rear dam, which I'm calling
9 ribs, as downwardly extending. So that indicates to me
10 that they're integral too. So they have to extend down
11 from it.

12 And if you look at figure 2, it looks like
13 rule 12, that plate, is -- because of that reason, it
14 looks like this is an exploded view just so you can see
15 the internals. So that tells me the front and rear dam
16 would be fixed. And, to me, there's no reason why the
17 sidewalls or the longitudinal ribs wouldn't be fixed as
18 well. So that's what I'm discussing. And I cite the
19 appropriate places in there that lead me to that
20 conclusion.

21 So I say in paragraph 86, in addition to
22 Williams himself suggesting the front dam and sidewalls
23 may be integrally formed, that's what I've just
24 discussed, a POSITA would be motivated to integrally

1 form the ribs with the underside of the griddle surface
2 and I go on. Now your question was aimed at paragraph
3 87 I believe?

4 Q Yeah.

5 A Okay.

6 Q Do you remember the question though?

7 A Well, so I don't have to ask you again, I'll
8 read the paragraph again and then I'll ask you what the
9 question is. Sorry about that.

10 Q Okay.

11 A Okay. I'm sorry. So your question was?

12 Q I'm not even sure I can remember it. So let's
13 start with -- Paragraph 37 talks about the griddle
14 plate --

15 A 37?

16 Q 87 talks about the griddle plate sitting on top
17 of the sidewalls such that they're thermally coupled,
18 right?

19 A Okay, yes.

20 Q And to be thermally coupled they just need to
21 touch; is that correct?

22 A They have to be in contact. That is correct.
23 That's what I said in paragraph 87.

24 So what I'm saying here in 87 is I read

1 Williams and say they're integrally formed at the
2 bottom. Okay? Even if they weren't, here's one reason
3 why you would want it to be, right? So you make sure
4 that you had intimate contact. At the bottom of
5 paragraph 87, the last sentence says, to ensure the
6 maximum thermal coupling between the griddle and
7 sidewalls, a POSITA would look to integrate the
8 sidewalls to the underside of the griddle.

9 So I think when I read Williams, I think they
10 are integrated. But even if you were to think they
11 weren't, I would certainly want to make sure they were
12 for -- this is the first reason, and then I go on in
13 paragraph 88, et cetera, to give you the other reason.

14 Q Would further thermocoupling the plate to the
15 sidewalls increase heat transfer between regions?

16 A So you're basically asking would increasing the
17 contact do that?

18 Q Yes.

19 A I'd have to think about that, because the
20 thermocoupling is intended to keep the most uniform
21 distribution between components you can. And the
22 coupling would prevent gases from flowing over the ribs.
23 I'd have to give that some further thought and take a
24 look at how that might be.

1 Q What would you need to consider in determining
2 whether more efficiently thermocoupling the griddle to
3 the sidewalls would increase heat transfer between the
4 regions?

5 A Well, I don't think you want to increase heat
6 transfer between the -- I'm sorry, by regions, do you
7 mean regions of the griddle or regions -- What regions
8 do you mean?

9 Q Let's take a look back at figure 2 of Williams.
10 Would you agree with me that there are depicted in
11 figure 2 gaps between -- or gaps in the sidewall that
12 separate the left region from the center region?

13 A Do we have the ability to draw on this, move the
14 cursor around? I don't know if you have to --

15 Q Yeah, I think on the screen you've got a
16 highlighting function. It's probably on the top right.

17 A I don't see the widgets here. I don't see a
18 widget or anything. I have a Zoom. Well, okay. I
19 think I can explain it in words okay if I can't get it.

20 Q Here we go. I think I'm --

21 A Oh, you have to give me permission.

22 Q That's probably the case. We're creating an
23 annotated version that we'll mark as Exhibit 5.

24 (Document marked as Deposition

1 Exhibit 5 for identification.)

2 A Okay. Now I have a tool. I think you may have
3 to scroll. I can't scroll up.

4 Okay. So there's figure 2. So I'm going to
5 zoom down here so we can see more of it. Okay. Now if
6 you give me -- Oh, I think we solved the problem. So
7 how do I want to do this? I'm just going to -- Okay.
8 That wall where I drew the red line, can you see that?

9 Q Yes.

10 A Okay. So we're talking about that wall,
11 correct?

12 Q Yes.

13 A And your question referred to basically gaps in
14 that wall?

15 Q Correct, gaps in the wall between the left side
16 of the griddle and the center of the griddle.

17 A So the left side is -- Can you see my cursor, my
18 little pen?

19 Q I cannot see your cursor. I can see what you
20 draw.

21 A So here's the -- That line is the left side and
22 here's the center side, correct?

23 Q And you've drawn a line above the numeral 24 and
24 you've drawn a line in between the U-shaped burner,

1 right?

2 A Right. So going from region 24 to region 22 is
3 what you're saying?

4 Q Yes.

5 A Okay. So the front -- I'll draw a line next to
6 it right there.

7 MS. HOROCOFSKY: I'm sorry, I'm going to object to
8 the annotations here. If we can try to stick with the
9 numbers, I think that would be a little more clear.
10 Sorry, Glenn, it's kind of difficult to follow on our
11 end.

12 THE WITNESS: Okay. I'm fine with that.

13 MR. BRAITHWAITE: Q However you need to explain
14 it, Dr. Vallee.

15 A Okay. So we have 44, that lower sidewall, and
16 in the front where I drew the red line of that is -- to
17 me, that looks like a termination of the 90-degree bend
18 in the sidewall.

19 I happen to have the page from my report, so I
20 can actually put it horizontally so I can -- I don't
21 have to turn my head.

22 Q Okay.

23 A So if you bear with me, I'm going to talk about
24 the one that's in the normal orientation. Okay? You

1 may be able to rotate that on the screen.

2 Q You can. And there's a page in the upper left,
3 the page icon with the little gear in it that allows you
4 to do that. But, in any event.

5 A Okay. We don't need it.

6 Q Yeah, if you can describe it, great.

7 A It looks like that rib 44 has a 90-degree bend
8 in it. And I believe that 90-degree bend is there to
9 act as a land surface for the griddle top to sit on it.
10 So you can weld it there or attach it, however you'd
11 like.

12 And it looks to me like the front there, it's
13 just a termination of that bend, not necessarily a gap
14 per se. It's very difficult to read in the figure and
15 he doesn't really talk about it as I recall in the
16 patent. So I'm really not sure what that is.

17 Q Okay. You don't have any understanding of what
18 is below the 90-degree bend, whether it has any depth at
19 all? You have no understanding yourself; is that right?

20 A Correct. I don't recall in Williams. He never
21 talks about that.

22 Q And without Williams talking about it, you don't
23 know?

24 A I can only speculate. What I do know is that

1 wall 44 is intended to -- as it shows, it's to create a
2 container or a channel or a volume between -- I'm sorry,
3 on the left and right side of zone 22. I think it's
4 zone 22. Yeah. I don't think that's pointing to the
5 burner. I think that's really pointing to the zone. So
6 wall 44 helped create that. And I don't think he talks
7 about it.

8 I can take a quick look at Williams here. I
9 don't believe he talks about it because whenever he
10 talks about 44, column 2, line 44, it talks about rear
11 dam 46, sidewalls 44. It doesn't talk about gaps.
12 Everything he describes is basically a barrier.

13 If you go to column 3, I still don't see any
14 further discussion. And he doesn't discuss it in the
15 claims. So that's all I can really glean from that.

16 Q All right. So the depiction in figure 2 does
17 not suggest to you that there is any gap whatsoever in
18 the sidewall?

19 A Well, it doesn't suggest either way. I mean, it
20 could be a gap. I don't know.

21 Q Okay. Let's go back to your declaration. Does
22 Williams at all talk about the need to thermally couple
23 the walls, front dam, and rear dam to the griddle plate?

24 A Well, using the discussion we just had, he shows

1 in the figures by that rib 44 having a 90-degree bend
2 that it's designed to couple to the griddle 12. I'm on
3 figure 2 now of Williams. Why else would you bend it
4 over like that?

5 To me, that supports -- To some extent it's
6 connected to the griddle surface. And if it's
7 connected, it's going to be thermally coupled. And we
8 discussed why I believe that it's integral to that
9 surface because the dams, front and rear, are downwardly
10 extending. So they must be connected. And you do the
11 same thing with 44. You bend those over so it helps you
12 make the connection. So -- Because they're connected
13 with a thermocouple. Basically he's teaching you this
14 in figure 2.

15 Q All right. So my question is, you will agree
16 with me the text of Williams does not describe thermally
17 coupling the sidewalls to the griddle plate, right?

18 A Well, the text does not include the term
19 thermally coupled.

20 Q And that 90-degree bend you're talking about in
21 figure 2, the text doesn't describe that 90-degree bend,
22 does it?

23 A Which doesn't surprise me considering it's
24 pretty obvious to me what it is. You know, there are

1 many things in this figure that the text may not
2 describe. You can just look at the figure and
3 understand what it's talking about.

4 So I don't see, to answer your question, in the
5 text his referral to a term 90-degree bend.

6 Q But you can tell from looking at the figure
7 alone?

8 A I'm sorry, I can tell that it's a 90-degree bend
9 you mean?

10 Q Yes.

11 A Yes, that looks to me like a 90-degree bend.

12 Q But you can't tell from the figure alone in
13 figure 2 whether there's a gap in the sidewall?

14 A Well, that's more ubiquitous. I mean, if there
15 were to be a gap, I could look at the rear and say
16 perhaps that's a gap. But it's difficult to say if
17 what's in the front is a gap or not. It's clear to me
18 that we have a 90-degree bend. I think that's clear.

19 On the front it just looks like they truncated
20 the 90-degree bend. So it's clear to me about the
21 90-degree bend. The gaps are more difficult.

22 Q Why would a person of skill in the art want to
23 thermally couple the griddle plate to the sidewalls?

24 A Just as a general matter?

1 Q Yeah.

2 A You want an even distribution of heat. So if --
3 I think I discuss it. I'm sorry, I'm just back in my
4 report in paragraph 87.

5 So if you're going to connect them, they're
6 going to be thermally coupled. You want the most even
7 temperature distribution you can so that -- particularly
8 if the sidewalls appear to be relatively thin, so the
9 heat can be transferred through the system so you don't
10 have a big gradient of the temperature distribution,
11 which would cause it to warp.

12 And you wouldn't -- I'll add to that, that if
13 you don't thermally couple them, you could get some
14 extreme deflection due to the fact that you have a much
15 different distribution of temperature in rib 44 than you
16 do in the plate. I'm worried about temperature --
17 thermal grading in the sidewall.

18 So to Williams it looks to be fairly -- I mean,
19 it's just got a 90-degree bend. It looks to be
20 relatively thin. And the thinner the piece, the more
21 susceptible it is to warping. So I would want to couple
22 them so there's more even distribution of heat.

23 Q The air in each of the chambers below the
24 griddle plate wouldn't provide a uniform distribution of

1 heat to the sidewalls and the griddle?

2 A Well, that would probably be the opposite. If
3 you had two different temperatures in two different
4 chambers -- I mean, if I were designing this, what I
5 would do is a thermal analysis to actually see what
6 these gradients are.

7 But you're going to have more uniform
8 distribution of a plate because of its thickness. You
9 have to, right? Because the whole purpose of Williams
10 and the '473 patent is to try to create zones that have
11 a minimal sharing of heat.

12 I think everyone understands that it's one
13 piece of -- if it's one piece of sheet metal, for
14 example, and Williams and in the '473, that creates the
15 top, heat will be transferred between zones on the
16 surface. It will be transferred through the
17 thickness -- through the length of the material. And it
18 will certainly be in a different way than whatever the
19 heat distribution in the rib 44 might be.

20 Q All right. So my question is, why would one of
21 skill in the art want to more efficiently connect the
22 sidewalls and the griddle plate as opposed to less
23 efficiently thermally couple them to achieve the
24 purposes of Williams?

1 A I believe that's what I was alluding to in my
2 previous answer. You want a more uniform distribution.

3 If this -- the thermal mass of the griddle
4 itself is more stable and you thermally couple a thinner
5 piece of sheet metal, for example, to it, you're going
6 to have a more stable gradient in the sheet metal. If
7 you -- Yeah, I'll just leave it at that.

8 Q And you mentioned that the sidewalls 44 appear
9 to be relatively thin because of the 90-degree bend.
10 Did I get that right?

11 A Yeah. And by that what I meant was to create
12 that bend, it seems to me you'd have to have a
13 relatively thin piece of metal so you could make a bend,
14 because if it's too thick, having a 90-degree bend would
15 be difficult. So, yes, that's good.

16 Q And if you were to weld sidewall 44 to the
17 griddle plate 12, how much additional resistance against
18 warping would those sidewalls impart if they're
19 relatively thin sheet metal?

20 A Well, to put a magnitude on that I'd need to
21 perform an analysis. I'd need the thickness of the
22 metal. I'd need the material of the griddle. I'd need
23 the thickness. I'd need that information to answer that
24 question.

1 Q Right. You cannot do that ----

2 A I'm sorry, I believe you asked me -- I'm sorry,
3 the beginning of the question is to what degree?

4 Q Yes.

5 A Okay. So you're asking me to put a number on
6 it. So I'd have to do an analysis to put a number on
7 it.

8 Q In your view, would welding sidewalls 44 to the
9 griddle plate as depicted in figure 2 provide any
10 significant strength against warp prevention?

11 A Well, I talk about stiffening I believe in
12 paragraph 88 of my report where I state integrating the
13 sidewalls with the underside of the griddle would also
14 greatly strengthen the horizontal planar griddle, et
15 cetera, et cetera. That's figure 2. So it would
16 strengthen it as I stated there. To what degree, I'd
17 have to think --

18 Q You used the word greatly strengthen, right?

19 A Right, but greatly --

20 Q What do you mean?

21 A I'm sorry, I interrupted your question. I'm
22 sorry.

23 Q Sorry, there was a bit of latency here. I'm not
24 meaning to talk over you and I understand you're not

1 meaning to talk over me. So I'll do my best.

2 What do you mean by greatly strengthen in your
3 declaration?

4 A It would be strengthening that would -- And,
5 again, it depends on the thickness of the griddle. But
6 adding ribs, multiple ribs, in particular would make it
7 I could say appreciably or -- I think when I say that,
8 I'm meaning it would be stronger to the point where it
9 improves the performance. Okay?

10 But that's not -- That statement I wrote in my
11 report isn't designed to say it will be 50 percent or 20
12 percent. It's just to say it would be noticeably I
13 think is another way I can put that.

14 Q And how do you know it would be noticeable?

15 A So I would design the ribs so it would be
16 noticeable. Williams is telling me, hey, you have these
17 ribs that are most likely connected to the bottom of the
18 griddle, and the purpose of the ribs is to channel the
19 flow. So I'm allowed then to design the ribs such that
20 when they're integrated with the griddle top, that I can
21 design the increase in stiffness to whatever degree I
22 see fit.

23 So if I'm designing a grill, I start with
24 thermal properties. I would most certainly consider the

1 properties of the geometry or item 12 in figure 2 of
2 Williams first because that's going to dictate the
3 consumer wants a griddle of a particular size. So you
4 would pick that first.

5 And then if my intent were to provide
6 stiffening, when I fasten the ribs 44 to the underside
7 of the grill, that allows me to design flexibility to
8 determine how much do I want to stiffen it.

9 So I could pick -- I would basically go
10 through a design process of approximating the initial
11 thickness of the surface of the grill -- not the
12 surface -- the grill sheet metal I'll call it, item 12.
13 And then I would probably iteratively go through, okay,
14 how thick do I want it. I want to reduce the thickness
15 as much as I can to get the weight and the cost down
16 because metal is expensive. And then I would design the
17 ribs, the thickness, the geometry of the ribs, and the
18 depth of the zone period.

19 So Williams gives me the tools I need to, you
20 know, start my design process to strengthen it to
21 whatever degree I feel is necessary.

22 Q Did you perform any of that design analysis to
23 figure out what thickness of the sidewalls you would
24 need to strengthen it to a noticeable degree?

1 A No, again, I didn't do it. That's why I wrote
2 in my report what I did, that it would greatly
3 strengthen it. I'm going to design this thing and now
4 I'm going to use this as a basis that I can agree to
5 strengthen it if I want. I can strengthen it to any
6 degree. It all -- I shouldn't say any, but a wide range
7 of degrees depending on how I design those ribs.

8 Integrating the sidewalls would greatly
9 strengthen the horizontally planar griddle. Let's
10 assume that when I make that attachment, I'm going to do
11 an analysis to figure out what the effects are. If I
12 want that benefit, I'll design a system such that it
13 gives me the amount of strengthening that I feel is
14 necessary. But until I know the thickness of the
15 components involved I can't do that.

16 So what I'm saying here is Williams teaches me
17 that I can do that. I can greatly stiffen it.

18 Q Williams teaches about stiffening the griddle
19 plate?

20 A In the figure, in the discussion we just had,
21 again, not because I feel they're integral with the
22 bottom, but I can look at this figure and it indicates
23 to me that, oh, if those two are connected, I can vary
24 geometries and vary the stiffness of the griddle plate.

1 Q And you'll agree with me that the text of
2 Williams does not talk about stiffening the griddle
3 plate and sidewalls, right?

4 A Well, and it doesn't have to because, again, I
5 can see from the figure.

6 Q All right. The figure communicates that to you
7 alone?

8 A That is enough, yes.

9 Q And in your opinion, which you described as the
10 relatively thin sheet metal of the sidewalls would
11 greatly strengthen the depicted griddle plate 12?

12 A Just depending on how it was designed, yes.

13 Q Okay. Let's go back to your declaration in
14 paragraph 88.

15 A I'm there.

16 Q Do you agree with me that the griddle depicted
17 in Williams does not rest on the front dam or the rear
18 dam?

19 A No, I believe it does. Williams says that the
20 front and rear dams are -- I forget the terminology --
21 downwardly extending I believe is what he says. So
22 they're connected.

23 Q Okay. So the front dam and rear dam in your
24 opinion would support the griddle plate against gravity?

1 That's what I mean by rest on. And so if that's a
2 different definition, please let me know.

3 A Well, let's look at it. Let's see. Just bear
4 with me for one second.

5 Scrolling through Williams, and for some
6 reason I don't see -- Oh, I know why. For some reason I
7 can't -- There are certain blank pages, which I know
8 isn't true. What I'm saying is if I looked at the key
9 on the left that shows all the pages, if I click on page
10 2, for example, I don't see anything.

11 Q You're looking at Williams Exhibit 4 to the
12 deposition?

13 A Williams is 5, correct?

14 Q Well, the annotated copy we marked as Exhibit 5.
15 Williams is also Exhibit 4 for a non-annotated clean
16 copy.

17 A Unable to load document, try again. I've got a
18 frowny face. I'll try it again.

19 MS. HOROCOFSKY: Yeah, mine just went down as well.
20 I'm not sure. I was kind of clicking around to see if I
21 can correct it.

22 MR. BRAITHWAITE: Q Well, Dr. Vallee, you've got a
23 hard copy of the Williams patent in front of you, right?

24 A Yes. And the reason I tried to use that was

1 because figure 3 is on the rear side of figure 2. But
2 that's okay. I don't need that. But let's forget about
3 Veritext for now. And if you could reask your question,
4 I'd appreciate it.

5 Q Sure. As depicted, is the griddle plate meant
6 to rest on the front and rear dams? And I guess by rest
7 on, I mean the front and rear dams support the griddle
8 plate against the -- against gravity.

9 A Well, if I look at figure 3 where it shows the
10 front dam, which I believe is 42, connected to the
11 underside of the griddle, it's connected. And if we
12 turn over to -- I mean, they're connected. It depends
13 on how you connect the front dam to the rest of the
14 structure. You could design it so it doesn't
15 necessarily rest there.

16 Let me just -- Just bear with me one more
17 second please. I don't think Williams necessarily
18 teaches that his invention is designed to support the
19 weight. It just said it's connected to it. I mean, it
20 could though.

21 Q Look at figure 2.

22 A I'm there.

23 Q Would you agree with me that the outer housing
24 14 is depicted as having a thickness beyond the mere

1 line?

2 A It does.

3 Q And that sidewalls 44 are not depicted as having
4 a thickness beyond the line?

5 A Well, I'm sure we all realize it has to have a
6 thickness, but the thickness isn't detailed in there.
7 So I agree with you.

8 Q And front dam 42 and rear dam 46 are not
9 depicted as having any thickness beyond a line?

10 A True. But I'll point you to, for example, item
11 14, which is part of the frame. I forget what exactly
12 he called it. But he's not very specific about
13 thickness.

14 For example, there's a piece 14 which appears
15 to have thickness, but it has an extended top wall, I'll
16 call it that. And I can't tell from this if that
17 component is actually a piece of sheet metal that's
18 folded on the top and the front to create the illusion
19 of thickness in the figure or not.

20 So this figure isn't really specific as to
21 what's thick, what's not, what's sheet metal. And,
22 again, sheet metal again is a relative term and what's
23 not. He really doesn't discuss a lot about thickness.

24 Q Would you agree with me that there are gaps

1 between the front and the rear dams and the ledges on
2 which the griddle sits?

3 MS. HOROCOFSKY: Objection, form.

4 THE WITNESS: I mean, it looks to me like the front
5 dam -- the top of the front dam is just about in line
6 with those flat surfaces on the side -- on -- again,
7 components 14 on the frame. I mean, they would have to
8 be, right? He describes 42 is extending downwardly from
9 the underside of the surface. If that's the case and it
10 sits on the flat on top of 14, then it's got to be at
11 the same level. And I'd argue the same for the rear
12 dam.

13 MR. BRAITHWAITE: Q Let's go to your declaration.
14 I have some questions about the content of paragraph 91,
15 which is on page 48. If you could take a minute to
16 review that and let me know when you're done.

17 A Okay. And we're at 1:00 o'clock. I don't know
18 if we're approaching a point in the questioning where it
19 might be a good time to break for lunch.

20 Q Oh, okay. Yeah, we're getting there pretty
21 quickly.

22 A Okay. So, I'm sorry, what paragraph are you
23 talking about here?

24 Q 91.

1 A 91, okay. Okay, I'm there.

2 Q You talk about forming the ribs, which are the
3 sidewalls, right? Is that what you're referring to by
4 ribs?

5 A Yes, 44.

6 Q So forming --

7 A And, I'm sorry, 42 and 46. I discuss those too.

8 Q The front dam, the rear dam, and the sidewalls,
9 forming those with the underside of the griddle surface
10 as to ensure that there's no gap between the griddle
11 surface and those walls, right?

12 A That is correct.

13 Q Would the weight of the griddle on top of the
14 walls not be enough to eliminate the gap?

15 A You mean if those ribs were not integrally
16 formed as I'm suggesting they would be; is that what you
17 mean?

18 Q Yeah. I guess another question is how big of a
19 gap would be created if you do not form the ribs with
20 the underside surface of the griddle?

21 A That would all depend on the manufacturing
22 tolerances that you decide to use in your design. If
23 it's not formed --

24 Q Okay. So --

1 A I'm sorry, I paused again. If it's not formed
2 with it, then you're probably going to design the
3 space -- the vertical space for the height of the rib,
4 design that space so that you can accommodate a rib that
5 may be slightly shorter than the total distance of that
6 space between wherever the rib is mounted on the floor,
7 for example.

8 In Williams, that part of the frame is that
9 plate that's below the burners. And you'd probably
10 design clearance between that and the griddle plate
11 because you can only control the height of that within a
12 certain specific tolerance. So how much of a gap
13 determines on what that tolerance is. It's probably
14 going to be line to line.

15 But if it's not connected, you have the other
16 problem of that piece of sheet metal is going to expand.
17 The rib would expand when it gets hot. You don't want
18 that expansion to lift the griddle surface up because
19 then you've got air leaking front, back, I mean,
20 potentially in many locations.

21 So to answer your question of how much, I'd
22 have to look at the design. I'd have to see how much
23 could leak. It all depends on what I choose for
24 tolerances and how I want to cost out the manufacturing

1 assembly.

2 Q You'd agree that Williams does not show or
3 describe a gap between the griddle plate, front and rear
4 dam, and sidewalls when the griddle plate is placed on
5 them?

6 A Well, again, as we discussed before, as I read
7 Williams, I'm assuming they're connected, and they're
8 coming from the bottom of the surface, and it's all
9 connected. So there wouldn't be a gap to begin with.

10 Q Does Williams talk about the risk of the front
11 and rear dams and sidewalls expanding being that the
12 griddle plate might lift off of its resting spot?

13 A I don't believe so, but I wouldn't think he
14 would. If they're all -- if they're, you know, all
15 integral to each other, that wouldn't surprise me. .

16 Let me take a quick look. No, I don't see
17 upon a quick read that he does.

18 Q All right. So I think we're just about at the
19 break spot. But then is it correct that your opinion is
20 one of skill in the art would look at the griddle of
21 Williams and consider that there is a risk that
22 expansion of the front and rear dam and sidewalls will
23 lift the griddle plate off of its base?

24 A Well, again, one reading Williams I think would

1 understand that it would all be connected and there
2 wouldn't be that problem.

3 Q And what is it in Williams that makes -- Sorry.
4 Is the only thing in Williams that makes you think the
5 front, rear -- and rear dams and sidewalls are all
6 connected is that they outwardly extend from the griddle
7 plate?

8 A I think that's one of the primary reasons. It
9 talks about downwardly extending.

10 Q Was there anything else?

11 A I'm sorry. If it weren't connected, how could
12 it downwardly extend?

13 Anything else? Well, all the things we talked
14 about earlier, one expects to do that. And, you know,
15 as I read this patent and I look at his disclosure and
16 the intent on where everything is positioned, the whole
17 disclosure really explains to me, that, yeah, I think
18 they're all connected.

19 Q And by connected, do you mean the same as
20 integrally formed?

21 A Yes.

22 MR. LAGERWALL: Okay. Now I think is probably an
23 okay time for lunch. Let's go off the record.

24 (Lunch recess was taken.)

1 MR. BRAITHWAITE: Q All right. Let's go back on
2 the record and turn back to your declaration, Deposition
3 Exhibit 2.

4 A Okay.

5 Q I'm looking at paragraph 92 on page 48 of your
6 declaration. If you want to take a minute to review
7 beforehand, let me know when you're done.

8 A All right. Paragraph 92. Okay, I'm good.

9 Q Do I understand correctly that your fourth
10 consideration here is providing stability and rigidity
11 to the sidewall?

12 A Right. In the sentence in the middle of that
13 paragraph I say, integrating the sidewalls with the
14 underside of the griddle or top of the floor plate
15 provides the most contact area and thus they provide the
16 greatest stability and rigidity to the sidewall,
17 correct.

18 Q So why is the stability and rigidity of the
19 sidewall a consideration in your opinion?

20 A Well, by that I mean it's not prone to warp or
21 deflect. And that's important as we discussed before
22 because if it deflects, it could alter the positioning
23 of the griddle. It could push up on the griddle. It
24 could form a crack. You know, if it's integrally

1 formed -- You know, you don't want it to form a crack in
2 there. So you want it to be stable, to stay where it
3 is, and don't deflect and cause problems.

4 Q Okay. So is it your view that attaching the
5 sidewall on one of its ends would essentially be --
6 provide more structural stability to the sidewall as
7 opposed to allowing free expansion?

8 A By one of its ends, you mean, for example, where
9 the 90-degree bend --

10 Q The 90-degree bend.

11 A Right. So, yeah, just what I said here, right?
12 You want the most compact area so you have the strongest
13 connection.

14 Q So the sidewalls you describe as relatively thin
15 vertical structures. Does being relatively thin mean
16 it's more subject to warping than something that's
17 relatively thicker?

18 A Again, it will depend on the design. I mean, I
19 could take a sidewall and I could integrate --
20 strengthen the ribs if I wanted to. In that case it
21 would not be thicker, but it would be -- it could be
22 stronger. So it depends on the design.

23 Q Okay. Well, I'm talking about the sidewalls of
24 Williams. Are the sidewalls of Williams more subject to

1 deformation than the griddle plate upon being heated?

2 A Well, they're certainly subject to deformation.
3 I'm looking at figure 2, by the way. And it depends on
4 the thickness of the griddle plate.

5 The fact that there's a 90-degree bend on the
6 sidewall is going to make it stiffer in the lateral
7 direction for sure. But you'd have to compare the
8 design of the griddle, its thickness, to whatever you
9 design the sidewalls or the ribs to be before you can
10 say whether one is stiffer than the other one.

11 Q So the 90-degree bend on the top of the
12 sidewall, that provides rigidity and stability as well,
13 correct?

14 A Having the 90-degree bend -- Excuse me. If you
15 had a sidewall of one thickness and you take that and
16 you provide the 90-degree bend versus a rib of the same
17 thickness without the bend, the one with the bend would
18 have a higher area of moment of inertia -- and by
19 bending, I'm talking about bending laterally, so that
20 the sidewalls want to deflect between the figure 2 zone
21 24 and 22, for example.

22 Q And getting the sidewalls would require more
23 material, correct?

24 A Are you talking about if you change nothing else

1 in the design of the sidewall or rib 44, would it
2 require more material?

3 Q Yes.

4 A Yes, it would. The reason I asked that is
5 because if you shortened it or if you put little
6 perforations at the bottom, you can do things like that.
7 But all things equal, more material means more mass, et
8 cetera.

9 Q And more material for the sidewalls would
10 increase the cost of the sidewalls, wouldn't it?

11 A Well, that depends again on the design. So much
12 of this is so dependent on the design.

13 For example, if I design a sidewall where the
14 thickness had to be, for example, 0.11 inches thick,
15 that may be a custom sizing and it may be more expensive
16 because it's not readily available as opposed to if I
17 went to 0.125, which would be a readily available size.
18 It depends on the design.

19 Q Okay. So a person of skill in the art would
20 need to figure out what the available thicknesses of
21 sheet metal were, for example, to determine what
22 thicknesses would actually drive down costs; is that
23 right?

24 A Well, that might be one factor. But also volume

1 would be a factor, right? How much of the material do
2 you need? Is it purchased by the pound or by the foot?

3 These hypotheticals are difficult really to
4 quantify because everything in the design can depend on
5 other factors with the design. And I'm just referring
6 to figure 2, for example, of Williams because your
7 question seems to be related to Williams, and he doesn't
8 give us any of those details.

9 Q Okay. So to figure out how to reduce costs for
10 Williams, we would need dimensional information about
11 the components, right?

12 A I'm sorry, to reduce costs from one design
13 versus another?

14 Q Right. We would need at least dimensional
15 information about the components and we would need
16 information about the availability of materials,
17 correct?

18 A Yes.

19 Q And we would need information about the volume
20 purchasing power of the designer, right?

21 A Right. This is all assuming you want -- The
22 goal is to calculate the actual cost of the assembly,
23 not to make an assumption that, you know, whether it
24 would be -- Let me back that up.

1 Those factors -- I'm assuming that you're
2 aiming at trying to actually calculate the exact cost to
3 complete a design. If you're going to do that, you need
4 all that information. That is absolutely correct.

5 Q Okay.

6 A But things like what I just told you -- For
7 example, if you had two sidewalls, one -- the same
8 thickness, same length, same geometry, except you had
9 one with a bend, a 90-degree bend, I can tell you that
10 that would be stiffer versus lateral -- in the direction
11 laterally. It would resist lateral deflection if it
12 were just a standalone part. But to quantify exactly
13 what it is I would need more information.

14 Q Is there any possibility that adhering the
15 sidewall to the griddle plate would increase the
16 potential for damage to the sidewall when under thermal
17 stresses?

18 A Again, it depends on your design. If you design
19 it wrong, you could. But these are, again, design
20 dependent details. If you gave me dimensions and
21 material properties and those kinds of things, I would
22 do an analysis to make sure that doesn't happen.

23 Q But you can't tell just from the information
24 provided by Williams whether adhering Williams sidewalls

1 to the Williams griddle plate would increase the
2 potential for damage to the Williams sidewalls?

3 A Well, I haven't considered whether doing that
4 would increase damage. Offhand, I don't see why it
5 would. But that's not something I really dived into.
6 My report really was focused on rigidity of components.
7 And, again, we're at paragraph 92. Sorry, stability and
8 rigidity, that's really what I was talking about.

9 Q In paragraph 95 you talk about a last
10 consideration. Perhaps you can read that paragraph and
11 let me know when you're done.

12 A Okay. I'm all set.

13 Q Does the additional step of welding components
14 together during the manufacturing process make
15 manufacturing more difficult?

16 A You mean more difficult than simply not welding
17 I assume is your question?

18 Q Yes.

19 A It's an added step. It's a very common step.

20 Q Does the step of welding components together as
21 opposed to not welding them together increase
22 manufacturing costs?

23 A Well, it all depends on the total assembly.
24 First of all, if you had other welded sheet metal

1 components, other things welded to the underside of the
2 griddle, for example, you'd already have stations set
3 up. So there's probably not a huge increase in cost.
4 You simply weld the ribs going forward.

5 But you have to look at the whole design and
6 say in doing that, what else might it affect. If I
7 weld, will it cost more to actually weld it? For
8 example, you have to hold the ribs -- Let's talk about
9 the sidewalls 44, those ribs. Okay? They have to be
10 held somewhere. How do you hold them? Well, you could
11 weld them to the underside of the griddle. You could
12 weld them to the front dam and rear dam. You could weld
13 them to the floor. You wouldn't just let them sit
14 there. That's another thing you could do.

15 You could create CADs and slots. So you could
16 CAD ribs 44 into the front and rear dams, those two
17 ribs. But then you have to look at that cost. Is it
18 more to perforate the steel and create the CAD joint
19 than it is to weld them?

20 So you really need to look at the entire
21 design. Many of these questions really need -- To do it
22 properly, you have to look at the entire design like I
23 said.

24 Q But you'd agree there's a variety of factors to

1 consider in determining what would reduce the cost for
2 any particular design of the griddle?

3 A I think it's more accurate to say there are a
4 variety of factors that would need to be considered to
5 calculate the change in cost. There are certain things,
6 for example, that you can say in certain processes that
7 one thing might add a cost, but when you put the whole
8 thing together might reduce it. You really need, you
9 know, information on the design.

10 When I say here in paragraph 95 -- For example,
11 if you want to reduce assembly cost, and I think that's
12 what I said -- Right, at the top of that paragraph.
13 Okay? But I can say to reduce assembly cost because
14 it's -- if you don't weld it, then you have to install
15 each rib somehow and then put the top on as opposed to
16 the top already has the ribs, you just insert it. Okay?
17 So I think here that if it's done that way, it should
18 reduce assembly.

19 Q Okay. And so the question with respect to the
20 griddle described by Williams, would welding all the
21 components together for the griddle described by
22 Williams reduce manufacturing costs?

23 A Again, without the details of the design, asking
24 me a question like that, I don't have the information to

1 say would welding all the components together, because
2 it could be -- I don't know if he actually used spatulas
3 for some of it. I would imagine he would have to use
4 spatulas in some way. Okay?

5 So I just can't generalize and say, yeah, if
6 you weld everything together, it's cheap, because they'd
7 have to put it together, which is akin to my point. You
8 know, you would have to understand the design of how all
9 these pieces fit together.

10 Years ago we used to do time studies on how
11 long it took to make a process to put things together.
12 You know, we need that kind of information to give an
13 accurate assessment of manufacturing costs. I just
14 couldn't -- I'm not saying I can calculate exactly what
15 it is, but I do say that it would reduce assembly time
16 if you don't have to weld the two separate ribs into two
17 different or more locations than it would be to just
18 integrate it into the griddle and then install it
19 somehow.

20 Q And I'm trying to get an understanding of how
21 the assembly time is reduced between someone welding the
22 parts together and an end user assembling the parts.
23 How is the overall assembly time reduced in your
24 opinion?

1 A Again, without details on the design, if you
2 have two ribs, for example, welded to the bottom --
3 Let's say there's five. Okay? The way that would be
4 fixtured is you would turn the manufacturing -- You
5 would have the bottom surface facing up most likely,
6 you'd have a jig set up, and you'd slot in the two ribs
7 and a robot would come down and would weld it. Okay?

8 Then you could use a wood -- Assuming we're
9 just talking welding two ribs here, okay? You may
10 decide to weld the front and rear dams. I don't know.
11 But just considering two ribs. Once that's done, then
12 to assemble it you would simply flip it upside down and
13 then you assemble the process, you install. Okay? But
14 if that's all you were doing.

15 If you don't do that, then you've got to fix
16 the front and rear and, for the same stability, probably
17 the bottom. You'd have to assemble it somehow. So you
18 have more surfaces. It's unlikely that you'll be able
19 to figure out how to do that. And I'll add that you
20 have to be very careful when you spot-weld metal. The
21 thickness is very important, the thickness of the pieces
22 you're welding. I like welding relatively thin things
23 to thick things because you have a lot of thermal
24 stability in the thicker plate.

1 So probably instead of two welds per rib on top
2 you'd probably do four per rib if you were to fasten to
3 the front and back.

4 And with assembling, it's all -- I mean, if the
5 user -- And let's take the other side. I think your
6 question was versus what the user would do. I mean, if
7 the owner of it had to put this together, and I've put a
8 number of griddles together in my time, it would be so
9 much easier if all I do is pull the griddle out and put
10 it on top. I don't have to worry about the ribs. If
11 you start fiddling around with all those pieces of sheet
12 metal, get them oriented in the right direction and put
13 them in in the right place, that would take more time to
14 do it that way.

15 Q Is it correct to say whether welding would be
16 advantageous depends on the thickness of the Williams
17 griddle and the thickness of the Williams sidewall?

18 A Well, again, it all depends on what those
19 thicknesses are.

20 Q So what information would you need to know to
21 make that determination in what Williams describes and
22 shows?

23 A If my goal was to actually calculate the exact
24 time it takes for every scenario, I would need things

1 like the dimensions, the material properties, the
2 thickness, the geometry. I would need information on
3 geometry and material property.

4 But I don't think I need that information to
5 simply say I believe that integrating the ribs with the
6 griddle would save time in manufacture and assembly
7 versus what I see in figure 2, assuming they were not
8 integrated together. And, again, we discussed before
9 that I think Williams teaches they are. If they
10 weren't, I don't need all that information just to make
11 that judgment.

12 Q Okay. So under any circumstance they would be
13 improved by welding together?

14 A I think under most reasonable circumstances
15 without having more information. It just makes sense
16 that if you have to put fewer parts together yourself,
17 it should take you less time.

18 Q And there aren't any downsides to welding them
19 together in your opinion?

20 A There could be depending on the design. I mean,
21 I don't know.

22 If you gave me an exact design, I'd have to
23 look at the manufacturing aspect to see how much time it
24 would take to weld. Would it be wiser to use fasteners?

1 You'd really need the design to say whether or not there
2 are downsides to welding.

3 Q All right. So under certain circumstances there
4 could be downsides?

5 A Well, again, I don't know. I haven't gone
6 through a number of scenarios.

7 Q You would need more information to make that
8 determination?

9 A About are there downsides to welding, yes.
10 What, how many welds do you need, et cetera. Yes, I'd
11 need more information.

12 Q Would there be any potential downsides to
13 thickening the sidewalls?

14 A Well, again, one, I think there's no doubt it
15 could be weight. Again, though, without the design, I
16 could compensate with the weight by putting perforations
17 in a place where I don't feel it would affect the flow.
18 So really to answer these questions accurately I'd need
19 more information.

20 Q I'm going to mark our next document. This will
21 be Deposition Exhibit 6.

22 (Document marked as Deposition
23 Exhibit 6 for identification.)

24 Q This is U.S. Patent No. 5,676,043 to Best,

1 submitted by LoCo Cookers as Exhibit 1007 in the IPR
2 proceedings.

3 MS. HOROCOFSKY: Counsel, I still wasn't able to get
4 into that log-in that you had sent earlier. It's still
5 showing that it's unavailable.

6 MR. BRAITHWAITE: I'll drop the link in the chat
7 again. Let's see if we can do the equivalent of turning
8 it on -- turning it off and back on again.

9 THE WITNESS: Reboot.

10 MS. HOROCOFSKY: Thank you.

11 MR. BRAITHWAITE: Are you able to access them now?

12 MS. HOROCOFSKY: Yes, thank you.

13 MR. BRAITHWAITE: Q Great.

14 All right. Dr. Vallee, do you --

15 A Hold on just a second please. I'm trying to get
16 in myself.

17 Q Oh, no problem.

18 A All right. We're in.

19 Q Great. Take a moment to flip through Exhibit 6,
20 the Best reference. Let me know if you remember
21 reviewing this patent.

22 A I do remember reviewing this patent.

23 Q Okay. Is it correct to say that the Best patent
24 is directed at a griddle having different cooking zones

1 through the use of insulation or airgaps on the
2 underside of the griddle surface?

3 A I'm bringing up the abstract of the patent. It
4 talks about a large griddle plate with discrete heating
5 zones. Griddle made of thin, relatively low
6 conductivity metal, juxtaposed heat transfer blocks
7 disposed in spaced relationship. Yeah, I think that's
8 accurate.

9 Q And then I think you'll recall in figure 5 there
10 is a couple of structures, an inverted U and another
11 thing labeled as 94 and 95 described as baffles. Do you
12 recall those?

13 A I just pulled the patent out of my binder so I
14 can flip through it. Okay. Yeah, I see it.

15 Q So looking at figure 5, do you see the reference
16 to numerals 94 and 95?

17 A I do.

18 Q Those are the described baffles in the Best
19 reference, right?

20 A I talk about that in my report. I believe
21 that's correct. I think I begin that discussion on page
22 23. So I get the terminology right, I discuss Best is
23 the section on page 23. I believe that's where it
24 says -- calls them baffles.

1 A pair of inverted U-shaped -- I'm in paragraph
2 52 of my report. Inverted U-shaped, insulating baffles
3 94, which you just talked about, and another set of
4 baffles 95 extending downwards. So, yes, that is
5 correct.

6 Q And the inverted U-shaped baffle 94 compliments
7 the shape of the baffle 95, right?

8 A I'm not sure what you mean by compliments the
9 shape.

10 Q Okay. There's a little gap between baffles 94
11 and 95, correct?

12 A That is correct.

13 Q And that small gap would allow the passage of at
14 least some air over the wall created by the baffle,
15 right?

16 MS. HOROCOFSKY: Objection, form.

17 THE WITNESS: I think Best discusses -- He discusses
18 the gap, which he called -- What did he call it? I
19 don't recall what he called it. But, anyway, since they
20 are separated, there could be air that flows in the gap.
21 If there is, it would be a very, very small amount based
22 on figure 5, for example, of Best.

23 MR. BRAITHWAITE: Q And would that little gap or
24 potential gap, would a person of skill in the art

1 consider that trivial in terms of the passage of air
2 from one side of the baffle to the other?

3 A Well, again, you'd have to know the size of the
4 gap and everything else that goes with it to determine
5 if it's -- By trivial, I would take that to mean -- What
6 do you mean by trivial? Because you asked the question,
7 what would you say trivial is?

8 Q Having any significance to the operation of the
9 griddle.

10 MS. HOROCOFSKY: Objection. Sorry, I'm going to
11 object to that. Form.

12 THE WITNESS: As I read Best, he doesn't talk about
13 the relative size of the gap and how it might affect
14 performance.

15 MR. BRAITHWAITE: Q Go to paragraph -- or column 9
16 of Best. I think there's a paragraph that talks about
17 the baffles 94 and 95. It's on lines 18 through 22 of
18 column 9. Let me know when you're there.

19 A Column 9 of Best, 18-ish?

20 Q Yeah.

21 A Column 9, correct?

22 Q Yeah, approximately line 18 to line 22.

23 A Okay. So that then will terminate in
24 overlapping relationship. So starting at the top, it

1 says, for further isolating the heat from burners 50, a
2 pair of inverted U-shaped, insulating baffles, as seen
3 in figure 5, are interposed between each pair of burner
4 groups, while other baffles 95 extend downwardly from
5 plate 20 to terminate in overlapping relationship. So,
6 okay, I see that.

7 Q And as far as the textual description of Best
8 goes, this is the only paragraph that describes the
9 baffles, right?

10 A Let's see. Okay. So I agree that seems to be
11 the only place, other than the figures of course, that
12 he talks about baffles. But he does talk about heat
13 zones.

14 Q And with respect to the baffles 94 and 95,
15 you'll agree that Best never refers to them as ribs,
16 correct?

17 A He doesn't call them ribs. It's just like we
18 had the discussion about Williams. He called them dams
19 and sidewalls, but they serve the same function. To me,
20 they would be ribs. But, no, he does not.

21 Q And one paragraph is enough to communicate to
22 one of skill in the art what baffles do, right?

23 MS. HOROCOFSKY: Objection, form.

24 THE WITNESS: Which paragraph in particular?

1 MR. BRAITHWAITE: Q Well, there's only one
2 paragraph that describes the baffles in Best, correct?

3 A Correct.

4 Q So I'm referring to that solitary paragraph that
5 describes the baffles. That's sufficient to communicate
6 to a person of skill in the art what baffles do, right?

7 MS. HOROCOFSKY: Objection.

8 THE WITNESS: So he tells me in that paragraph that
9 they isolate from the burners, create zones. He calls
10 them baffles, which tells me they're most likely
11 relatively thin, not sidewalls or ribs, and they extend
12 downwardly. So they're connected.

13 So in the context of the claims where he's
14 talking about -- Well, it may be easier to go to the
15 abstract where it says the whole purpose here is to
16 define a discrete heating zone. That's enough to tell
17 me, for example, that they're used to define those
18 zones, similarly to what we'll call them the rib
19 sidewalls is of Williams and to what the ribs in the
20 '473 patent is.

21 So with respect to that feature, yes, that
22 paragraph is enough to tell me how those baffles work
23 and what they do.

24 MR. BRAITHWAITE: Q You'll agree with me that Best

1 never describes the baffles as providing a strengthening
2 function against warping of the griddle plate, correct?

3 A Best does not describe that function.

4 Q Are the two components of the plate in Best, the
5 griddle plate, integrally formed? I'm talking about the
6 top plate and the bottom plates.

7 A So we're talking about -- I believe it's in 30.
8 I'd have to go ahead and take a look. I don't recall.

9 MS. HOROCOFSKY: I'm going to object as vague.

10 THE WITNESS: Just bear with me for a second please
11 until I find it. I'm sorry, the question was does Best
12 teach that --

13 MR. BRAITHWAITE: Q Well, Best teaches a clad
14 cooking surface; is that correct?

15 A Right, yes.

16 Q And are those two layers described by Best, are
17 those integrally formed with one another?

18 A I don't know if he describes them as integrally
19 formed. Let's see.

20 I'm on column 5, line 26 of Best. It says,
21 below and rigidity secured to the bottom of lower
22 surface 20B. So he's talking about figure -- That's
23 figure 3. I believe that's the section there.

24 Well, he's discussing in that section the

1 plate's sturdy, which are aluminum, and some thickness
2 information, thermal conductivity. Without reading the
3 whole patent though, I believe, my recollection is,
4 that's all he says. So are they integrally formed? I
5 don't think he discusses if they're integrally formed.

6 Q Turning back to your declaration on page 98, in
7 paragraph 192. Please let me know when you're there.

8 A Paragraph 192. Okay. I'm there.

9 Q Why would -- When you say integrating lateral
10 ribs in paragraph 92, what are you referring to in Best
11 or Williams as the lateral ribs?

12 A Well, the paragraph says the underside surface
13 of the griddle. So that would be 95, which would be
14 the -- I'll call it kind of an L-shaped rib that sits on
15 top and forms the U-shaped rib. In that figure, which
16 is figure 5, you can see that there -- that these are
17 inserted in a gap or they're part of a structure. So
18 that's 95.

19 Q All right. And 95 is described by Best as a
20 baffle, correct?

21 A Correct.

22 Q Why would integrating the baffle with the
23 underside surface of the griddle improve the thermal
24 isolation of the heating chambers?

1 A Well, if you didn't -- First of all, I'm not
2 sure how you would assemble that, how that would be put
3 together. But building it in allows you -- or
4 integrating it let's say allows you to control the depth
5 at which -- or the height of that rib from the bottom
6 surface.

7 I think that surface 36, looking at figure 5
8 in my declaration, I think that's it. That lower
9 surface of the sandwich of the two thicknesses of the
10 plate, if you integrate it, you control it. If you
11 don't integrate it, you have to put it on -- I don't
12 know how else you would attach it.

13 If you didn't connect the two -- Let's say you
14 just decided to slide it in, okay, and it wasn't tight.
15 How would you control where it goes? Because if you
16 don't control it and let's say the bottom portion of
17 that rib 95 isn't low enough with respect to the
18 U-shaped baffle 94, then you could have a large gap.
19 But if you integrate it, you control that. Okay? Now,
20 if you integrate it with the underside surface to
21 improve a thermal isolation, so you're shrinking --
22 you're controlling the gap.

23 Q And what does it mean for the baffle 95 to be
24 integrally formed with the underside surface?

1 A That it is connected to it, rigidly connected to
2 it.

3 Q And, in your mind, integrally formed just means
4 rigidly connected to?

5 MS. HOROCOFSKY: Objection to form.

6 THE WITNESS: Integrated with means part of.
7 Connecting it is one way to make it part of by welding
8 or fastening or just forming it. For example, cold
9 warping I discuss in my report, forming it together. So
10 it's part of it.

11 MR. BRAITHWAITE: Q Are baffles 95 and 94
12 integrally connected?

13 A Well, 95 certainly is. I'm in the next
14 paragraph, 193. I say, a POSITA would appreciate some
15 of the lateral ribs taught by Best, which are 95,
16 integral with the underside as we just discussed. They
17 would be used in conjunction with overlapping lateral
18 ribs taught by Best that are integral with the floor
19 plate of the heating chamber.

20 So if you shift to the bottom, it affixes
21 the -- 95, that rib, to the top. It assembles them.
22 When you put the thing together, you get the combination
23 of 94 and 95, which separates the heat chamber.

24 Q And in the context of Best, not having baffle 95

1 and 94 be welded together is okay?

2 A If we specify that there is a gap between the
3 two, and it's assumed to be a very small gap bearing the
4 specification -- Because we're talking about heat
5 isolation. The gap is basically there so we can put it
6 together.

7 If you didn't have a gap, there's a chance
8 that because of manufacturing tolerances you could
9 actually displace the surface of the griddle if the
10 baffles were in contact to the point where it would
11 raise the griddle surface when you assembled it. So I
12 think that talks about how this is a convenient way to
13 create a more forgiving assembly with having the thermal
14 insulation that he talks about.

15 Q What do you mean by forgiving assembly?

16 A Tolerance-wise. So if I looked at that
17 design -- I'll stick with figure 5 of my report. I'm
18 sorry, figure 5 of Best that I include in my report
19 because it's magnified. If I'm going to design this,
20 what tolerances do I need to worry about to specify the
21 gap?

22 I'm sorry, let's say there's no gap. If I had
23 those welded together, I would need to control the
24 height of the whole assembly. Then I'd have to control

1 the positioning of the bottom of the plate. Then I'd
2 have to control how the top half of 95 is actually
3 integrated into the plate. There are lot of -- The
4 tolerance stack up is significant.

5 Whereas, if I simply designed a U-shaped
6 baffle at the bottom 94, the only thing I really have to
7 control is the location of the bottom of the U with
8 respect to the assembly and the type. Then I'd need to
9 control the depth of the bottom of the rib 95 with
10 respect to the bottom of the plate.

11 So it allows me to perform the tolerance stack
12 up and include the worst-case scenarios in the size of
13 the gap to ensure that whenever I put it together, I
14 don't have protrusions through the bottom of a structure
15 lifting the griddle. So it's a very convenient way for
16 me to make sure it's assembled and it's configured
17 properly every time you assemble it.

18 Q Okay. So is Best a situation then in which
19 assembly tolerance considerations outweigh the potential
20 for gaps between the zones?

21 A Could you rephrase that? I'm not sure what you
22 mean by outweigh the potential for gaps.

23 Q Yeah. In the context of Best, those assembly
24 tolerance factors that you just described, do those

1 outweigh the potential for a gap in the baffles in terms
2 of a designer saying they want zero gap in between the
3 baffles of Best would operate in juxtaposition to the
4 assembly tolerances consideration, right?

5 MS. HOROCOFSKY: Objection, form.

6 THE WITNESS: I'm still not sure I understand all
7 that.

8 MR. BRAITHWAITE: Q Sure. A larger gap between
9 baffles 94 and 95 provides for more forgiveness I think
10 was your word in manufacturing tolerances, correct?

11 A It could depending on the overall design.

12 Q And how does one of skill in the art determine
13 which is more important, forgiveness in assembly
14 tolerances or air exchange across the baffles?

15 A It all depends on the specifics of the entire
16 product and the design. Is this a product that's going
17 to be sold in Wal-Mart so cost is more important than
18 performance? Is this one that's going to be sold at
19 high-end retailers or a camping shop where they'll
20 expect poor performance for the price? It all depends
21 on -- You know, to make that judgment as to which is
22 more important you need to know the context of the
23 intent of the design.

24 Q So there's additional factors or information

1 that we would need to know to figure out what's going to
2 drive the design one direction or not?

3 A You would need information to answer the
4 specific question of which is more important. When I
5 discuss Best in my report, I'm using the -- just the
6 subcomponents of the baffle design and how they use them
7 here, what their purpose is. The design of the baffle
8 is to control cross airflow between heat engines.

9 So when I discuss them in that entire section
10 of my report, you know, claim by claim -- For example,
11 where it's talking about the claim element in the '473,
12 wherein the front rib and multiple lateral ribs
13 integrally form with the underside, so I'm focused on
14 that aspect of Best.

15 So, in general, I think Best is intended to
16 create, you know, this flow channel, you know, this heat
17 zone, and it does it with a two-piece design that uses
18 separation. It integrates the top of the rib with the
19 underside of the griddle, griddle plate, if you will,
20 and the bottom of the floor support, if you can call it
21 a floor, that structure. But either way essentially
22 we're talking about how it's integrated, and we
23 discussed that.

24 Q So despite the purpose of Best being to divide

1 heating zones, Best still provides for a potential
2 airgap between the heating zones through the baffles,
3 right?

4 A I believe we discussed that before. A very
5 small gap.

6 Q Let's go to our next document.

7 A I'm sorry, just to finish that answer, it could
8 happen. If you look at -- I mean, depending on how the
9 device actually performs, if there's a very strong
10 function of airflow, that would make it even further the
11 size of a small gap. That's all I meant to add. Again,
12 you know, to answer specific questions would require
13 more information on the design.

14 Q Understood. Marked as Exhibit 7 is United
15 States Patent No. 5,890,482.

16 (Document marked as Deposition
17 Exhibit 7 for identification.)

18 A So we're all set with Best for now?

19 Q Yeah, for now.

20 A Okay. If we're going to refer to it later,
21 I'll -- I just don't want to -- I'll have papers all
22 over my desk.

23 Q Let's put it away then.

24 A Put it away.

1 Q You can put it away.

2 A Okay. Bear with me for a second and I'll put it
3 in the right place so I can find it.

4 Okay. And we're moving on to Exhibit --

5 Q This will be Deposition Exhibit 7 submitted by
6 LoCo Cookers as Exhibit 1008 in connection with the IPR
7 petition.

8 A This is Farnsworth. Okay. I think I have --
9 I'm reorganized now, ready to roll.

10 Q Okay, great. If you want to take a moment to
11 flip through the couple figures and pages if you need to
12 refamiliarize yourself with Farnsworth and just let me
13 know when you're ready.

14 A Sure, okay. I will do that.

15 Okay. I think I'm good. Thank you.

16 Q Now, Farnsworth is describing another clad
17 griddle top with two layers, right?

18 A Yes, there are two layers there. I think one is
19 18 and one is 20 if I'm not mistaken.

20 Q Are those layers integrally formed with one
21 another?

22 A I'm going to column 2 of Farnsworth. Around
23 line 67 or so is a discussion. Okay. Let's go to line
24 67 of column 2. He says, griddle top 12 is comprised of

1 an upper plate 18, a lower plate 20, with a thermally
2 conductive mastic material between. He goes on to say,
3 the lower plate could be comprised of a plurality of
4 separate plates.

5 It says the lower plates 20 -- lower plate 20
6 is attached to the bottom surface 26 of upper plate 18
7 by fasteners 28. And he's talking about figure -- I
8 think it's figure 1. And if I read that correctly, he
9 says it's attached with fasteners 28. Okay. So it's
10 connected with fasteners. It's connected with bolts.

11 So your question was, if I recall correctly,
12 are these integrally formed?

13 Q Correct.

14 A Well, it's connected. If I consider integrally
15 formed, for example, ribs to the bottom, it could be
16 rolled into it, it could be cold rolled, it could be
17 welded, there could be fasteners. So I think it's
18 integral to it. It's connected.

19 Q Is integral to it something different than
20 integrally formed?

21 A I mean, it's connected. I've been using
22 connected basically throughout my report to mean
23 integrally formed.

24 If you roll something -- if you roll a rib

1 into a piece of metal, the rib is certainly connected.
2 We talked about welding. That would be connected. So I
3 think integrally formed and connected are essentially
4 the same with respect to this discussion, ribs being
5 formed integrally.

6 Q Now, figure 1 of Farnsworth shows a baffle
7 labeled as 30, right?

8 A Yep, it does.

9 Q And that baffle is discussed in a single
10 sentence in Farnsworth in column 3, approximately line
11 17 through 19, right?

12 A It says, a laterally extending baffle is
13 attached to the bottom surface of the upper plate. And
14 that's 30. I'm just looking at 30. Correct, attached
15 to the bottom surface. Yes.

16 Q There's no other textual description of the
17 baffle in Farnsworth, right?

18 A Well, let's see. I don't recall.

19 No, I believe that sentence that tells me it's
20 attached, for the sake of my report, tells me it's
21 integrated too. So, yeah, I believe it's one sentence,
22 but with respect to my report, that explains to me what
23 I need to know as far as how it's formed. So it's
24 connected.

1 Q Farnsworth does not describe the baffle as
2 providing a strengthening feature to the griddle surface
3 to prevent warping, right?

4 A I'm just double checking. Bear with me a second
5 please.

6 I'm on my report, page 144, paragraph 300
7 where I'm discussing Farnsworth, wherein the front and
8 lateral ribs integrally formed. I think we already
9 discussed this sentence. And -- Well, okay. We already
10 discussed that.

11 Okay. So that's the extent of his discussion,
12 just what I said to you there.

13 Q All right. So Farnsworth -- You'll agree with
14 me that Farnsworth does not use the word rib to describe
15 the baffle 30, right?

16 A Correct. Just like the other patent we talked
17 about where you might use dam, you know, one might use,
18 you know, other words. But he does not say the word
19 rib.

20 Q And just so we're clear on the last point, that
21 you'll agree that Farnsworth does not describe the
22 baffles as providing a structural support to the griddle
23 surface?

24 A No, he's silent on whether or not it affects the

1 surface.

2 Q Sitting here today, are you aware of any of the
3 material that you considered for your declaration that
4 uses the word baffles to describe structural supports
5 for griddles?

6 A I'd have to go through the exhibits and see if I
7 could find the word baffle. But I think we all know
8 what it is. I mean, it's a structure that creates a
9 boundary for the airflow.

10 Every one of these patents that we discussed,
11 whether it's called a baffle or a dam or a sidewall,
12 does that. So, to me, depending on what they call them,
13 that that definition is still good.

14 But to answer your question, I'd have to go
15 back through all this prior art and I'd have to refresh
16 my memory as to whether that word baffle comes up with a
17 description. I'd just have to go through it.

18 Q Well, the point of my question, there's a -- In
19 your declaration, let's just turn back to that, towards
20 the front end, you have a list of materials considered.
21 It begins on page 8 and flows over to page 9.

22 A Okay. Let me get there. Okay. Got it.

23 Q My question is, sitting here today right now,
24 with what you can remember, are you aware of any of

1 those materials reviewed that use the word baffles and
2 state that baffles provide structural support to a
3 griddle surface?

4 A I can remember the word baffles from some of
5 these. Again, I'd have to go through them to see if I
6 can equate the word baffle with strength of a surface in
7 all these, whatever, 15 of them. So to answer your
8 question, I'd have to go through these again to see if I
9 recollect baffle and strengthening.

10 Q Okay. But you're not aware of anything specific
11 right now without going back through everything?

12 MS. HOROCOFSKY: Objection, form.

13 THE WITNESS: I recall the term baffle used at least
14 in one of these prior references. Farnsworth for sure.
15 There may be another one. But I'd have to go through
16 it.

17 MR. BRAITHWAITE: Q We discussed Best as well,
18 right, that used baffle, right?

19 A See, that's why I'd have to go through these.
20 He said baffle. That says baffle. Farnsworth says
21 baffle. And I thought --

22 Q And --

23 A I thought there was another one, but.

24 Q Okay. Well, with respect to at least Best and

1 Farnsworth, you agree with me that neither discussed
2 baffles as providing strength to a griddle surface to
3 resist warping, right?

4 MS. HOROCOFSKY: Objection, asked and answered.

5 THE WITNESS: Going through Best -- Yeah, I believe
6 you asked me in each case whether or not that was the
7 case. And I said there wasn't any sentence in either of
8 those that described the baffles with strengthening.

9 I believe that -- I'm sorry. It doesn't mean
10 there may not be. It doesn't mean that they could be
11 done to strengthen. But to answer your question, I
12 don't recall in those two references them saying that.

13 MR. BRAITHWAITE: Q And that's what I'm focused
14 on, is whether the references themselves describe
15 baffles as providing the function of strengthening a
16 griddle surface against warping.

17 MS. HOROCOFSKY: Objection, form.

18 MR. BRAITHWAITE: Q There wasn't a question yet.
19 But now I'll ask the question.

20 So are you aware, sitting here right now -- I
21 understand you haven't committed it to memory. I'm not
22 understanding your response of no, you're not aware as a
23 universal definition that it doesn't exist. But are you
24 aware of anything in that materials considered list that

1 uses the word baffle to describe a structural support
2 against warping?

3 MS. HOROCOFSKY: Objection, asked and answered.

4 THE WITNESS: So the answer is I don't recollect
5 that. But as I look at -- You know, as I'm citing the
6 combinations in my report, we're talking about what
7 baffles do and how they're connected and how they're
8 integral. Now we've discussed how one in the art could
9 also use a rib-like structure that would -- for the
10 discussion we're calling it a baffle -- how they could
11 integrate into the bottom surface of the griddle.

12 And we discussed earlier that when you're
13 doing that -- We had a lengthy discussion on stiffening
14 effects. So one in the art simply needs to see the
15 baffle connected and can immediately apply that, oh, and
16 when I attach it, the act of attaching is going to have
17 some effect on the stiffness.

18 So the fact that Best or any of these other
19 ones may not associate baffle with strengthening, we
20 already discussed that, in my view, a baffle serves the
21 purpose of the ribs in the asserted patent, and once we
22 talk about connecting, we could go through the whole
23 design process we discussed this morning on how I could
24 strengthen the structure.

1 MR. BRAITHWAITE: Q Let's turn back to Deposition
2 Exhibit 3. This is the Hinkle patent.

3 A All right, Hinkle. Okay, back to Hinkle. I'm
4 there.

5 Q You recall Hinkle describes the use of ribs to
6 strengthen a griddle surface against warping, right?

7 A Correct.

8 Q But Hinkle does not describe ribs to create
9 different heating zones, correct?

10 A I'm in the abstract. He says, ribs are provided
11 on the bottom wall and then the bottom wall has sections
12 at different elevations, thereby providing different
13 surface temperatures on the griddle. So he's talking
14 about ribs and their effect on different heating,
15 different temperatures.

16 Q And he describes the use of ribs to distribute
17 heat evenly, right?

18 A Well, in the abstract it says, the ribs are used
19 to provide different surface temperatures. But he does
20 talk about rigidity.

21 Q So perhaps we --

22 A I'm sorry, I just wanted to add. He does talk
23 about rigidity. You talk about ribs. And we already
24 discussed that. To me, the baffle and the rib are

1 synonymous. So in that sense he's talking about a
2 baffle created.

3 Q Is it correct to describe the ribs of Hinkle as
4 baffles?

5 A Well, depending on -- It could be. I mean, his
6 ribs -- Bear with me please. It's been a while since I
7 read this patent.

8 I'm on column 1 around line 40, the heat
9 distribution ribs as he stated. He doesn't -- Obviously
10 he doesn't call them baffles. He calls them ribs. But
11 they are -- They do create the different heat flows,
12 which is what the ribs do in the asserted patent. They
13 do stiffen -- Our earlier discussion was about would
14 ribs 23 and 25 create stiffnesses and -- increase
15 stiffness in different directions. So they do that.
16 But I agree with you, he doesn't call them baffles.

17 Q But you believe it would be correct to
18 potentially call them baffles even though Hinkle does
19 not?

20 A Well, if Hinkle -- if he were to in his
21 discussion -- He can call it whatever he likes. He can
22 call it a baffle. He can call them dams. He could call
23 them sidewalls. He could call them baffles too. It's
24 up to Hinkle to call them what he wants to call them.

1 Q My question is, what would you call them? In
2 your opinion, are they correctly characterized as
3 baffles?

4 A I think ribs, baffles, sidewalls, dams would all
5 be appropriate.

6 Q Okay. Are you aware of any of the literature in
7 your materials considered list that describes ribs
8 useful for the function of controlling airflow?

9 A I believe that's what Williams at least talks
10 about. And I believe -- Do you recall what your exhibit
11 Best was so I don't have to flip through them on the
12 screen? Was that 4?

13 Q Sure. Best is No. 6. And maybe you didn't hear
14 my question entirely either. But Best is 6, and if
15 you'd like me to repeat my question, I'm happy to.

16 A If I interrupted you, I apologize.

17 Q My question is, out of any of the materials
18 considered from your declaration, do any of those
19 references use the word ribs to describe a structure
20 that controls airflow?

21 A I'd have to go through all those documents to
22 see if ribs was used with airflow. I don't recall.

23 Q Sitting here right now, you can't think of one?

24 A I don't remember. I don't remember. It could

1 have, but I don't remember. Again, when we're talking
2 about sidewalls and ribs, these are the things that
3 control an airflow. I think we already discussed that I
4 would consider them ribs.

5 Q Right, which wasn't my question. My question is
6 whether any of those references use the word ribs or rib
7 in the singular for a structure to control airflow?

8 A And I believe I answered that when I said I'd
9 have to go through. I don't recall. There may have
10 been, but I don't recall without going through all of
11 it.

12 Q But you would agree with me certainly that at
13 least Best and Farnsworth use the word baffle for a
14 structure to control airflow, right?

15 A Yes, they call -- What I call ribs, they use the
16 term baffle, true.

17 Q And you would agree with me that Hinkle at least
18 uses the word rib to describe something that imparts
19 structure to a griddle surface to prevent warping,
20 right?

21 A Correct. We discussed that. So that's why
22 under my definition of rib, a baffle, the rib structure
23 of Hinkle and all these other references are ribs,
24 because I state in my report you could add ribs to add

1 structure, like Hinkle. I said you could add ribs to
2 add boundaries for airflow like Williams and Best. So
3 that's why all these things fall under the definition of
4 rib. Whether or not they specifically call it rib we
5 just discussed. But they act like ribs.

6 MR. BRAITHWAITE: I think now is a good time for a
7 five-minute break. We'll come back at 25 til and I'll
8 try to tighten up what I have.

9 THE WITNESS: Could we go til -- so I can get a cup
10 of coffee? Instead of 25 -- I have 3:27. Can we make
11 it 10 minutes, please?

12 MR. BRAITHWAITE: Yeah, that's great. Quarter til.
13 Let's just do a quarter til.

14 (Recess was taken.)

15 MR. BRAITHWAITE: Let's go back on the record.

16 Dr. Vallee, thank you for your time. I have
17 no further questions at the present pending any
18 recross-examination.

19 MS. HOROCOFSKY: Okay. Thank you, Counsel. And we
20 also -- We do not have any redirect.

21 MR. BRAITHWAITE: All right. Well, I'm guessing
22 then that this concludes the questions and deposition.

23 (Whereupon, the deposition concluded
24 at 3:54 p.m. Eastern Standard Time.)

1 STATE OF ILLINOIS)

) SS:

2 COUNTY OF C O O K)

3 The within and foregoing deposition of the
4 aforementioned witness was taken before NADINE J.
5 WATTS, CSR, RPR, and Notary Public, at the place, date
6 and time aforementioned.

7 There were present during the taking of the
8 deposition the previously named counsel.

9 The said witness was first duly sworn and was
10 then examined upon oral interrogatories; the questions
11 and answers were taken down in shorthand by the
12 undersigned, acting as stenographer and Notary Public;
13 and the within and foregoing is a true, accurate and
14 complete record of all of the questions asked of and
15 answers made by the forementioned witness, at the time
16 and place hereinabove referred to.

17 Before completion of the deposition, review of
18 the transcript { } was {X} was not requested. If
19 requested, any changes made by the deponent (and
20 provided to the reporter) during the period allowed are
21 appended hereto.

22 The undersigned is not interested in the
23 within case, nor of kin or counsel to any of the
24 parties.

Witness my official signature and seal as
Notary Public in and for Cook County, Illinois on the
16th day of January, A.D. 2025.

Nadine J Watts

NADINE J. WATTS CSR, RPR
Notary Public
License No. 084-002736
One North Franklin Street
Suite 2100
Chicago, Illinois 60606
Phone: (312) 442-9087

&	120 13:20 15:8	76:1 79:10 80:1	2500 2:15
& 2:14,19 4:16 5:7	16:15	80:21 87:3 89:3	257-5035 2:21
0	14 3:2 80:24	89:20 91:6 99:7	26 107:20 117:6
0.11 90:14	81:11,14 82:7	116:22,24	28 117:7,9
0.125 90:17	82:10	20 14:15 20:13	3
084-002736	1401 2:10	75:11 105:5	3 3:11 10:4
130:6	144 119:6	116:19 117:1,5	47:21 48:1,12
1	14th 1:18	117:5	49:4,16 50:7,9
1 3:8 8:21,23	15 48:21 50:18	200 14:8,18	50:18 52:1 53:7
10:12 48:20	121:7	20:7 42:20	68:13 80:1,9
55:3 117:8	150 2:20	2009 44:6	107:23 118:10
118:6 125:8	160 13:8,15,18	2014 32:4	124:2
10 36:13 48:20	13:21 14:1	2017 17:21	3,747,509 3:11
61:1 128:11	16th 130:3	19:15,19	47:22
100 3:17 16:15	17 118:11	2021 20:15	30 13:20 14:15
42:20	18 38:19 40:10	2025 1:19 3:2	107:7 118:7,14
1000 2:5	49:7,18 104:17	130:3	118:14 119:15
1002 37:17	104:19,22	20805 130:4	300 119:6
1003 9:7	116:19 117:1,6	20b 107:22	303 2:11
1005 54:11	180 14:6	21 20:15	312 130:8
1007 101:1	19 40:11 118:11	2100 130:7	34 59:22
1008 116:6	190 14:6	22 20:15 66:2	35 55:10 60:6
1013 47:23	192 108:7,8	68:3,4 89:21	36 109:7
1018 38:19	193 110:14	104:17,22	37 3:9 55:7
1023 39:18	1985 39:6	23 27:24 28:22	62:13,15
10:30 1:18	1:00 82:17	50:20 51:10	374-1600 2:6
10th 38:16	2	102:22,23	39 40:8,15,18
11 32:10 36:15	2 3:9 9:20 22:2	125:14	3:27 128:10
115 3:19	37:16,21 57:7	2300 2:10	3:54 128:24
12 61:13 69:2	57:16 60:6	24 65:23 66:2	4
73:17 76:1,12	61:12 64:9,11	89:21	4 3:5,13 12:7
78:11 116:24	65:4 68:10,16	25 50:20 51:14	20:14 54:10,14
	69:3,14,21	125:14 128:7	79:11,15
	70:13 74:9,15	128:10	

126:12 40 125:8 401-8900 2:16 42 58:24 80:10 81:8 82:8 83:7 44 57:8,17 58:1 58:3,6,7,13,24 60:15 66:15 67:7 68:1,6,10 68:10,11 69:1 69:11 71:15 72:19 73:8,16 74:8 76:6 81:3 83:5 90:1 94:9 94:16 442-9087 130:8 46 59:1 60:18 68:11 81:8 83:7 47 3:11 473 59:14,16 72:10,14 106:20 114:11 48 82:15 87:5	5,890,482 3:19 115:15 50 75:11 105:1 500 2:20 509 48:5,11,19 49:23 50:7 52 103:2 53703 2:21 54 3:13 583-8239 2:11	80 16:21 801 2:16 80202 2:11 84111 2:16 85 61:7 86 61:21 87 60:20 62:3 62:16,23,24 63:5 71:4 88 63:13 74:12 78:14	102:16 103:4,7 103:11 104:17 105:4,14 108:13,18,19 109:17,23 110:11,13,15 110:21,23,24 112:2,9 113:9 98 108:6
69:11 71:15 72:19 73:8,16 74:8 76:6 81:3 83:5 90:1 94:9 94:16 442-9087 130:8 46 59:1 60:18 68:11 81:8 83:7 47 3:11 473 59:14,16 72:10,14 106:20 114:11 48 82:15 87:5	6	9	a
5	6 3:17 100:21 100:23 101:19 126:13,14 6,389,960 3:13 3:16 54:12 60606 130:8 608 2:21 64 3:15 6400 2:5 67 116:23,24 68 59:22 60:4	9 38:8,15 104:15,18,19 104:21 120:21 90 66:17 67:7,8 67:18 69:1,20 69:21 70:5,8,11 70:18,20,21 71:19 73:9,14 88:9,10 89:5,11 89:14,16 92:9 91 82:14,24 83:1 92 87:5,8 93:7 108:10 94 102:11,16 103:3,6,10 104:17 105:14 109:18 110:11 110:23 111:1 112:6 113:9 95 2:15 93:9 95:10 102:11	a.d. 1:19 130:3 a.m. 1:18 ability 64:13 able 8:16 47:4 67:1 97:18 101:3,11 above 65:23 absolutely 92:4 abstract 102:3 106:15 124:10 124:18 access 101:11 accommodate 84:4 account 8:14 26:2 45:18 accurate 46:3 46:13 95:3 96:13 102:8 129:13 accurately 45:20 100:18 achieve 72:23
5 3:15 12:7 19:17 64:23 65:1 79:13,14 102:9,15 103:22 105:3 107:20 108:16 109:7 111:17 111:18 5,676,043 3:17 100:24	7 3:19 61:2 115:14,17 116:5 713 2:6 77002 2:5		
	8		
	8 3:8 38:3,6,8 49:6,17,18 120:21		

act 67:9 123:16 128:5 acting 129:12 acts 58:23 60:7 actual 28:6 30:16 91:22 actually 11:7 13:19 14:4 15:23 16:3 18:10 20:21 21:17,20,23 22:21 23:2 28:20 29:4,15 30:23 33:1 39:6 42:22 46:19 66:20 72:5 81:17 90:22 92:2 94:7 96:2 98:23 111:9 112:2 115:9 actuated 10:5 14:23 add 12:15 18:24 32:24 41:19 71:12 95:7 97:19 115:11 124:22 127:24,24 128:1,2 added 33:3,7 35:13 44:21 45:1 93:19 adding 33:1 75:6	addition 36:4 36:12 44:11 48:12 61:21 additional 45:1 73:17 93:13 113:24 additions 32:21 address 26:23 addressed 28:20 29:15 addressing 48:12 adhering 92:14 92:24 adjust 42:14,18 advantageous 98:16 affect 19:11 25:12 94:6 100:17 104:13 affected 21:22 46:24 affects 119:24 affixes 110:20 afford 41:3 aforementioned 129:4,6 afraid 53:17 54:7 ago 10:10 14:15 15:24 32:10,21 34:19 36:15 96:10	agree 4:6 7:12 17:24 29:14 54:19 56:7 58:10,14 64:10 69:15 77:4 78:1 78:16 80:23 81:7,24 85:2 94:24 105:10 105:15 106:24 119:13,21 122:1 125:16 127:12,17 agreed 7:15 ahead 4:21 8:10 107:8 aid 44:10 aimed 56:10 62:2 aiming 92:2 air 12:3 13:15 55:24 56:2,13 57:2,3,12 58:2 71:23 84:19 103:14,20 104:1 113:14 airflow 11:7,15 12:12 20:24 37:1 55:18 114:8 115:10 120:9 126:8,20 126:22 127:3,7 127:14 128:2 airgap 115:2	airgaps 102:1 akin 19:1 96:7 alarm 12:22 30:7,15 32:12 32:14 alleged 20:1 allow 11:8 49:12 53:15 56:22 57:11 103:13 allowed 11:15 12:18 19:9 36:12 42:11 43:24 56:6,7 75:19 129:20 allowing 88:7 allows 26:10 41:21 67:3 76:7 109:3,4 112:11 alluding 73:1 alter 87:22 aluminum 108:1 ambient 16:17 46:9 american 4:16 amount 29:5 41:20 77:13 103:21 analyses 45:11 45:11 46:18 analysis 11:19 24:16,17,18,23 25:1,2,3 26:2,3
--	---	--	---

26:7,16,21 28:17,23 30:22 43:2,4,9,12,21 44:10,24 45:4,4 45:6,8,10,17,20 45:24 46:2,4,11 46:23 47:11 72:5 73:21 74:6 76:22 77:11 92:22 analyze 21:13 25:5 46:20 47:1 analyzed 19:20 21:5 analyzing 20:17 21:12,24 animal 11:16 annotated 3:15 64:23 79:14,15 annotations 66:8 answer 5:23 6:2,3 24:21 39:16 52:12,18 53:9 70:4 73:2 73:23 84:21 100:18 114:3 115:7,12 120:14 121:7 122:11 123:4 answered 60:10 122:4 123:3 127:8	answers 129:11 129:15 anyway 103:19 apologize 126:16 appeal 1:1 appear 71:8 73:8 appeared 2:3,9 2:14,19 appears 81:14 appended 129:21 applications 26:23 27:2,3,7 30:10 apply 123:15 appreciable 52:22 53:2 appreciably 75:7 appreciate 5:1 80:4 110:14 approach 39:21 40:4 54:16 approaching 82:18 appropriate 46:22 61:19 126:5 approximately 13:12 49:6 104:22 118:10	approximating 76:10 area 34:8,9 87:15 88:12 89:18 areas 10:19 arena 12:8 argue 82:11 aroma 10:2 14:17,21 20:6 art 40:14 70:22 72:21 85:20 90:19 103:24 105:22 106:6 113:12 120:15 123:8,14 asked 60:10 74:2 90:4 104:6 122:4,6 123:3 129:14 asking 23:12 29:12 45:24 54:24 63:16 74:5 95:23 aspect 25:19 99:23 114:14 assemble 97:12 97:13,17 109:2 112:17 assembled 111:11 112:16 assembles 110:21	assembling 96:22 98:4 assembly 85:1 91:22 93:23 95:11,13,18 96:15,21,23 99:6 111:13,15 111:24 112:8 112:19,23 113:4,13 asserted 21:5 123:21 125:12 assess 45:19 assessment 96:13 assignment 28:4 associate 123:19 assume 5:19 77:10 93:17 assumed 111:3 assuming 85:7 91:21 92:1 97:8 99:7 assumption 91:23 atlantic 1:7 4:17 attach 67:10 109:12 123:16 attached 18:22 117:6,9 118:13 118:14,20
--	---	--	---

attaching 88:4 123:16	43:1 47:19 49:15 56:1,14	106:2,5,6,10,22 107:1 110:11	27:15
attachment 19:12,13 77:10	60:21 64:9 68:21 71:3	111:10 113:1,3 113:9,14 115:2	bear 11:24 40:14 48:24
attachments 12:9 17:3,8	78:13 84:19 87:1,2 91:24	119:22 120:4 121:1,2,4 122:2	55:2 59:18 60:24 66:23
attend 5:2	98:3 101:8 108:6 120:15	122:8,15 123:7 125:4,10,16,18	79:3 80:16 107:10 116:2
attendance 5:9 7:24	120:19 121:11 124:1,3 128:7	125:23 126:3,4	119:4 125:6
attending 5:5,7	128:15	baffling 36:24	bearing 111:3
attention 30:8	bad 36:18	baja 28:13,14	beginning 18:11 49:17
attorneys 53:20	baffle 53:11,16 103:6,7,14	bar 34:18 35:10 35:10 36:5,12	60:4 74:3
automobile 22:22,24	104:2 108:20 108:22 109:18	44:11,19 45:2	begins 120:21
automotive 28:13	109:23 110:24 112:6 114:6,7	barbecue 11:20 12:2,9 17:2,3,8	behalf 2:13,23 4:23
availability 91:16	118:6,9,12,17 119:1,15 120:7	19:3	believe 8:19 16:8 17:20
available 90:16 90:17,20	120:11,16 121:6,9,13,18	barn 15:14	20:15 33:21
aware 54:1 120:2,24	121:20,20,21 123:1,10,15,19	barrier 68:12	34:7,15,18
121:10 122:20	123:20 124:24	base 31:11 85:23	36:22 37:6
122:22,24	125:2,22	based 103:21	53:10 58:3,7,12
126:6	127:13,16,22	basically 11:5 13:12 33:8	59:12 62:3 67:8
axis 50:23 52:3	baffles 36:20 36:22 37:2 53:7	58:23 59:15	68:9 69:8 73:1
b	53:14 54:1 102:11,18,24	63:16 65:13	74:2,11 78:19
back 10:8 11:6 13:4,19,21	103:2,4,10 104:17 105:2,4	68:12 69:13	78:21 80:10
15:23 17:20	105:9,12,14,22	76:9 111:5 117:22	85:13 99:5
18:18 20:4 21:9		basis 77:4	102:20,23
22:2 25:15		beam 26:19 27:15 47:1,3,3	107:7,23 108:3
34:21 36:23		beams 10:16 26:15,24 27:13	115:4 118:19
37:4,13 39:6			118:21 122:5,9
			125:17 126:9
			126:10 127:8
			bend 66:17 67:7,8,13,18

69:1,3,11,20,21 70:5,8,11,18,20 70:21 71:19 73:9,12,13,14 88:9,10 89:5,11 89:14,16,17,17 92:9,9 bending 34:9 50:3,19 51:10 51:11,12,13,14 89:19,19 beneath 54:21 benefit 7:23 77:12 bent 33:9 34:18 35:10,10 36:5 best 3:18 53:23 75:1 100:24 101:20,23 102:18,22 103:17,22 104:12,16,19 105:7,15 106:2 106:24 107:3,4 107:11,13,16 107:20 108:10 108:19 110:15 110:18,24 111:18 112:18 112:23 113:3 114:5,14,15,24 115:1,18 121:17,24 122:5 123:18	126:11,13,14 127:13 128:2 beyond 80:24 81:4,9 bhorocofsky 2:7 big 71:10 83:18 binder 102:13 bit 18:24 48:18 74:23 blank 79:7 block 24:10 blocks 102:6 board 1:1 bobbie 2:4 4:5 4:6,19 body 12:12 boiling 14:10 bolts 117:10 bostitch 10:3 bottom 9:7,20 10:4 20:14 50:19 63:2,4 75:17 77:22 85:8 90:6 97:2 97:5,17 107:6 107:21 109:5 109:16 110:20 112:1,6,7,9,10 112:14 114:20 117:6,15 118:13,15 123:11 124:11 124:11	bought 31:11 boundaries 128:2 boundary 46:22 58:23 59:15 60:12 120:9 box 11:5,6,8 15:22 16:8,10 16:14 43:10 braithwaite 2:15 3:5 4:4,13 4:14,15,21 5:6 7:21 8:6,15,19 19:5 23:12 24:22 25:15 28:19 34:10,17 36:11 37:15 44:16 47:13,17 47:19 60:17 66:13 79:22 82:13 87:1 101:6,11,13 103:23 104:15 106:1,24 107:13 110:11 113:8 121:17 122:13,18 124:1 128:6,12 128:15,21 break 6:4 47:14 82:19 85:19 128:7	brief 6:6 briefly 5:18 bringing 102:3 broad 22:8 23:6 23:17 broil 17:8,14 18:14 21:16 36:22 37:3 buggy 28:14 building 109:3 bulk 25:4 burn 13:9 burner 65:24 68:5 105:3 burners 56:12 84:9 105:1 106:9 business 11:3 15:19 buy 19:3 buying 28:2 byproduct 56:24
c			
c 129:2 cad 94:16,18 cads 94:15 calculate 24:19 26:11 91:22 92:2 95:5 96:14 98:23 calculation 47:5 53:3,5			

calculations 34:20 call 58:1,10,13 60:9 76:12 81:16 103:18 105:17 106:18 108:14 114:20 120:12 125:10 125:16,18,21 125:22,22,22 125:23,24,24 126:1 127:15 127:15 128:4 called 4:9 11:13 15:17 46:19 57:7 58:9 81:12 103:18,19 105:18 120:11 calling 61:8 123:10 callister 39:19 40:7 calls 58:16 102:24 106:9 125:10 camping 113:19 capability 42:10 capable 41:24 42:24 capacitance 23:23 25:7	capsule 16:1 car 23:15 careful 97:20 case 8:11 16:7 17:6,10,14 19:7 19:8,23 20:16 21:4 36:22 37:1 37:14 46:14 59:8 64:22 82:9 88:20 112:12 122:6,7 129:23 cause 71:11 88:3 causing 35:2 center 47:7 57:12,12,20,23 64:12 65:16,22 ceramic 11:7 20:3 certain 24:4 25:19 42:13 46:18 79:7 84:12 95:5,6 100:3 certainly 33:4 63:11 72:18 75:24 89:2 110:13 118:1 127:12 cetera 12:22 26:24 63:13 74:15,15 90:8 100:10	chair 9:17 chamber 17:16 19:9 24:3 110:19,23 chambers 71:23 72:4 108:24 chance 111:7 change 25:21 89:24 95:5 changes 25:11 25:20,23 43:3,8 129:19 channel 27:6 58:5,22 59:4 68:2 75:18 114:16 channels 60:13 char 17:8,14 18:14 21:16 36:22 37:3 characteristics 23:21 characterized 126:2 charcoal 12:5 chat 7:13,17 101:6 cheap 96:6 check 20:14 checking 119:4 chef 12:20 chicago 130:8	chips 19:1 choose 46:1 84:23 cigarettes 11:22 12:1 19:20 circle 25:17 circular 47:2 circumstance 99:12 circumstances 99:14 100:3 cite 61:18 citing 54:23 123:5 city 2:16 civil 1:16 clad 107:13 116:16 claim 61:1 114:10,10,11 claims 20:18 21:5 68:15 106:13 clean 79:15 clear 66:9 70:17,18,20 119:20 clearance 84:10 click 79:9 clicking 79:20 close 36:15 closer 14:6
--	---	--	--

coax 56:1 coefficient 46:8 coffee 128:10 coil 10:9 19:24 20:2 coiled 11:22 cold 28:2 110:8 117:16 collect 29:3,5 colorado 2:11 column 48:20 49:4,16 50:18 55:3 68:10,13 104:15,18,19 104:21 107:20 116:22,24 118:10 125:8 combination 21:16 110:22 combinations 123:6 combustion 15:3 24:2 come 16:6 19:9 28:19 35:2 97:7 128:7 comes 14:14 28:18 120:16 coming 4:23 85:8 commencing 1:17 comment 46:15	commercially 11:3 committed 122:21 common 29:7 93:19 communicate 105:21 106:5 communicates 78:6 compact 88:12 company 20:16 21:19 compare 28:5 38:1 89:7 compartment 58:3 compensate 100:16 competing 21:1 competitive 41:17 competitor 21:8 complete 38:10 38:12 46:24 57:19 92:3 129:14 completely 56:6 completion 129:17 complexity 26:18	complicated 26:8,13,20 36:1 compliments 103:6,8 component 24:20 25:4,10 41:16,21 42:9 44:18 46:21 47:12 81:17 components 22:24 43:14 63:21 77:15 82:7 91:11,15 93:6,13,20 94:1 95:21 96:1 107:4 comprised 116:24 117:3 computer 7:8 concluded 7:13 128:23 concludes 128:22 conclusion 61:20 condition 46:9 conditions 15:12 16:17 32:18 46:23 conductance 23:23 conducted 25:9 conduction 24:4,15	conductive 25:6 117:2 conductivity 102:6 108:2 configured 112:16 conjunction 110:17 connect 71:5 72:21 80:13 109:13 connected 34:7 35:24 69:6,7,10 69:12 75:17 77:23 78:22 80:10,11,12,19 84:15 85:7,9 86:1,6,11,18,19 106:12 110:1,1 110:4,12 117:10,10,14 117:18,21,22 118:1,2,3,24 123:7,15 connecticut 6:14 connecting 110:7 123:22 connection 17:1,2 18:14 19:20 20:11 37:17 43:21 44:17 54:11 69:12 88:13
--	--	--	---

116:6 consider 23:17 23:21 46:16 64:1 75:24 85:21 95:1 104:1 117:14 127:4 consideration 87:10,19 93:10 113:4 considerations 23:6 45:15 112:19 considered 38:11 48:8 59:1 93:3 95:4 120:3 120:20 122:24 126:7,18 considering 25:6 69:23 97:11 constitute 43:8 constraints 46:2 construction 30:1 consulting 12:8 17:1 19:21 consumer 29:22,23 76:3 contact 10:23 62:22 63:4,17 87:15 111:10	container 68:2 content 82:14 context 49:10 49:20 58:21 59:12,14 60:11 60:24 106:13 110:24 112:23 113:22 continue 56:18 contour 33:9 control 42:1 84:11 109:4,10 109:15,16,19 111:23,24 112:2,7,9 114:8 127:3,7,14 controlled 11:18 controlling 109:22 126:8 controls 126:20 convect 24:1 convection 24:4 24:9,13,13,15 convective 23:23 24:10 convenient 111:12 112:15 cook 16:11 17:13 35:24 44:1 130:2 cookers 1:4 4:20 47:22 54:10 101:1	116:6 cooking 17:24 30:6 33:23 101:24 107:14 cool 13:11 57:3 coolant 24:10 cooperate 55:12 copies 7:1 8:5,9 copy 9:2 37:18 37:22 38:1 48:2 48:3,3,5 49:15 54:17 79:14,16 79:23 copying 27:11 corner 9:7 correct 5:16,17 6:16 7:3 9:9 13:22 15:20 16:12 22:5 29:12 38:19 46:17 48:10 49:17 50:1,4 53:6 57:9 58:20 62:21,22 65:11 65:15,22 67:20 79:13,21 83:12 85:19 87:17 89:13,23 91:17 92:4 98:15 101:23 102:21 103:5,11,12 104:21 105:16 106:2,3 107:2	107:14 108:20 108:21 113:10 117:13 118:14 119:16 124:7,9 125:3,17 127:21 correctly 5:11 42:19 44:21 50:17 87:9 117:8,11 126:2 correlate 30:23 cost 40:23 41:15 42:2,4 76:15 84:24 90:10 91:22 92:2 94:3,7,17 95:1,5,7,11,13 113:17 costs 40:20 41:6 41:17,23 90:22 91:9,12 93:22 95:22 96:13 counsel 2:2 4:1 5:4 43:3 101:3 128:19 129:8 129:23 counterbore 31:22 county 129:2 130:2 couple 57:6 68:22 69:2 70:23 71:13,21 72:23 73:4
---	---	---	--

102:10 116:11 coupled 24:8 45:6,7 62:17,20 69:7,19 71:6 coupling 63:6 63:22 69:17 course 5:23 10:13,20 11:2,2 12:16 13:9 15:16,18,21 16:1,1,9 22:9 22:11,13,16,18 22:23 23:4,5 24:18 26:14,22 27:14,16 29:18 39:7 105:11 courses 22:4,5 22:7 39:5 coursework 24:23 27:20 28:21 29:14,16 39:1,23 43:10 court 6:1 60:2 courts 1:16 crack 87:24 88:1 crazy 1:4 4:20 create 14:13 42:8 54:20 55:12 56:21 57:5,19 68:1,6 72:10 73:11 81:18 94:15,18 106:9 111:13	114:16 124:8 125:11,14 created 83:19 103:14 125:2 creates 23:2 60:13 72:14 120:8 creating 64:22 critical 42:22 cross 114:8 csr 1:13 129:5 130:5 cube 25:17,21 26:6 cup 128:9 curl 51:12 curriculum 3:8 cursor 64:14 65:17,19 custom 90:15 cv 9:1,3,5,15,17 9:19 19:17,18 22:3	damage 92:16 93:2,4 dams 55:12 60:9,16 69:9 78:20 80:6,7 82:1 85:11 86:5 94:16 97:10 105:18 125:22 126:4 dash 11:11 date 129:5 david 5:8 day 1:18 130:3 dealing 23:14 26:15 28:1 47:12 dealt 12:17 14:4 decide 26:20 52:10 83:22 97:10 decided 109:14 declaration 3:10 7:1 37:19 37:23 38:2,4 40:8 48:9 60:18 68:21 75:3 78:13 82:13 87:2,6 108:6 109:8 120:3,19 126:18 deep 51:16 define 53:1 58:20 106:16	106:17 defines 59:15 61:7 definitely 14:12 definition 79:2 120:13 122:23 127:22 128:3 deflect 87:21 88:3 89:20 deflection 71:14 92:11 deflector 29:3 deflects 87:22 deformation 89:1,2 degree 56:9 66:17 67:7,8,18 69:1,20,21 70:5 70:8,11,18,20 70:21 71:19 73:9,14 74:3,16 75:21 76:21,24 77:6 88:9,10 89:5,11,14,16 92:9 degrees 13:8,18 14:8,18 15:9 16:21 20:7 36:13,14 77:7 delivery 11:5 11:10 15:22 16:8,10,11,14 16:16,17 30:6 43:10
	d		
	dam 58:18,18 59:2,3,8 61:8,8 61:15,22 68:11 68:23,23 78:17 78:18,23,23 80:10,13 81:8,8 82:5,5,12 83:8 83:8 85:4,22 94:12,12 119:17 120:11		

denver 2:11	4:24 7:6,10,12	107:1,18 124:5	111:17,19
department 9:18	7:14 8:21,22	124:16 126:7	113:11,16,23
depend 83:21	37:16,20 47:21	describing	114:2,6,7,17
88:18 91:4	47:24 48:12	50:10 116:16	115:13 123:23
dependent 43:9	54:9,13 64:24	description	designed 21:23
47:10 90:12	79:12 87:2	34:11 43:2 51:8	27:6 57:2 69:2
92:20	100:21,22	105:7 118:16	75:11 78:12
depending	115:16 116:5	120:17	80:18 112:5
13:13 15:11	124:1 128:22	design 9:11,23	designer 42:3
31:21 42:16	128:23 129:3,8	10:14,14,14,18	91:20 113:2
45:3,4 77:7	129:17	12:10 15:16	designing 21:11
78:12 99:20	depositions	16:1,8 21:14	21:17,20 22:19
113:11 115:8	1:17	22:1,8,18,23	22:23 72:4
120:12 125:5	depth 31:21	23:5,22 24:18	75:23
depends 25:23	52:17 67:18	26:14,18,22	designs 11:19
26:18 27:16	76:18 109:4	29:20,24 30:1	desirable 11:9
46:11 75:5	112:9	30:13,15,16,21	desired 56:23
80:12 84:23	describe 33:6	31:5,24 34:5,19	desk 115:22
88:22 89:3	53:6,13 67:6	35:8 38:23 39:8	despite 33:1
90:11,18 92:18	69:16,21 70:2	39:10,12 41:4	114:24
93:23 98:16,18	85:3 88:14	43:16 44:5 45:3	detail 52:12
113:15,20	107:3 119:1,14	75:15,19,21	detailed 81:6
depicted 64:10	119:21 120:4	76:7,10,16,20	details 20:3
74:9 78:11,16	122:14 123:1	76:22 77:3,7,12	21:10 44:8 91:8
80:5,24 81:3,9	124:8 125:3	80:14 83:22	92:20 95:23
depiction 57:16	126:19 127:18	84:2,4,10,22	97:1
68:16	described 15:18	88:18,22 89:8,9	detection 32:18
deponent	78:9 95:20,21	90:1,11,12,13	determination
129:19	102:11,18	90:18 91:4,5,12	98:21 100:8
deposed 5:16	107:16 108:19	92:3,18,18,19	determine
deposition 1:12	112:24 122:8	94:5,21,22 95:2	12:20 32:5
2:2 3:1,8,9,11	describes 68:12	95:9,23 96:8	42:23 43:16
3:13,15,17,19	82:8 98:21	97:1 99:20,22	46:10 76:8
	105:8 106:2,5	100:1,15	90:21 104:4

113:12 determines 84:13 determining 64:1 95:1 develop 11:3 developed 12:17 15:22 developing 32:11 development 10:4 11:1 15:17 29:18 device 11:9 12:10 18:6,13 18:16,20 20:22 20:24 21:6 22:21 23:1 25:4 30:8 35:15,23 36:1,23 53:20 115:9 devices 10:1,15 10:22,24 14:17 20:18 21:1 22:19 32:22 36:24 diagonal 33:19 diameter 47:2 dictate 25:8 45:21 76:2 difference 52:22 different 13:10 13:24 15:13	17:4 20:2,4 23:2 27:8,8,12 43:7 44:1 56:23 71:15 72:3,3,18 79:2 96:17 101:24 117:19 124:9,12,12,14 124:15,19 125:11,15 differing 46:22 difficult 44:8 66:10 67:14 70:16,21 73:15 91:3 93:15,16 digit 8:2,16 digital 30:24 dimensional 50:22 91:10,14 dimensions 42:15,16,22,23 92:20 99:1 directed 101:24 direction 50:20 51:1,6,7,12,24 52:5 59:24 89:7 92:10 98:12 114:2 directions 50:22 51:2 125:15 director 9:14 disagree 29:17 disclosure 86:15,17	discrete 102:4 106:16 discuss 59:17 59:21 60:4,6 68:14 71:3 81:23 83:7 102:22 110:9 114:5,9 discussed 12:8 36:21 61:24 69:8 85:6 87:21 99:8 110:16 114:23 115:4 118:9 119:9,10 120:10 121:17 122:1 123:8,12 123:20,23 124:24 127:3 127:21 128:5 discusses 58:8 103:17,17 108:5 discussing 61:18 107:24 119:7 discussion 8:17 59:21 68:14,24 77:20 102:21 105:18 116:23 118:4 119:11 123:10,13 125:13,21 displace 111:9	display 7:9 30:24 32:1 43:24 44:18 displayed 7:8 disposed 102:7 dissipated 25:20,22 dissipates 24:14 distance 84:5 distribute 49:24 124:16 distribution 26:9 30:24 63:21 71:2,7,10 71:15,22,24 72:8,19 73:2 125:9 district 1:16 distrust 39:11 39:13 40:2 dived 93:5 divide 114:24 dividing 56:10 56:11 document 7:16 8:20,22 37:15 37:20 47:20,24 53:22 54:4,9,13 64:24 79:17 100:20,22 115:6,16 documentation 20:5 34:21 35:8 37:14
---	---	---	---

documents 7:5 126:21 doggy 11:13 16:18,19 dogs 16:23,24 doing 29:10 44:6 51:4 93:3 94:6 97:14 123:13 door 11:11 double 119:4 doubt 100:14 downsides 99:18 100:2,4,9 100:12 downwardly 55:11 61:9 69:9 78:21 82:8 86:9 86:12 105:4 106:12 downwards 103:4 dr 3:10 5:10,16 6:13 8:10 9:10 35:6 37:23 66:14 79:22 101:14 128:16 draw 34:23 64:13 65:20 66:5 drawn 57:19 65:23,24 drew 65:8 66:16	drilled 31:21 drive 90:22 114:2 drop 7:16 35:1 57:3 101:6 dryer 11:13 16:18,20 drying 11:15 duct 58:23,24 59:4,6 ductwork 27:5 due 48:22 71:14 dulin 2:10 4:22 4:22 duly 4:9 129:9 dune 28:14	edge 33:22 edition 38:16 edward 6:12 effect 51:16,22 52:6,10,11 123:17 124:14 effects 77:11 123:14 efficiently 54:22 55:19 64:2 72:21,23 eight 18:19 37:4 either 12:21 25:17 29:9 60:13 68:19 114:21 122:7 126:14 elastic 46:7 electromecha... 10:18 electronic 48:3 48:4 electronics 32:23 33:17 35:24 element 10:6,8 11:6,7 19:24 24:18,23 26:1,7 26:12,16 43:2,4 43:11,20 44:10 44:24 45:4,10 45:24 46:5 61:2 114:11	elements 9:12 9:24 10:17,22 11:12,21,22 12:13,17 13:3 46:19,22 57:7 57:17,19 elevations 124:12 eliminate 83:14 employment 6:19 employs 51:9 ends 88:5,8 energy 15:4 24:11 28:24 29:4,5 engine 22:22,24 23:3,15,24 24:2 24:20 engineer 23:7 23:16,20 engineering 9:14 11:2 16:5 22:8 28:13 38:16,23 39:5,7 39:12,20 40:3 engineers 15:19 16:2 engines 114:8 england 6:17 ensure 63:5 83:10 112:13 enter 8:16
	e 1:12 3:1,10 4:8 7:13 11:22 12:1 19:20 earlier 29:17 30:4 41:14 86:14 101:4 123:12 125:13 earth 35:3 ease 41:5,11,14 41:19 easier 41:8,22 98:9 106:14 east 2:20 eastern 1:18 128:24 easy 40:20 41:22		

entire 22:11 23:3 29:19 35:2 53:4 94:20,22 113:15 114:9 entirely 126:14 entitled 39:19 environment 42:7 equal 90:7 equate 121:6 equivalent 20:19 21:1 101:7 errata 40:6 errors 41:1 escapes 56:3 essentially 88:5 114:21 118:3 estimate 37:2 et 12:21 26:24 63:13 74:14,15 90:7 100:10 evaluate 42:11 42:21 evaluating 42:3 evenly 124:17 event 67:4 everybody 8:20 exact 14:6 19:7 55:7 92:2 98:23 99:22 exactly 18:19 19:23 32:9 33:21 47:10,11	51:23 52:9 60:15 81:11 92:12 96:14 examination 3:4 4:12 128:18 examined 4:10 129:10 example 22:20 22:22 24:1,7,9 26:10 27:5,23 44:10 46:14 47:2 50:14 51:24 57:11 59:22 72:14 73:5 79:10 81:10,14 84:7 88:8 89:21 90:13,14,21 91:6 92:7 94:2 94:8 95:6,10 97:2 103:22 106:17 110:8 114:10 117:15 exceed 15:8 except 92:8 exchange 113:14 excuse 89:14 exhaust 24:3 exhibit 3:8,9,11 3:13,15,17,19 8:21,23 9:7,8 37:16,17,21 38:19 39:18	47:21,23 48:1 48:12 54:10,11 54:14 64:23 65:1 79:11,14 79:15 87:3 100:21,23 101:1,19 115:14,17 116:4,5,6 124:2 126:10 exhibits 3:6 120:6 exist 58:4 122:23 existing 30:20 31:8 exit 56:1 expand 84:16 84:17 expanding 85:11 expansion 84:18 85:22 88:7 expect 113:20 expects 86:14 expensive 41:8 76:16 90:15 experience 26:12 expert 17:7 explain 64:19 66:13	explained 59:12 explains 86:17 118:22 explode 53:18 53:19 exploded 61:14 expressed 48:9 extend 51:22 52:5 61:10 86:6 86:12 105:4 106:11 extended 52:22 81:15 extending 52:4 55:11 61:9 69:10 78:21 82:8 86:9 103:4 118:12 extent 69:5 119:11 external 15:7 extreme 71:14
f			
fabricate 42:11 fabrication 40:20 41:6 42:2 face 14:13,14 79:18 facial 10:1 14:1 14:18,20 20:6 facilities 31:13 31:15 facing 97:5			

fact 21:1 34:5 34:21 71:14 89:5 123:18 factor 22:20 90:24 91:1 factors 45:17 45:19 91:5 92:1 94:24 95:4 112:24 113:24 faculty 22:11 fahrenheit 13:22,23 14:2,9 14:19 16:22 20:8 failure 27:15 fair 14:8 25:11 fairly 71:18 fall 128:3 familiar 38:18 38:22 39:21 far 35:11 38:12 51:21,23 52:4 105:7 118:23 farnsworth 3:20 116:8,12 116:16,22 118:6,10,17 119:1,7,13,14 119:21 121:14 121:20 122:1 127:13 fasten 76:6 98:2	fasteners 99:24 117:7,9,10,17 fastening 10:5 14:23 110:8 favorably 41:16 feature 106:21 119:2 features 55:23 59:16 federal 1:15 feel 5:20 8:8 40:16 76:21 77:13,21 100:17 fewer 99:16 fiddling 98:11 figure 26:3 50:7,9,23 52:1 52:14,16 53:5,7 57:7,16 60:6 61:12 64:9,11 65:4 67:14 68:16 69:3,14 69:21 70:1,2,6 70:12,13 74:9 74:15 76:1,23 77:11,20,22 78:5,6 80:1,1,9 80:21 81:19,20 89:3,20 90:20 91:6,9 97:19 99:7 102:9,15 103:22 105:3	107:22,23 108:15,16 109:7 111:17 111:18 114:1 117:7,8 118:6 figures 49:13 69:1 105:11 116:11 file 35:8 37:5 files 7:8 43:16 44:5 final 43:15 find 16:2 20:5 29:8 31:4 53:3 107:11 116:3 120:7 fine 49:20 66:12 fingers 51:12 finish 115:7 finite 24:18,22 26:1,7,11,16 43:1,4,11,20 44:10,24 45:3 45:10,24 46:5 fire 12:2 20:21 21:11 fired 10:5 11:21 firm 2:3,9 4:15 first 4:9 7:16 8:20 20:21 23:18,20 27:15 30:15 45:19 63:12 76:2,4	93:24 109:1 129:9 fit 47:4 75:22 96:9 five 44:5 46:13 47:14 97:3 128:7 fix 97:15 fixed 61:16,17 fixtures 97:4 flat 33:12,16 82:6,10 flavor 18:5 19:1 flexibility 76:7 flip 48:6 97:12 101:19 102:14 116:11 126:11 flood 35:2 floor 29:2 84:6 87:14 94:13 110:18 114:20 114:21 flow 19:12,14 22:21 24:7,7,14 25:3 27:6 54:21 55:12,13,14 56:6,8,9,19,19 56:20,24 57:12 58:5,22 59:4 75:19 100:17 114:16 flowing 63:22 flows 38:8 40:10 103:20
--	--	--	---

120:21 125:11 focus 47:8 49:16 focused 93:6 114:13 122:13 folded 81:18 foley 2:14,19 4:16 5:7 foley.com 2:17 2:22 follow 66:10 following 2:2 27:11 follows 4:11 food 10:23,23 10:23,24 11:5,8 15:22 16:7,10 16:11,14 18:2 30:6 32:5 43:10 foods 44:1 foot 47:1 91:2 forced 24:13 foregoing 129:3 129:13 forementioned 129:15 forget 14:6 31:10 78:20 80:2 81:11 forging 31:16 forgiveness 113:9,13 forgiving 111:13,15	form 18:17 23:11 25:13 28:9 34:3,14 36:6 37:10 38:13 44:13 62:1 82:3 83:19 87:24 88:1 103:16 104:11 105:23 110:5 113:5 114:13 121:12 122:17 formed 60:22 61:3,23 63:1 83:16,23 84:1 86:20 88:1 107:5,17,19 108:4,5 109:24 110:3 116:20 117:12,15,20 117:23 118:3,5 118:23 119:8 forming 48:8 83:2,6,9 110:8 110:9 forms 58:24 108:15 forth 49:15 forward 94:4 found 35:15 39:15 four 46:13 52:23 98:2 fourth 87:9	frame 81:11 82:7 84:8 frankie 5:12 franklin 130:7 free 5:20 8:8 40:16 88:7 front 8:24 48:2 48:5 49:13 54:15,18 56:14 58:18 59:2,8,9 60:5,16 61:2,8 61:15,22 66:5 66:16 67:12 68:23 69:9 70:17,19 78:17 78:20,23 79:23 80:6,7,10,13 81:8,18 82:1,4 82:5 83:8 84:19 85:3,10,22 86:5 94:12,16 97:10 97:16 98:3 114:12 119:7 120:20 frowny 79:18 full 6:10 fully 53:24 fun 34:24 function 7:18 23:1 64:16 105:19 107:2,3 115:10 122:15 126:8	functions 7:13 fundamentals 39:19 40:3 further 63:14 63:23 68:14 105:1 115:10 128:17
			g
			gap 67:13 68:17 68:20 70:13,15 70:16,17 83:10 83:14,19 84:12 85:3,9 103:10 103:13,18,20 103:23,24 104:4,13 108:17 109:18 109:22 111:2,3 111:5,7,21,22 112:13 113:1,2 113:8 115:5,11 gapless 57:20 gaps 57:10,22 57:24 58:4,8 64:11,11 65:13 65:15 68:11 70:21 81:24 112:20,22 gases 63:22 gauges 28:3,5 gear 67:3 general 18:2,8 22:3 56:8 70:24 114:15

generalize 96:5	go 4:21 8:10	32:10 34:23	101:13,19
generally 12:4	9:19,19,20 16:5	35:7 43:1 47:20	116:10 128:12
13:15 18:1 20:7	17:23 20:4,9	48:4 52:3 59:20	greatest 87:16
46:12 55:17	21:9 34:21	65:4,7 66:2,7	greatly 74:14
generated	35:16,16 36:23	66:23 69:7 71:5	74:18,19 75:2
12:10 15:3	37:4,13 40:8	71:6 72:7 73:5	77:2,8,17 78:11
generating	42:3 43:15	76:2 77:3,4,10	grid 51:3
28:24	47:17 49:13	84:2,14,16 89:6	griddle 12:18
generation 12:4	53:4 56:20 62:2	92:3 94:4	12:19,20,23
geometries	63:12 64:20	100:20 104:10	29:21,21 30:3,4
77:24	68:13,21 76:9	107:9 111:19	30:5,11,17,19
geometry 25:5	76:13 78:13	113:16,18	30:20,24 31:3,8
26:13 46:6,16	82:13 86:23	114:1 115:20	31:10,24 32:5,6
46:24 52:7,12	87:1 104:15	116:22 121:11	32:13,18 33:13
52:17 76:1,17	106:14 107:8	122:5 123:16	33:19,19 34:1,2
92:8 99:2,3	115:6 116:23	127:10	36:4,13 40:19
getting 82:20	120:6,14,17	good 1:4 4:18	40:22 43:22,23
89:22	121:5,8,15,19	4:20,21,22	44:1,12,18,22
gilman 2:20	123:22 126:21	13:16 32:6	48:13,21 49:24
give 21:22 27:8	127:9 128:9,15	47:13 49:3	50:3,12,15
34:10 43:2,6	goal 32:11	53:20 73:15	51:17,20,21,21
46:14 52:11,18	45:20 47:11	82:19 87:8	52:2,6,21,23
61:4 63:13,23	91:22 98:23	116:15 120:13	53:8 54:2,21
64:21 65:6 91:8	goals 46:2	128:6	55:19,19 56:22
96:12	goes 18:18 23:7	grade 10:24,24	60:21,23 62:1
given 11:16	104:4 105:8	gradient 71:10	62:13,16 63:6,8
16:3 20:18	109:15 117:2	73:6	64:2,7 65:16,16
gives 76:19	going 4:5,23,24	gradients 72:6	67:9 68:23 69:2
77:13	5:4 7:19 8:20	grading 71:17	69:6,17 70:23
glean 68:15	11:23 12:7	grate 17:12	71:24 72:1,22
glenn 1:12 3:1	13:19 14:14	gravity 78:24	73:3,17,22 74:9
3:10 4:8 6:12	17:20 19:6	80:8	74:13,14 75:5
66:10	23:15 24:5 26:4	great 5:6,13	75:18,20 76:3
	29:20 31:2	6:10 22:22 67:6	77:9,18,24 78:2

78:11,16,24 80:5,7,11 82:2 83:9,10,13,20 84:10,18 85:3,4 85:12,20,23 86:6 87:14,23 87:23 89:1,4,8 92:15 93:1 94:2 94:11 95:2,20 95:21 96:18 98:9,17 99:6 101:24 102:2,4 102:5 104:9 107:2,5 108:13 108:23 111:9 111:11 112:15 114:19,19 116:17,24 119:2,22 121:3 122:2,16 123:11 124:6 124:13 127:19 griddles 27:20 28:7,11 29:16 36:19 48:23 98:8 120:5 griddling 18:2 grill 12:11,12 17:9,16 19:4,9 19:13 27:23 30:17 31:8 33:9 37:3 55:22 75:23 76:7,11 76:12	grilling 17:12 18:2,23,24 30:10 36:2 grills 11:20 12:9 17:2,3 18:21 21:16 27:20 28:7 29:16 groups 105:4 guess 50:14 52:2 80:6 83:18 guessing 128:21 h hair 9:24 13:16 13:20 hairdryer 11:17 13:8 hairdryers 9:23 13:5 half 112:2 hand 9:7 26:11 51:11 handle 4:5 happen 66:19 92:22 115:8 happens 32:7 happy 126:15 hard 8:5,9 38:1 48:3 49:15 54:17 79:23 head 5:24 66:21 heading 38:4	hear 5:21 6:2 59:23 126:13 heat 9:12 10:23 11:16 12:3,10 17:12 22:13,18 22:20,21 23:1,3 23:7,15,23 24:1 24:5,8,10,14,17 24:19,20 25:6,7 25:8,9,12,19,19 25:21 26:4,4,8 35:21 46:7,8 49:24 54:22 55:19 56:21 59:7 60:13 63:15 64:3,5 71:2,9,22 72:1 72:11,15,19 102:6 105:1,12 110:23 111:4 114:8,16 124:17 125:8 125:11 heated 10:1 14:24 15:1,2,4 55:24 56:23 89:1 heater 58:7 heaters 20:2,3 heating 9:24 10:6,16,22 11:6 11:7,12,21,22 12:13,17 13:2 19:24 30:11	48:22 57:14 102:4 106:16 108:24 110:19 115:1,2 124:9 124:14 height 52:8 84:3,11 109:5 111:24 held 25:9,12,22 94:10 help 8:7 10:9 44:12,24 48:13 48:17 55:4 helped 38:13 68:6 helps 69:11 hereinabove 129:16 hereto 129:21 hey 30:7 53:15 75:16 hi 4:18 hickory 19:1 high 13:14 113:19 higher 14:5,7 14:11 89:18 highest 35:21 36:3 highlighting 64:16 hinkle 3:12 47:22 49:23 50:17,18 51:19
--	---	--	--

53:7,9,10,13,24 54:1,5 124:2,3 124:3,5,8 125:3 125:18,20,24 127:17,23 128:1 history 28:22 hits 24:12 hold 25:19 26:4 55:24 56:2 57:2 94:8,10 101:15 holds 60:13 hole 47:7 55:23 holes 31:21 home 6:20,21 horizontal 50:23 74:14 horizontally 66:20 77:9 horocofsky 2:4 4:7,18,19 8:10 8:13 18:17 23:11,19 25:13 28:9 34:3,14 35:4 36:6 37:10 44:13 60:10 66:7 79:19 82:3 101:3,10,12 103:16 104:10 105:23 106:7 107:9 110:5 113:5 121:12 122:4,17 123:3 128:19	hot 11:17 12:23 15:5 44:1 84:17 hotter 36:13,14 hours 18:6 housing 80:23 houston 2:5 huge 94:3 human 24:7 hundred 16:21 36:14 47:1 hurt 16:24 hypotheticals 91:3 i i.e. 35:15 icon 67:3 idea 14:12 18:4 29:1 32:15 ideation 29:23 identification 8:23 37:21 48:1 54:14 65:1 100:23 115:17 ignite 10:10 ignore 22:20 illinois 129:1 130:2,8 illusion 81:18 illustration 60:5 imagine 15:2 96:3 immediately 123:15	impart 73:18 imparts 127:18 import 45:21 important 23:24 24:21 29:10 36:2 37:1 87:21 97:21 113:13,17,22 114:4 importantly 60:2 imports 1:7 4:17 improve 57:4 108:23 109:21 improved 99:13 improves 75:9 inch 47:2 52:21 52:23 inches 52:24 90:14 include 47:3 69:18 111:18 112:12 included 11:5 includes 46:6 including 9:12 10:15,22 11:20 increase 63:15 64:3,5 75:21 90:10 92:15 93:1,4,21 94:3 125:14	increased 33:4 34:12,13 increases 34:8 increasing 63:16 indicates 61:9 77:22 individual 56:22 inertia 34:8,12 89:18 infinite 46:19 inform 44:24 information 17:23 52:19 73:23 91:10,15 91:16,19 92:4 92:13,23 95:9 95:24 96:12 98:20 99:2,4,10 99:15 100:7,11 100:19 108:2 113:24 114:3 115:13 infringement 20:1,16 21:4 infringing 20:17 21:6,8 infuse 18:5 initial 76:10 innovation 11:2 12:16 15:17 input 21:22,24 46:4
---	--	--	--

insert 30:19,21 31:20 32:1 95:16 inserted 108:17 inspection 21:3 21:3 41:23 install 95:14 96:18 97:13 instances 24:4 instructions 6:7 insulate 36:1 insulated 32:23 insulating 103:2 105:2 insulation 102:1 111:14 integral 61:10 69:8 77:21 85:15 110:16 110:18 117:18 117:19 123:8 integrally 60:22 61:3,23 61:24 63:1 83:15 86:20 87:24 107:5,17 107:18 108:4,5 109:24 110:3 110:12 114:13 116:20 117:12 117:14,20,23 118:3,5 119:8 integrate 63:7 88:19 96:18	109:10,11,19 109:20 123:11 integrated 39:20 40:4 43:23 63:10 75:20 99:8 110:6 112:3 114:22 118:21 integrates 114:18 integrating 74:12 77:8 87:13 99:5 108:9,22 109:4 intended 13:17 14:2 15:6 16:10 16:13,19 17:18 19:22 20:22 53:20 63:20 68:1 114:15 intent 56:21 58:5,21 76:5 86:16 113:23 interested 47:7 129:22 interesting 27:9 internals 61:15 interposed 105:3 interrogatories 4:10 129:10 interrupted 74:21 126:16	intimate 63:4 introduce 22:9 introduced 27:15 invention 55:4 80:18 inverted 102:10 103:1,2,6 105:2 involve 20:20 28:8 30:16 32:16 involved 9:23 10:11,17,21 11:4,12,19 12:10 13:2 17:14 21:7,11 21:14,17 23:22 24:8 25:1 27:21 29:6 45:7,12 77:15 involving 17:7 ipr 5:4 9:8 18:14 37:17,19 47:23 54:11 101:1 116:6 ipr2024-00642 1:6 ish 32:4 104:19 isolate 106:9 isolating 105:1 isolation 108:24 109:21 111:5 issue 19:5,8 20:11 21:7,17	issues 8:18 26:11 item 76:1,12 81:10 items 60:15 iteratively 76:13
j			
j 1:13 2:15 3:5 129:4 130:5 james 2:4 5:3 january 1:19 3:2 130:3 jared 2:15 3:5 4:15 jbraithwaite 2:17 jehovah 35:2 jig 97:6 jo 2:4 4:5,19 job 21:13 joined 46:17 joining 5:8 45:16 joint 94:18 jpmurphy 2:6 judgment 99:11 113:21 juxtaposed 102:6 juxtaposition 113:3			

k	82:16,17 85:14	larger 113:8	lift 84:18 85:12
k 129:2	86:14 87:7,24	late 20:15	85:23
keep 13:14	88:1 91:23	latency 74:23	lifting 112:15
14:12 16:11	93:11 95:9 96:2	lateral 61:3	likely 75:17
29:23 41:17	96:8,12 97:10	89:6 92:10,11	97:5 106:10
58:6,7 59:9	98:20 99:21	108:9,11	likes 125:21
63:20	100:5 101:20	110:15,17	limited 32:18
keeps 27:10	104:3,18	114:12 119:8	line 42:4 48:20
key 30:12 79:8	107:18 108:7	laterally 89:19	49:6,7,17 50:18
kin 129:23	109:12 113:21	92:11 118:12	55:7,10 65:8,21
kind 19:2 20:19	113:22 114:1	law 2:3,9 4:15	65:23,24 66:5
21:6 26:11 30:8	114:10,16,16	lawrence 2:10	66:16 68:10
35:16 66:10	115:12 116:13	layers 107:16	81:1,4,9 82:5
79:20 96:12	118:23 119:17	116:17,18,20	84:14,14
108:14	119:18 120:7	lead 5:4 61:19	104:22,22
kinds 18:21	123:5	leak 84:23	107:20 116:23
20:2 25:7 27:17	knowing 52:17	leaking 84:19	116:23 118:10
28:2 37:12 47:8	knowledge	leave 5:1 73:7	125:8
92:21	53:24	ledges 82:1	lines 104:17
know 6:5,7	knows 54:8	left 9:7 32:6	link 8:1 101:6
12:23 13:16	I	50:24 56:13	liquids 10:2
24:16 29:22	I 108:14	57:12,20,22	list 38:10,12
30:11 33:15	labeled 57:8,17	64:12 65:15,17	45:12 120:20
35:18,20 36:17	102:11 118:7	65:21 67:2 68:3	122:24 126:7
36:18 38:5 39:8	lack 46:24	79:9	listed 39:18
40:11 41:21	lagerwall 2:20	length 72:17	literature 126:6
45:14 49:8 52:7	5:7 35:5 86:22	92:8	litigation 17:7
52:10,19 53:3	laid 33:12	lengthy 123:13	18:14
53:16 54:15	lake 2:16	lessen 51:13,14	little 43:7 48:17
59:7,13,14	land 67:9	letting 5:1	49:9 60:24
64:14 67:23,24	lardner 2:14,19	level 23:6,17	65:18 66:9 67:3
68:20 69:24	4:16 5:7	35:1,9 82:11	90:5 103:10,23
75:14 76:20	large 48:23	license 130:6	llc 1:7
77:14 79:2,6,7	102:4 109:18		

llp 2:14,19 load 79:17 located 6:13,17 29:2 location 112:7 locations 84:20 96:17 loco 1:4 4:20,23 47:22 54:10 101:1 116:6 log 7:24 8:4 101:4 logged 8:2,11 login.agile.com 8:1 long 10:10 16:16 34:19 35:18 96:11 longer 55:24 longitudinal 58:1,9,11 61:17 look 7:22 9:17 17:22 21:10 25:4 36:23 37:14 44:4 49:4 49:19 58:16,24 60:14,14 61:12 63:7,24 64:9 68:8 70:2,15 77:22 79:3 80:9 80:21 84:22 85:16,20 86:15 94:5,17,20,22 99:23 107:8	115:8 123:5 looked 41:16 79:8 111:16 looking 8:7,7 50:22 52:1,16 57:16 59:23 60:17 70:6 79:11 87:5 89:3 102:15 109:7 118:14 looks 61:12,14 66:17 67:7,12 70:11,19 71:18 71:19 82:4 loop 29:24 lose 26:4 loses 24:11 lot 42:20 44:7 81:23 97:23 112:3 louisiana 2:5 low 13:13 16:22 18:4 102:5 109:17 lower 18:1 33:14 66:15 107:21 109:8 117:1,3,5,5 lowest 13:10 lunch 82:19 86:23,24	m machine 10:13 22:18,23 23:5 24:18 26:14,22 28:1 39:9 made 32:21 49:5 102:5 129:15,19 madison 2:21 magnified 111:19 magnitude 34:11,24 45:1 73:20 mail 7:13 main 12:12 56:21 majority 12:14 13:1 make 28:4 31:19 35:23 38:1 40:19 41:8 41:16,22 63:3 63:11 69:12 73:13 75:6 77:10 89:6 91:23 92:22 93:14 96:11 98:21 99:10 100:7 110:7 112:16 113:21 115:10 128:10 makes 86:3,4 99:15	mandatory 41:9 manufacture 29:20 30:2 31:3 40:20 99:6 manufactured 21:23 41:2 manufacturers 40:24 manufacturing 41:5,12,14,20 42:6,7,14 83:21 84:24 93:14,15 93:22 95:22 96:13 97:4 99:23 111:8 113:10 mark 8:20 37:15,16 47:20 64:23 100:20 marked 8:22 9:6 37:20 47:24 48:11 54:9,13 64:24 79:14 100:22 115:14 115:16 market 41:17 mart 113:17 mass 24:16 25:1,2,3,4,5,16 25:18,19,21,22 73:3 90:7 mastic 117:2
--	--	--	--

match 33:9 material 10:24 25:7,8 42:17 45:15 46:6 72:17 73:22 89:23 90:2,7,9 91:1 92:21 99:1 99:3 117:2 120:3 materials 7:1,4 10:20,21 23:22 27:14 38:4,7,10 38:13 39:20 40:1,3 91:16 120:20 121:1 122:24 126:7 126:17 matter 4:17 7:2 18:14 21:18 38:11 43:5 70:24 matters 17:4 maximum 13:17 14:2 16:13,19 19:21 63:6 mdulin 2:12 mean 21:19,21 23:17 29:7 40:21,23 43:23 45:11 46:5 51:23,24 52:9 57:14 58:20 64:7,8 68:19	70:9,14 71:18 72:4 74:20 75:2 79:1 80:7,12,19 82:4,7 83:15,17 84:19 86:19 87:20 88:8,15 88:18 93:16 98:4,6 99:20 103:8 104:5,6 109:23 111:15 112:22 115:8 117:21,22 120:8 122:9,10 125:5 meaning 74:24 75:1,8 means 46:20 53:2 90:7 110:3 110:6 meant 59:3 73:11 80:5 115:11 measure 42:21 42:23 measurements 21:2 mechanical 15:19 16:2 22:8 22:19,21 23:6 23:16,20 24:20 32:17 38:16,22 39:4,7,12 mechanics 27:14	medium 13:14 meet 41:21 members 10:15 26:15,23 27:4 28:12 memory 14:15 53:13 54:24 120:16 122:21 mentioned 12:1 16:18 17:2 26:14,24 36:3 73:8 mere 80:24 mesquite 19:2 metal 33:8,11 33:12,18 34:1 34:13,16 37:6,7 37:8 44:19 72:13 73:5,6,13 73:19,22 76:12 76:16 78:10 81:17,21,22 84:16 90:21 93:24 97:20 98:12 102:6 118:1 michael 2:10 4:22 micro 9:24 middle 33:23 87:12 mind 28:18,20 29:9 110:3	mine 79:19 minimal 41:2 72:11 minimize 40:23 41:15 minute 47:14 82:15 87:6 128:7 minutes 128:11 missed 55:6 mistaken 116:19 model 13:13 45:22 46:4,5,6 46:23 modifications 30:21 31:18 32:8 modified 31:23 modify 31:5,14 31:17 33:3 moment 34:8 34:11 48:6 89:18 101:19 116:10 monitor 12:19 30:5 33:15 43:24 months 5:14 morning 4:18 4:21,22 123:23 motivated 61:24
--	---	---	--

mount 32:21 mounted 33:18 33:20 44:18 84:6 mounting 32:24 43:17 move 10:12 22:2 30:15 43:1 56:13 57:2 64:13 moved 25:9 movement 17:15 51:11 moving 48:19 58:2 116:4 multiple 26:3 61:2 75:6 114:12 murphy 2:4 4:5 5:3,3 8:2	need 5:18,23 6:4 8:4,14 35:17 45:20,23 46:20 47:9 48:6 49:19 51:17,22 52:5,7,14,19 53:2 62:20 64:1 66:13 67:5 68:22 73:20,21 73:22,22,23 76:19,24 80:2 90:20 91:2,10 91:14,15,19 92:3,13 94:20 94:21 95:4,8 96:12 98:20,24 99:2,4,10 100:1 100:7,10,11,18 111:20,23 112:8 113:22 114:1,3 116:11 118:23 needed 22:10 needs 23:17 31:6 40:24 123:14 neither 122:1 never 32:6 67:20 105:15 107:1 new 6:17 nice 16:23 nicholas 2:20	nick 5:6 nine 8:2,16 nlagerwall 2:22 nod 5:24 nodding 60:3 nominal 42:16 non 79:15 normal 18:23 33:14 55:22 66:24 north 1:7 4:16 4:16 130:7 notary 1:14 129:5,12 130:2 130:6 note 5:6 noticeable 75:14,16 76:24 noticeably 75:12 notwithstandi... 40:5 number 8:2,16 9:8,13 11:20 27:7,9 39:8 41:2 45:9 47:4 74:5,6 98:8 100:6 numbers 14:6 66:9 numeral 65:23 numerals 57:8 57:17 102:16	numerical 26:21 43:8 numerically 24:19 47:5
o			
o 129:2,2 o'clock 82:17 object 25:12 66:7 104:11 107:9 object's 25:11 26:2,4 objection 18:17 23:11,19 25:13 28:9 34:3,14,23 35:4 36:6 37:10 44:13 60:10 82:3 103:16 104:10 105:23 106:7 110:5 113:5 121:12 122:4,17 123:3 obvious 69:24 obviously 30:12 33:22 125:9 occur 32:19 ocean 35:1,3 offhand 93:4 office 1:1,15 6:15,21 official 130:1 oh 4:21 6:21 8:14 13:7,23 16:23 17:20			

19:16,23 27:3 28:22 31:10 33:8 43:13 53:19 55:8,10 56:17 64:21 65:6 77:23 79:6 82:20 101:17 123:15 oil 14:11,13 oils 14:4 okay 6:17,21 9:13,16,22 13:4 20:11,14 23:12 30:9 31:7,12,18 34:17 38:6,21 39:11 40:9,13 40:14 41:18 42:2 47:14,20 48:24 49:2,21 49:22 51:2 52:20 54:4,8,18 55:2,9,10 58:23 60:3,17,19 61:4 62:5,10,11,19 63:2 64:18,19 65:2,4,5,7,10 66:5,12,15,22 66:24 67:5,17 68:21 74:5 75:9 76:13 78:13,23 80:2 82:17,20 82:22 83:1,1,24 86:22,23 87:4,8 88:4,23 90:19	91:9 92:5 93:12 94:9 95:13,16 95:19 96:4 97:3 97:7,9,13 99:12 101:23 102:14 103:10 104:23 105:6,10 108:8 109:14,19 111:1 112:18 115:20 116:2,4 116:8,10,14,15 116:23 117:9 119:9,11 120:22,22 121:10,24 124:3 126:6 128:19 once 24:12 97:11 123:21 ones 13:1 26:20 123:19 opening 59:20 operate 113:3 operated 14:5 operating 13:6 13:7,17 14:2 15:6,12 16:14 16:19 17:18 19:22 operation 18:4 104:8 operational 14:18	operator 12:23 28:16 opinion 41:10 78:9,24 85:19 87:19 96:24 99:19 126:2 opinions 38:14 48:8 opposed 50:13 50:16 52:23 72:22 88:7 90:16 93:21 95:15 opposite 72:2 oral 4:10 129:10 order 9:15 13:20 33:3 34:24 51:16 52:6 54:21 orientation 66:24 oriented 98:12 original 60:7 outdoor 17:11 29:21 outdoors 12:2 29:21 outer 80:23 output 13:14 46:3 outwardly 86:6 outweigh 112:19,22	113:1 overall 96:23 113:11 overhead 47:6 overheat 32:7 overheated 30:7 overheating 32:15 overlapping 104:24 105:5 110:17 own 24:23 31:3 owner 1:8 2:23 4:17 98:7
p			
p 2:4,10 p.e. 1:12 3:1 4:8 p.m. 128:24 page 3:4,7 8:8 9:20,20 10:4,12 12:7 19:17 20:14 22:2 38:2 38:3,6,7,8,15 40:10,10 52:4,4 59:22 60:6,18 66:19 67:2,3 79:9 82:15 87:5 102:21,23 108:6 119:6 120:21,21 pages 48:7 79:7 79:9 116:11			

pain 13:15 15:10 pair 103:1 105:2,3 papers 115:21 paragraph 40:8 40:15,18 48:20 49:6,7,18,21 55:3 59:22 60:20 61:7,21 62:2,8,13,23 63:5,13 71:4 74:12 78:14 82:14,22 87:5,8 87:13 93:7,9,10 95:10,12 103:1 104:15,16 105:8,21,24 106:2,4,8,22 108:7,8,10,12 110:14 119:6 parallel 50:16 parameters 42:19 52:14 part 36:2 37:1 43:16 58:22,24 59:4 81:11 84:8 92:12 108:17 110:6,7,10 particular 21:7 25:5 40:17 56:3 75:6 76:3 95:2 105:24	particularly 32:14 48:22 51:9 71:7 parties 129:24 partition 59:7 60:12 partitioned 56:12 parts 96:22,22 99:16 passage 103:13 104:1 passing 59:9 past 9:11 patent 1:1,1,8 1:15 2:23 3:11 3:13,16,17,19 4:17 17:7 21:10 47:21 48:5,11 48:19 49:5,13 49:23 50:7 53:7 53:13 54:12,17 54:20,23 55:21 58:17,21 59:15 59:16,17 67:16 72:10 79:23 86:15 100:24 101:21,22,23 102:3,13 106:20 108:3 115:15 119:16 123:21 124:2 125:7,12	patents 20:17 21:9 48:8 60:12 120:10 pattern 50:6,8 50:10,11,13,15 51:3 paused 56:17 84:1 pay 30:8 pen 65:18 pending 128:17 people 15:20 16:23 29:2 42:15 percent 75:11 75:12 perforate 94:18 perforations 90:6 100:16 perform 24:17 26:6,20 30:22 43:4,11 45:5,16 46:1,12 73:21 76:22 112:11 performance 19:12 20:19 57:5 75:9 104:14 113:18 113:20 performed 18:1 18:13 performing 43:8 45:3	performs 115:9 period 76:18 129:20 periphery 31:24 33:24 permission 64:21 person 70:22 90:19 103:24 106:6 pertaining 1:17 pertinent 18:12 pet 11:14 petition 37:19 47:23 54:11 116:7 petitioner 1:5 2:13 pets 11:14 ph.d. 1:12 3:1 4:8 phone 130:8 photographic 21:3 physical 21:2 42:1 pick 76:4,9 piece 31:3 33:8 33:10,12 34:13 71:20 72:13,13 73:5,13 81:14 81:17 84:16 114:17 118:1
--	---	--	--

pieces 42:20 45:15 96:9 97:21 98:11 pilot 42:9,22 pin 8:2,16 pits 12:2 21:12 pizzas 11:10 place 6:19 40:6 98:13 100:17 105:11 116:3 129:5,16 placed 11:8 85:4 places 61:19 planar 74:14 77:9 plate 17:13 26:10 28:23 29:2,3 31:4,5 49:24 50:3,12 50:15 51:17,20 51:21,21 52:2,6 52:8,21,23 53:4 53:8 54:2 60:21 60:23 61:13 62:14,16 63:14 68:23 69:17 70:23 71:16,24 72:8,22 73:17 74:9 77:19,24 78:3,11,24 80:5 80:8 84:9,10 85:3,4,12,23 86:7 87:14 89:1	89:4 92:15 93:1 97:24 102:4 105:5 107:2,4,5 107:6 109:10 110:19 112:1,3 112:10 114:19 117:1,1,3,5,6 118:13 plate's 108:1 plates 26:9 27:22,22 28:1,2 28:4,8,10,15,17 28:21 29:4,7 31:16 107:6 117:4,5 please 4:1 5:20 6:4 8:8 11:24 40:14,16 44:15 56:18 61:5 79:2 80:17 101:15 107:10 108:7 119:5 125:6 128:11 plurality 117:3 point 5:9 32:9 75:8 81:10 82:18 96:7 111:10 119:20 120:18 pointing 68:4,5 points 26:3 polsinelli 2:3,9 4:19 5:3	polsinelli.com 2:6,7,12 poor 113:20 ported 12:3 portion 46:20 54:23 59:10 109:16 portions 49:19 56:22 posita 61:24 63:7 110:14 position 34:4 positioned 86:16 positioning 87:22 112:1 possibility 92:14 potential 23:7 92:16 93:2 100:12 103:24 112:19,22 113:1 115:1 potentially 84:20 125:18 pound 91:2 power 91:20 pre 31:8 present 2:1 128:17 129:7 pressure 32:4 32:22 pretty 69:24 82:20	prevent 32:12 32:15,17 44:12 48:13 50:12 51:13 56:9 58:2 63:22 119:3 127:19 prevention 74:10 previous 27:10 73:2 previously 44:16 129:8 price 113:20 primary 39:2,4 86:8 printed 6:24 prior 120:15 121:14 probably 32:3 55:7 64:16,22 72:2 76:13 84:2 84:9,13 86:22 94:3 97:16 98:1 98:2 problem 16:3,6 48:21,22 49:1 65:6 84:16 86:2 101:17 problems 88:3 procedure 1:16 proceedings 9:8 101:2 process 8:12 16:5 29:19,19
--	--	---	---

29:24 41:1 42:1 42:8,8,10,11,23 76:10,20 93:14 96:11 97:13 123:23 processes 95:6 product 9:11 11:1 13:24 15:16,17,23 16:7 29:18 31:11 43:3,7,7 43:9 44:2 113:16,16 product's 42:4 production 42:18 products 9:12 9:21 11:4,4,12 11:20 12:15,16 13:2 20:1 21:17 21:23 22:1 28:7 28:20 29:15 36:21 profiles 23:2 project 16:1,9 27:11,17 28:13 30:4 36:2 projects 27:8 27:13,19,21 28:3 29:12,14 30:3,12 43:18 44:6,7 prone 41:1 87:20	propane 10:5,5 10:9 11:21 12:13 14:23 15:3 proper 12:20 30:5,18 41:3,20 properly 94:22 112:17 properties 25:8 75:24 76:1 92:21 99:1 property 46:6,8 99:3 protect 28:16 33:17 prototypes 30:1 33:10 protrusions 112:14 provide 71:24 74:9 76:5 87:15 88:6 89:16 121:2 124:19 provided 12:11 92:24 124:10 129:20 provides 41:20 87:15 89:12 113:9 115:1 providing 87:10 107:1 119:2,22 122:2 122:15 124:12	public 1:14 129:5,12 130:2 130:6 pull 49:15 98:9 pulled 102:13 pun 20:22 punching 17:15 purchased 91:2 purchasing 91:20 purely 18:3 purpose 55:17 72:9 75:18 106:15 114:7 114:24 123:21 purposes 72:24 pursuant 1:14 push 87:23 put 17:12 28:3 28:5 31:22 33:16,23 50:11 54:5 66:20 73:20 74:5,6 75:13 90:5 95:7 95:15 96:7,11 98:7,7,9,12 99:16 109:2,11 110:22 111:5 112:13 115:23 115:24 116:1,2 putting 50:16 100:16	q quantify 35:17 52:9 91:4 92:12 quarter 128:12 128:13 question 5:21 18:10,12 21:15 23:9 24:21 25:20 26:5 40:17 50:6 52:13,18 53:10 55:16,17 58:14 60:7 62:2,6,9 62:11 65:13 69:15 70:4 72:20 73:24 74:3,21 80:3 83:18 84:21 91:7 93:17 95:19,24 98:6 104:6 107:11 114:4 117:11 120:14,18,23 121:8 122:11 122:18,19 126:1,14,15,17 127:5,5 questioning 82:18 questions 5:19 5:23 22:3 24:24 49:18 57:6 82:14 94:21 100:18 115:12
--	--	---	---

128:17,22 129:10,14 quick 7:22 37:24 47:14 61:4 68:8 85:16 85:17 quickly 9:4 25:9 38:1 48:15 82:21 quite 11:20 32:8,20 45:13	readily 90:16 90:17 reading 53:24 55:10 85:24 108:2 ready 54:18 116:9,13 realize 81:5 really 35:17 43:9 46:11,14 47:6 52:12 59:6 67:15,16 68:5 68:15 81:20,23 86:17 91:3 93:5 93:6,8 94:20,21 95:8 100:1,18 112:6 rear 55:11 58:18 59:3 61:8 61:15 68:10,23 69:9 70:15 78:17,20,23 80:1,6,7 81:8 82:1,11 83:8 85:3,11,22 86:5 86:5 94:12,16 97:10,16 reask 80:3 reason 6:7 27:22 39:11 40:2 61:13,16 63:2,12,13 79:6 79:6,24 90:4	reasonable 29:5 99:14 reasons 27:9 47:4 86:8 reboot 101:9 recall 13:21 15:5,7 16:13,21 17:8,21 18:7,15 18:19,21 19:23 20:10,13 27:21 27:24 31:8,23 32:9,20 33:10 33:20,21 34:19 34:20 35:7 36:7 36:8,10,24 37:5 37:12 43:13,14 43:18,20 44:4,7 44:9 53:11 54:3 58:5 67:15,20 102:9,12 103:19 107:8 117:11 118:18 121:13 122:12 124:5 126:10 126:22 127:9 127:10 recalling 35:11 recess 47:18 86:24 128:14 recognize 9:2 37:22 48:7 recollect 121:9 123:4	recollection 36:12 108:3 record 4:2,14 4:18 6:11 8:17 9:6 20:22 47:17 47:19 86:23 87:2 128:15 129:14 records 29:8 recross 128:18 red 65:8 66:16 redirect 128:20 reduce 40:20 41:5,23 51:10 55:18 76:14 91:9,12 95:1,8 95:11,13,18,22 96:15 reduced 96:21 96:23 reduces 42:1 reductions 42:4 refamiliarize 116:12 refer 37:7 48:4 58:15 59:20 115:20 reference 7:5 12:6 38:15 39:18 40:19 101:20 102:15 102:19 references 121:14 122:12
r			
radiating 24:5 radiation 24:5 radiator 24:9 24:11,12,14 rains 35:2 raise 111:11 raises 35:1 raising 35:3 range 10:15 13:24,24 14:7 14:16 15:8,9 77:6 read 30:23 40:15,16 49:7,9 49:21 50:17 54:3 55:21 59:13 61:4 62:8 62:24 63:9 67:14 85:6,17 86:15 93:10 104:12 117:8 125:7			

122:14 126:19 127:6,23 referral 70:5 referred 58:19 65:13 129:16 referring 15:18 37:8 56:15 83:3 91:5 106:4 108:10 refers 105:15 refresh 120:15 regarding 8:18 40:13 region 64:12,12 66:2,2 regions 56:11 63:15 64:4,6,7 64:7,7 reinforce 34:2 reinforced 34:5 34:6 reinforcement 27:4 32:17 related 91:7 relates 61:1 relationship 102:7 104:24 105:5 relative 81:22 104:13 relatively 54:20 55:13,13 56:2,5 57:1 71:8,20 73:9,13,19	78:10 88:14,15 88:17 97:22 102:5 106:11 relied 7:1 remain 11:9 remember 19:7 20:3 21:10 28:1 36:16 62:6,12 101:20,22 120:24 121:4 126:24,24 127:1 remington 9:14 9:21 13:4 remotely 1:13 4:3 reorganized 116:9 repeat 18:10 126:15 rephrase 23:8 112:21 report 17:20,23 58:2 59:17,20 66:19 71:4 74:12 75:11 77:2 93:6 102:20 103:2 110:9 111:17 111:18 114:5 114:10 117:22 118:20,22 119:6 123:6 127:24	reporter 4:1,2 6:1 7:18 60:2 129:20 reports 43:15 represent 4:16 4:20 37:18 request 7:24 requested 129:18,19 require 89:22 90:2 115:12 required 41:4 41:15 43:14 requirement 41:9,11 requires 16:2 28:14 requiring 27:4 reread 53:9 resale 40:22 research 10:19 resist 92:11 122:3 resistance 34:12 35:14 44:21 45:1 73:17 resistant 34:9 resistive 10:8 19:24 respect 9:12 14:22 15:15 21:14,15,24 29:13 95:19	105:14 106:21 109:17 112:8 112:10 118:4 118:22 121:24 response 122:22 rest 78:17 79:1 80:6,6,13,15 restate 5:20 51:18 resting 85:12 restricted 19:14 restricting 55:12 result 15:4 28:6 results 45:21 retailers 113:19 retained 17:6 review 37:5 40:11 48:15 49:2 82:16 87:6 129:17 reviewed 38:5 38:7,11,13 121:1 reviewing 101:21,22 rib 26:19 33:2,6 58:6,20 59:13 59:13,14,15 60:5,7,11,16 61:2 67:7 69:1 71:15 72:19
--	--	--	--

84:3,4,6,17 89:16 90:1 95:15 98:1,2 106:18 108:14 108:15 109:5 109:17 110:21 112:9 114:12 114:18 117:24 118:1 119:14 119:19 123:9 124:24 127:6 127:18,22,22 128:4,4 ribs 10:16 26:15,24 27:6 27:13 48:12 49:23 50:2,5,7 50:11,16 51:3,6 51:8,10,13,14 51:17,20 52:5,8 52:22 53:6,14 56:12 58:1,9,11 58:15,17,19 59:1,11 60:9 61:3,9,17 62:1 63:22 75:6,6,15 75:17,18,19 76:6,17,17 77:7 83:2,4,15,19 88:20 89:9 94:4 94:8,9,16,17 95:16 96:16 97:2,6,9,11 98:10 99:5	105:15,17,20 106:11,19 108:10,11 110:15,18 114:12 117:15 118:4 119:8 123:21 124:5,8 124:10,14,16 124:18,23 125:3,6,9,10,12 125:14 126:4,7 126:19,22 127:2,4,6,15,23 127:24 128:1,5 right 4:14 5:10 5:15,18 6:13 7:2,21,23 8:19 9:10 14:3 16:11 16:23 17:15,17 19:1,10,15 22:14,23 25:12 29:13,13 31:4 34:10 35:11,14 36:19 38:3 44:22 48:14 49:4,24 50:24 51:7,11 53:14 53:23 55:15,20 56:13 57:8,13 58:11,15,19 59:2,5 60:23 62:18 63:3 64:16 66:1,2,6 67:19 68:3,16	69:15,17 72:9 72:20 73:10 74:1,18,19 78:3 78:6 79:23 82:8 83:3,11 85:18 87:1,8,12 88:11 88:11 90:23 91:1,11,14,20 91:21 95:12 98:12,13 100:3 101:14,18 102:19,22 103:7,15 105:9 105:22 106:6 107:15 108:19 113:4 115:3 116:3,17 118:7 118:11,17 119:3,13,15 120:23 121:11 121:18,18 122:3,20 124:3 124:6,17 126:23 127:5 127:14,20 128:21 rigidity 87:10 87:16,18 89:12 93:6,8 107:21 124:20,23 rigidly 110:1,4 risk 85:10,21 robot 97:7	rock 47:7 roll 116:9 117:24,24 rolled 28:2 117:16,16 roof 15:13 room 6:22 13:12 rotate 67:1 rpr 1:13 129:5 130:5 rudy 5:12 rule 61:13 rules 1:14,15 run 26:2 42:9 42:12,18,19,22 44:5
			s
			sae 28:13 safe 42:17 sake 118:20 salt 2:16 sample 42:9,12 sandwich 109:9 save 99:6 saying 5:11,13 62:24 66:3 77:16 79:8 96:14 113:2 122:12 says 9:17 38:4 56:2 63:5 78:19 78:21 102:24 105:1 106:15

107:20 108:4 108:12 116:24 117:5,9 118:12 121:20,20 124:10,18 scan 37:24 scenario 98:24 scenarios 100:6 112:12 science 10:20 39:20 40:1,3 screen 7:9 47:5 54:17 64:15 67:1 126:12 scroll 9:4 11:23 12:6 49:15 65:3 65:3 scrolling 79:5 se 67:14 seal 130:1 search 53:15,16 53:21 searing 12:21 second 7:16 48:24 59:19 79:4 80:17 101:15 107:10 116:2 119:4 section 12:11 40:13 49:2 55:18 61:1 102:23 107:23 107:24 114:9	sections 124:11 secured 107:21 see 5:24 6:6 8:2 12:14 20:9,18 20:23,24 27:22 33:16 34:5 35:23 38:17 55:5 57:17 59:18 61:14 64:17,17 65:5,8 65:17,19,19 68:13 70:4 72:5 75:22 78:5 79:3 79:6,10,20 84:22 85:16 93:4 99:7,23 101:7 102:14 102:15 105:6 105:10 107:19 108:16 118:18 120:6 121:5,8 121:19 123:14 126:22 seem 33:9 seems 73:12 91:7 105:10 seen 48:16 105:2 select 30:18 42:7 selecting 10:21 semester 44:5 senior 16:1,8	sense 99:15 125:1 sensor 12:18 30:14,16 32:4 32:12,14 43:19 43:22 sensors 30:9,14 32:22 36:1 sent 8:1 24:11 101:4 sentence 63:5 87:12 118:10 118:19,21 119:9 122:7 separate 59:7 64:12 96:16 117:4 separated 103:20 separates 110:23 separation 114:18 serve 105:19 serves 50:2 123:20 set 46:2 49:22 93:12 94:2 97:6 103:3 115:18 setters 9:24 13:16,20 setting 13:11,11 settings 13:10 13:14	setup 42:13 seven 18:18 37:4 shape 25:11,14 25:21,24 26:2,3 26:6 43:3 103:7 103:9 shaped 65:24 103:1,2,6 105:2 108:14,15 109:18 112:5 shapes 26:9 sharing 72:11 sheet 17:15 33:8,11,12,18 34:1,13,15 37:6 37:7,8 44:19 72:13 73:5,6,19 76:12 78:10 81:17,21,22 84:16 90:21 93:24 98:11 shield 28:15 shift 110:20 shigley's 38:16 38:22 39:7,11 39:17 shoot 42:15 shooting 16:15 shop 28:2 113:19 shops 11:14 shortened 90:5
---	--	--	--

shorter 84:5 shorthand 129:11 shot 13:11 show 50:7 85:2 showing 101:5 shows 50:9 68:1 68:24 79:9 80:9 98:22 118:6 shrinking 109:21 side 49:14 56:11,20,20 65:15,17,21,22 68:3 80:1 82:6 98:5 104:2 sidewall 64:11 66:15,18 68:18 70:13 71:17 73:16 87:11,16 87:19 88:5,6,19 89:6,12,15 90:1 90:13 92:15,16 98:17 120:11 sidewalls 55:11 57:7,11 58:13 58:15,16 59:3 60:9,16,22 61:17,22 62:17 63:7,8,15 64:3 68:11 69:17 70:23 71:8 72:1 72:22 73:8,18 74:8,13 76:23	77:8 78:3,10 81:3 83:3,8 85:4,11,22 86:5 87:13 88:14,23 88:24 89:9,20 89:22 90:9,10 92:7,24 93:2 94:9 100:13 105:19 106:11 106:19 125:23 126:4 127:2 signature 130:1 130:4 significance 104:8 significant 23:15 74:10 112:4 silent 119:24 similar 14:17 20:6 similarly 13:17 14:1 106:18 simmering 12:21 simple 25:16,18 26:9,19 simplistic 25:16 26:6 simply 53:16 93:16 94:4 97:12 99:5 112:5 123:14	single 118:9 singular 127:7 sit 67:9 94:13 sits 82:2,10 108:14 sitting 34:20 36:8,16 43:14 43:18 44:9 62:16 120:2,23 122:20 126:23 situation 12:24 22:17 112:18 situations 27:18 six 44:5 size 76:3 90:17 104:3,13 112:12 115:11 sizing 90:15 skill 70:22 72:21 85:20 90:19 103:24 105:22 106:6 113:12 slide 109:14 slightly 84:5 slot 97:6 slots 94:15 slow 56:8,19 slower 56:20 slowing 56:24 slowly 18:5 small 29:3 103:13,21	111:3 115:5,11 smoke 17:16,24 18:6 19:1,9 20:23,23 smoker 12:11 17:19 18:22,23 21:16 smoking 18:4,8 society 28:13 sold 113:17,18 solid 45:21 solitary 106:4 solo 12:3 17:10 20:12 21:8,9 solution 16:6 solutions 27:11 solve 16:6 solved 65:6 somewhat 33:14 sophomore 27:16 sorry 12:7 13:23 14:20 18:7 19:6 23:11 26:5 27:1 31:15 40:14 41:11 44:14 55:8,16 56:17,18 59:23 60:7 62:9,11 64:6 66:7,10 68:2 70:8 71:3 74:2,2,21,22,23 82:22 83:7 84:1
---	--	---	---

86:3,11 91:12 93:7 104:10 107:11 111:18 111:22 115:7 122:9 124:22 sort 18:15 35:3 source 24:2 south 2:15 spa 14:20 space 58:6 84:3 84:3,4,6 spaced 102:7 sparkplugs 10:7 spas 10:1 14:1 14:18 20:6 spatulas 96:2,4 specific 17:6 18:13 26:22 27:1 44:8 81:12 81:20 84:12 114:4 115:12 121:10 specifically 10:6 27:20 40:19 43:20 128:4 specification 111:4 specifics 32:9 43:6 113:15 specified 42:12 specify 111:2 111:20	speculate 67:24 sphere 25:17 spoke 29:17 30:3 sponsor 16:4 spot 85:12,19 97:20 spring 29:9 square 25:17 ss 129:1 stability 87:10 87:16,18 88:6 89:12 93:7 97:16,24 stable 73:4,6 88:2 stack 112:4,11 stagnant 54:21 55:5,13,14 56:2 56:5,6 57:1 stamp 31:15 stamping 17:15 standalone 92:12 standard 1:18 39:9 45:10 128:24 stanley 10:3 14:22 start 18:9,11 27:3 30:14,20 31:3 42:13 62:13 75:23 76:20 98:11	started 9:13 15:24 20:15 31:7 starting 38:7 104:24 starts 40:10 state 2:15 6:10 40:13 74:12 121:2 127:24 129:1 stated 41:14 74:16 125:9 statement 75:10 statements 49:5 states 1:1,15,16 3:11,13,16,17 3:19 47:21 48:21 54:12 115:15 stations 94:2 statistical 42:10 stay 9:15 88:2 steel 17:15 28:2 94:18 stenographer 129:12 step 29:2 45:12 48:18,18 93:13 93:19,19,20 stepping 13:4 steps 41:2 45:7 45:9	stick 66:8 111:17 stiffen 50:3,19 50:21,24 51:2,7 51:20 76:8 77:17 125:13 stiffened 33:1 51:9 stiffening 35:5 35:10 51:16,22 52:6,10,11 74:11 76:6 77:18 78:2 123:13 stiffer 89:6,10 92:10 stiffness 33:5 75:21 77:24 123:17 125:15 stiffnesses 125:14 stipulate 4:2 stock 31:4,5 34:18 35:10 stove 17:10,13 stoves 12:3 17:11 20:12 straight 52:3 straightforward 40:24 41:1 strain 28:3,5 street 2:5,10,15 2:20 130:7
--	--	--	--

strength 74:10 121:6 122:2	126:19 127:7 127:14,19,22 128:1	support 78:24 80:7,18 114:20 119:22 121:2 123:1	109:9,20,24 111:9,11 117:6 118:13,15 119:2,23 120:1 121:3,6 122:2 122:16 123:11 124:6,13,19 127:19
strengthen 35:18 50:12,15 54:2 74:14,16 74:18 75:2 76:20,24 77:3,5 77:5,9 78:11 88:20 122:11 123:24 124:6	structures 26:19 88:15 102:10	supports 69:5 120:4	surfaces 30:12 31:22 82:6 97:18
strengthening 75:4 77:13 107:1 119:2 121:9 122:8,15 123:19	students 10:14 11:3 27:10 29:19 31:18 32:11,16 43:11	sure 7:18 23:8 27:13 28:11 29:8 31:10 35:23 38:1 40:22 47:16 49:11 53:21 62:12 63:3,11 67:16 79:20 80:5 81:5 89:7 92:22 103:8 109:2 112:16 112:21 113:6,8 116:14 121:14 126:13	surprise 69:23 85:15
strengthens 35:18	studies 20:23 96:10	sturdy 108:1	surrounding 46:9
stress 45:6,8,11 45:17	subject 88:16 88:24 89:2	subcomponents 114:6	surveys 29:23 29:24
stresses 92:17	submitted 37:17,19 47:22 54:10 101:1 116:5	surface 33:13 33:15,16,19,19 33:23 34:2 44:12,19,22 48:13 54:21 55:19 56:22 61:4 62:1 67:9 69:6,9 72:16 76:11,12 82:9 83:9,11,20 84:18 85:8 97:5 102:2 107:14 107:22 108:12 108:23 109:6,7	susceptible 71:21
strong 115:9	substantially 58:2		swear 4:2
stronger 75:8 88:22	sufficient 106:5		swell 14:11
strongest 88:12	suggest 68:17 68:19		sworn 4:10 129:9
structural 10:15 26:15,23 27:7 88:6 119:22 120:4 121:2 123:1	suggesting 61:22 83:16		synonymous 125:1
structure 11:8 33:3,6 58:22 80:14 108:17 112:14 114:21 120:8 123:9,24	suit 31:6 suite 2:5,10,15 2:20 130:7		system 11:15 12:4,22 24:3 30:7 32:12 35:17 43:17,17 46:17 50:2 71:9 77:12
	summary 55:3		

t	67:22 69:20	teams 11:2	term 53:1,11
table 38:7	70:3 82:23	15:19	58:12 59:6
take 6:1 7:21	88:23 89:19,24	technical 8:18	69:18 70:5
10:8 16:2 28:4	93:8 97:9	techniques 47:8	81:22 121:13
30:20 37:14,24	106:14 107:5,7	tell 5:19 8:24	127:16
45:13 48:6	107:22 111:4	9:10 38:13 45:5	terminate
63:23 64:9 68:8	114:11,22	70:6,8,12 81:16	104:23 105:5
82:15 85:16	117:7 123:6	92:9,23 106:16	termination
87:6 88:19	124:13 125:1	106:22	66:17 67:13
89:15 98:5,13	127:1	telling 44:11	terminology
99:17,24	talks 10:12	75:16	78:20 102:22
101:19 104:5	49:23 50:5	tells 34:6 50:21	terms 15:6
107:8 116:10	62:13,16 67:21	61:15 106:8,10	104:1 113:1
taken 1:13 3:2	68:6,9,10,10	118:19,20	test 20:18 28:6
7:19 32:5 47:18	86:9 102:4	temperature	34:5 35:9,13,23
86:24 128:14	104:16 105:12	11:9 12:18,19	36:7
129:4,11	111:12,14	12:21 13:6,7,12	tested 35:15,21
takes 18:6	126:9	13:17 14:2,5,11	36:9
98:24	taught 22:4,5	15:6,7 16:14,19	testified 4:11
talk 66:23	22:16 39:24	18:4,20,24 19:7	testify 6:8
67:15 68:11,22	40:2 110:15,18	19:22 23:2 30:5	testing 20:20
74:11,24 75:1	teach 10:13,14	30:9,13,14,16	30:1
78:2 83:2 85:10	10:20 11:1 22:7	32:12 36:3	texas 2:5
93:9 94:8	22:10,10,17	43:19,21,24	text 38:18 39:1
102:20 104:12	23:3 27:14	44:17 56:3 71:7	39:3,4,19,21
105:12 123:22	29:18,22 40:1	71:10,15,16	40:18 48:19
124:20,22,23	107:12	temperatures	49:14 54:16
talked 86:13	teaches 39:12	14:18 17:18,22	69:16,18,21
103:3 118:2	77:16,18 80:18	18:1,15 56:23	70:1,5 78:1
119:16	99:9 107:13	72:3 124:13,15	texts 39:9
talking 18:7	teaching 69:13	124:19	textual 105:7
25:2,3 35:6	teachings 54:19	tends 26:12	118:16
44:17 52:3 54:1	56:8	48:21	thank 8:13
59:18 65:10			49:22 101:10

101:12 116:15 128:16,19 theories 26:10 theory 28:6 53:4 therapy 10:2 14:17,21 20:7 thermal 23:21 23:22 30:22 45:6,7,17 46:7 63:6 71:17 72:5 73:3 75:24 92:16 97:23 108:2,23 109:21 111:13 thermally 62:17,20 68:22 69:7,16,19 70:23 71:6,13 72:23 73:4 117:1 thermocouple 31:22 69:13 thermocouples 30:19,22 thermocoupli... 63:14,20 64:2 thermodynamic 22:7,9 thermodyna... 22:6,10,11 thick 27:22,22 37:2 52:21 73:14 76:14	81:21 90:14 97:23 thickening 100:13 thicker 88:17 88:21 97:24 thickness 37:8 37:12 52:8 72:8 72:17 73:21,23 75:5 76:11,14 76:17,23 77:14 80:24 81:4,6,6 81:9,13,15,19 81:23 89:4,8,15 89:17 90:14 92:8 97:21,21 98:16,17 99:2 108:1 thicknesses 90:20,22 98:19 109:9 thin 71:8,20 73:9,13,19 78:10 88:14,15 97:22 102:5 106:11 thing 12:15 14:20 20:19 21:6 30:7 41:19 51:18 69:11 77:3 86:4 94:14 95:7,8 102:11 110:22 112:6	things 10:10,16 10:22 11:11 12:24 17:11 21:20 23:16 28:12,15 32:24 39:2 40:6 41:24 45:23 70:1 86:13 90:6,7 92:6,21 94:1 95:5 96:11 97:22,23 98:24 127:2 128:3 think 7:19 12:14 13:1,11 15:23,23 18:12 19:17 28:10 36:24 39:16 42:19 44:16 53:19 55:21 56:1,10,15,20 63:9,9,10,19 64:5,15,19,20 65:2,6 66:9 68:3,4,5,6 70:18 71:3 72:12 74:17 75:7,13 80:17 85:13,18,24 86:4,8,17,22 95:3,11,17 98:5 99:4,9,14 100:14 102:7,9 102:21 103:17 104:16 108:5	109:7,8 111:12 113:9 114:15 116:8,15,18 117:8,17 118:3 119:8 120:7 126:4,23 127:3 128:6 thinking 17:4 thinner 71:20 73:4 thought 26:5 63:23 121:21 121:23 three 46:13 threshold 13:15 15:10 throw 19:3 throwing 19:2 tight 109:14 tighten 128:8 tighter 42:1 tile 28:24 time 1:18 6:4 10:10 16:16 34:19 44:14 47:14 55:24 82:19 86:23 96:10,15,21,23 98:8,13,24 99:6 99:17,23 112:17 128:6 128:16,24 129:6,15
--	---	--	---

timeframe 19:19 today 5:8 6:7 53:24 120:2,23 together 45:16 93:14,20,21 95:8,21 96:1,6 96:7,9,11,22 98:7,8 99:8,13 99:16,19 109:3 110:9,22 111:1 111:6,23 112:13 told 92:6 tolerance 41:21 41:22 84:12,13 111:16 112:4 112:11,19,24 tolerances 41:3 41:23 42:5,12 83:22 84:24 111:8,20 113:4 113:10,14 took 5:15 21:2 21:4 39:6 96:11 tool 65:2 tools 10:5 14:23 14:23 15:2,5 76:19 top 17:13 33:3 33:7,13,18,20 33:21 34:7 38:4 38:15 62:16 64:16 67:9	72:15 75:20 81:15,18 82:5 82:10 83:13 87:14 89:11 95:12,15,16 98:1,10 104:24 107:6 108:15 110:21 112:2 114:18 116:17 116:24 topics 22:9,17 total 46:21 84:5 93:23 touch 62:21 toward 56:1 59:9 towards 120:19 track 20:24 trademark 1:1 1:15 transcript 129:18 transfer 22:13 22:18 23:1,3,7 23:16,24 24:5,8 24:10,17,19 25:6 46:7,8 63:15 64:3,6 102:6 transferred 71:9 72:15,16 transverse 50:6 50:8,10,11,15	trial 1:1 tried 13:14 36:7 79:24 trivial 104:1,5 104:6,7 troublesome 48:23 true 79:8 81:10 127:16 129:13 truncated 70:19 truss 27:4 trusses 27:4 trust 39:17 40:6 truthfully 6:8 try 20:23,24 27:8 28:5 45:12 47:3 53:18 66:8 72:10 79:17,18 128:8 trying 29:18 30:4 31:23 34:21 43:13 44:4,7 50:17,18 50:21,24 55:22 55:23 56:2 57:5 92:2 96:20 101:15 tune 42:14 turn 54:4 60:18 66:21 80:12 87:2 97:4 120:19 124:1	turning 38:3 57:7 101:7,8 108:6 two 12:16 17:4 30:3 33:10 36:21 45:15 46:12 50:21,22 72:3,3 77:23 92:7 94:16 96:16,16 97:2,6 97:9,11 98:1 107:4,16 109:9 109:13 111:3 114:17 116:17 116:18 122:12 type 112:8 typical 37:8,11 37:13 45:10 typically 24:13 41:7,8 42:6,13 42:15,20 44:5 45:6,22 typos 39:15 40:5
u			
u 65:24 102:10 103:1,2,6 105:2 108:15 109:18 112:5,7 u.s. 100:24 ubiquitous 70:14 unable 79:17			

unavailable 101:5	understood 44:20 47:13	121:1 123:9	utilize 18:22
under 32:19	115:14	124:5,16	v
35:21 92:16	uniform 63:20	126:19 127:6	vague 107:9
99:12,14 100:3	71:24 72:7 73:2	127:13,15	vallee 1:12 3:1
127:22 128:3	unique 29:9	used 7:10 9:24	3:10 4:8 5:10
underneath	unit 15:4	10:18,21 11:6	5:10,12,12,12
36:20 53:7	united 1:1,14	11:10,14 12:2	5:13,16 6:12,13
underside	1:16 3:11,13,15	14:21 17:11	8:10 9:10 35:6
28:15 50:9 52:2	3:17,19 47:21	18:16 26:12	37:23 66:14
61:3 62:1 63:8	54:12 115:14	27:13,23 28:11	79:22 101:14
74:13 76:6	universal	28:21,23 29:3	128:16
80:11 82:9 83:9	122:23	29:20,21 36:1	vapor 14:13
83:20 87:14	universities	39:7 46:21,22	vaporizing 14:4
94:1,11 102:2	39:5,8	54:1 58:12 59:6	variation 13:9
108:12,23	university 6:18	74:18 96:2,10	15:11
109:20,24	10:13 22:14	106:17 110:17	varied 16:15
110:16 114:13	29:11,12,14	121:13,18	variety 10:21
114:19	upper 55:10	124:18 126:22	94:24 95:4
undersigned	59:10 67:2	useful 126:8	vary 77:23,24
129:12,22	117:1,6 118:13	user 8:14 96:22	vehicle 28:16
understand	upside 97:12	98:5,6	28:17
5:19,21 23:1,9	use 7:12 8:9	uses 53:10	vent 19:8
56:4 59:4 70:3	12:11 15:1	114:17 120:4	vented 19:13
74:24 86:1 87:9	24:18 26:16	123:1 127:18	verbal 6:3
96:8 113:6	27:5,5 30:9	using 15:12,13	verbally 5:23
122:21	39:1,9,23,24	17:24 25:5	6:2
understanding	42:8 47:8 50:14	49:23 50:5	verify 8:7
55:1 57:10,21	51:3,11,19	51:20 56:12	veritext 7:19
57:24 60:20	54:16 77:4	68:24 114:5	53:15 80:3
67:17,19 96:20	79:24 83:22	117:21	versa 57:13
122:22	96:3 97:8 99:24	usually 21:4	version 3:15
understands	102:1 114:6	51:11	64:23
72:12	119:14,17,17	utah 2:16	versus 21:5
			43:4 89:16

91:13 92:10 98:6 99:7 vertical 50:24 84:3 88:15 viable 11:3,4 16:6 vice 57:13 video 5:1,24 videoconferenc... 2:3,9,14,19 7:9 view 53:10 61:14 74:8 88:4 123:20 visual 32:1 vitae 3:8 volume 58:6 68:2 90:24 91:19 vs 1:6	40:17,17,22 41:3 45:12,14 45:16 46:3,12 46:15 49:4 63:3 63:11 64:5 65:7 70:22 71:2,6,21 72:21 73:2 76:8 76:14,14 77:5 77:12 84:17,24 87:6 88:1,2,12 89:20 91:21 95:11 113:2 115:21 116:10 wanted 14:12 40:15 47:1 49:16 88:20 124:22 wants 76:3 125:24 warm 16:11 warn 12:23 warp 35:14,16 35:22 44:21 45:1 48:22 71:11 74:10 87:20 warpage 48:22 warped 36:4 warping 32:7 32:13,15,17,19 34:13 36:13,14 44:12 48:13 50:3,12,16 71:21 73:18	88:16 107:2 110:9 119:3 122:3,16 123:2 124:6 127:19 water 14:10 35:1 watts 1:13 129:5 130:5 way 34:7 51:4 52:20 53:12 68:19 72:18 75:13 89:3 95:17 96:4 97:3 98:14 110:7 111:12 112:15 114:21 we've 7:13 123:8 weight 60:21 76:15 80:19 83:13 100:15 100:16 weld 67:10 73:16 94:4,7,7 94:11,12,12,19 95:14 96:6,16 97:7,10,20 99:24 welded 93:24 94:1 97:2 111:1 111:23 117:17 welding 74:8 93:13,16,20,21 95:20 96:1,21	97:9,22,22 98:15 99:13,18 100:2,9 110:7 118:2 welds 98:1 100:10 went 16:16 19:12 20:23 29:7 79:19 90:17 westbrook 6:14 western 6:17 whatsoever 68:17 wide 10:15 77:6 widget 64:18 widgets 64:17 williams 3:14 3:16 54:12,20 55:1,18 56:8,10 56:21 58:10,14 59:14,17 60:14 60:22 61:7,22 63:1,9 64:9 67:20,22 68:8 68:22 69:3,16 71:18 72:9,14 72:24 75:16 76:2,19 77:16 77:18 78:2,17 78:19 79:5,11 79:13,15,23 80:17 84:8 85:2 85:7,10,21,24
w			
wal 113:17 walk 48:17 wall 50:19 57:20,22,24 58:18,18 59:3,3 65:8,10,14,15 68:1,6 81:15 103:14 124:11 124:11 walls 55:12 68:23 83:11,14 want 4:6 8:8 14:10 15:9 16:24 22:2 26:8			

86:3,4 88:24,24 91:6,7,10 92:24 92:24 93:1,2 95:20,22 98:16 98:17,21 99:9 105:18 106:19 108:11 126:9 128:2 winter 15:14 wisconsin 2:21 wise 111:16 wiser 99:24 witness 4:3,9 8:4,12,14 18:18 23:20 25:14 28:10 34:4,15 36:7 37:11 44:14 47:16 60:11 66:12 82:4 101:9 103:17 104:12 105:24 106:8 107:10 110:6 113:6 121:13 122:5 123:4 128:9 129:4,9 129:15 130:1 wood 12:4 97:8 word 53:16 55:5 56:4 59:13 74:18 113:10 119:14,18 120:4,7,16 121:1,4,6 123:1	126:19 127:6 127:13,18 words 51:18 64:19 119:18 work 7:19 9:11 9:14 10:3,13 13:4 14:22 15:15 17:1,2,14 18:13 19:21 20:12 29:10 32:16 43:1,21 106:22 worked 10:4 13:5 36:20 working 21:19 worried 71:16 worry 98:10 111:20 worst 112:12 wright 5:8 wrong 5:13 92:19 wrote 75:10 77:1	45:14 48:4 50:14 51:5 52:1 52:16 57:16 60:4,15 62:4 64:15 67:6 68:4 71:1 73:7,11 79:19 82:20 83:18 86:17 88:11 96:5 102:7,14 104:20,22 112:23 115:19 118:21 122:5 128:12 year 27:10,12 27:16,17 28:22 years 5:15 13:20 14:15 15:24 18:19 27:9,12,19,24 32:10 36:15 37:5 39:16 43:18 96:10 yep 118:8	zones 55:11 56:12,21 57:14 60:14 72:10,15 101:24 102:5 105:13 106:9 106:18 112:20 115:1,2 124:9 zoom 7:17 64:18 65:5
	x	z	
	x 50:23 51:1,14 129:18	z 52:3,5 zero 113:2 zone 54:20 55:13,24 56:3 56:14,14 57:15 57:20,21,22 58:7 68:3,4,5 76:18 89:20 106:16 114:17	
	y		
	y 50:24 51:1,15 yeah 13:23,23 19:18 20:14 21:22 23:10,10 44:16,23 45:14		

Wisconsin Rules of Civil Procedure
Chapter 804, Depositions and Discovery
Section 804.05

(6) Submission to Deponent; Changes; Signing.

If requested by the deponent or any party, when the testimony is fully transcribed the deposition shall be submitted to the deponent for examination and shall be read to or by the deponent. Any changes in form or substance which the deponent desires to make shall be entered upon the deposition by the officer with a statement of the reasons given by the deponent for making them. The deposition shall then be signed by the deponent, unless the parties by stipulation waive the signing or the witness is ill or cannot be found or refuses to sign. If the deposition is not signed by the deponent within 30 days after its submission to the deponent, the officer shall sign it and state on the record the fact of the waiver or of the illness or absence of the deponent or the fact of the refusal or failure to sign together with the reason, if any, given therefor; and the deposition may then be used as fully as though signed unless on a motion to suppress under s. 804.07 (3) (d) the court holds

that the reasons given for the refusal or failure to sign require rejection of the deposition in whole or in part.

DISCLAIMER: THE FOREGOING CIVIL PROCEDURE RULES ARE PROVIDED FOR INFORMATIONAL PURPOSES ONLY. THE ABOVE RULES ARE CURRENT AS OF APRIL 1, 2019. PLEASE REFER TO THE APPLICABLE STATE 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.