

UNITED STATES DISTRICT COURT
SOUTHERN DISTRICT OF FLORIDA

ANDREA ROSSI and LEONARDO
CORPORATION,

Plaintiffs,

VS.

No. 1:16-cv-2119-CMA

THOMAS DARDEN; JOHN T. VAUGHN;
INDUSTRIAL HEAT, LLC; IPH
INTERNATIONAL B.V.; and
CHEROKEE INVESTMENT PARTNERS,
LLC,

Defendants.

INDUSTRIAL HEAT, LLC and IPH
INTERNATIONAL B.V.,

Counter-Plaintiffs,

vs.

ANDREA ROSSI and LEONARDO
CORPORATION,

Counter-Defendants,

and

J.M. PRODUCTS, INC.; HENRY
JOHNSON; FABIO PENON; UNITED
STATES QUANTUM LEAP, LLC;
FULVIO FABIANI; and JAMES
BASS,

Third-Party Defendants.

HIGHLY CONFIDENTIAL

Videotaped Deposition of JOSEPH ALAN MURRAY
(Taken by Plaintiff)
Raleigh, North Carolina
Friday, February 17, 2017

Reported in Stenotype by
Lauren M. McIntee, RPR
Transcript produced by computer-aided transcription

EXHIBIT "C"

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1 APPEARANCES

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ALSO PRESENT:

MR. MICHAEL KIRBY, CLVS
DR. ANDREA ROSSI

1 VIDEOTAPED DEPOSITION OF JOSEPH ALAN MURRAY, a
2 witness called on behalf of Defendant, before Lauren M.
3 McIntee, Registered Professional Reporter and Notary
4 Public, in and for the State of North Carolina, at
5 CaseWorks Court Reporting, 3509 Haworth Drive, Suite
6 403, Raleigh, North Carolina, on Friday,
7 February 17, 2017, commencing at 8:50 a.m.

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1 THE VIDEOGRAPHER: We're on the record at
2 8:51 a.m. This is the videotaped deposition of
3 Joseph Murray in the matter of Andrea Rossi, et al,
4 versus Thomas Darden, et al. This deposition is
5 being held in the offices of CaseWorks at 3509
6 Haworth Drive, Suite 403, in Raleigh, North Carolina
7 27609 on February 17, 2017. The court reporter is
8 Lauren McIntee. The videographer is Michael Kirby,
9 both with Caseworks. Would counsel please introduce
10 themselves.

11 MR. ANNESSER: John Annesser and Brian
12 Chaiken on behalf of the Plaintiffs.

13 MR. LOMAX: I'm Christopher Lomax on behalf
14 of the Defendants.

15 THE VIDEOGRAPHER: And would the court
16 reporter please swear in the witness.

17 MR. NUÑEZ: Hello there. This is Rudy
18 joining in.

19 MR. ANNESSER: Thank you, Rudy. We've
20 already begun.

21 MR. NUÑEZ: Okay.

22 MR. ANNESSER: Please place us on mute.

23 MR. NUÑEZ: I thought it was 9:00 though,
24 right?

25 MR. ANNESSER: Yes, but we, we decided to

1 start just a couple minutes early. Just put us on
2 mute if you would.

3 MR. NUÑEZ: Okay. No problem.

4 JOSEPH ALAN MURRAY,
5 having first been duly sworn, was examined
6 and did testify as follows:

7 EXAMINATION

8 BY MR. ANNESSER:

9 Q. Mr. Murray, my name is John Annesser. I
10 represent the Plaintiffs in this matter as you know.
11 Have you had your deposition taken before, sir?

12 **A. I have had a deposition taken before, yes.**

13 Q. Okay. When was that?

14 **A. Between 1998 and 1999.**

15 Q. Okay. I'm going to give you a quick
16 refresher for depositions. Our court reporter here is
17 going to take down everything we say. With that being
18 the case, I'm going to do my absolute best not to
19 interrupt you or talk over you in any manner. I would
20 ask you to do the same for me as it makes her job nearly
21 impossible. During the course of the deposition I'm
22 going to be asking you a series of questions, none of
23 which are intended to embarrass or harass you in any
24 manner. They are simply to get to the facts in the
25 matter of this case.

1 If I ask you a question and you do not
2 understand it, please let me know that and I will try to
3 either restate it or rephrase it. If you do not ask me
4 or do not tell me that you don't understand, I'm going
5 to assume that you do understand. Is that fair?

6 **A. Yes.**

7 Q. Okay. At any time if you need a break, just
8 let me know and we'll try to get to, to a break at the
9 next available opportunity. Are you represented by
10 counsel today?

11 **A. Yes.**

12 Q. And who is your counsel?

13 **A. Chris Lomax of Jones Day.**

14 Q. Does he represent you individually, or does
15 he just represent the Defendants in this matter and you
16 believe yourself to be part of that group?

17 **A. He represents the Defendants and, therefore,**
18 **me in some capacity as a witness.**

19 Q. Okay. Are you current -- are you currently
20 employed --

21 MR. LEÓN: Francisco Leon here.

22 MR. ANNESSER: Okay. Francisco, we've begun
23 already.

24 MR. LEÓN: Okay.

25 MR. ANNESSER: Thank you.

1 BY MR. ANNESSER:

2 Q. Have you retained Mr. Lomax individually?

3 A. No.

4 Q. Are you currently employed by any of the
5 defendants in this case?

6 A. No.

7 Q. Okay. Can you please state your full name
8 for the record?

9 A. My name is Joseph Alan Murray.

10 Q. And what is your home address?

11 A. 2646 Saint Marys Street, Raleigh, North
12 Carolina 27609.

13 Q. Your business address or addresses?

14 A. I have a home office now at my home address.
15 And I also have an office that's under construction at
16 5107 Unicon Drive, Unit K in Wake Forest, North
17 Carolina.

18 Q. Are you currently employed?

19 A. I started a new business after Industrial
20 Heat shut down.

21 Q. Industrial Heat is shut down?

22 A. They ceased to have an engineering operation,
23 so they let all of the engineers go.

24 Q. What do you mean they ceased to have an
25 engineering operation?

1 A. So we had a group of, I don't know, five or
2 six engineers that were working at the company. And as
3 effective the end of October, they gave all of the
4 engineers a severance package and released us, paying us
5 through the end of the year. And then subsequently we
6 had to agree to support their ongoing activities,
7 as-needed basis for pay if needed.

8 Q. Have you provided any services to Industrial
9 Heat after October 2016?

10 A. Yeah. Obligated to from October through
11 December, and I did I would say very little. And then
12 in January there were a few questions, and then this
13 month in preparation for the deposition there were a lot
14 more questions.

15 Q. Okay. What was the amount of your severance
16 package?

17 A. It was pay and benefits through the end of
18 the year, so for November and December. It did not
19 include any leave on the books. That was just
20 terminated.

21 Q. The question was how much.

22 A. How much money?

23 Q. Yes.

24 A. I, I don't know, two months worth of salary.

25 Q. What were you being paid at Industrial Heat?

1 A. \$200,000 a year.

2 Q. What benefits did you receive?

3 A. Medical, 401(k), short-term, long-term
4 disability, leave. Probably a few other things. Oh,
5 there was a life insurance policy, kind of a standard
6 life insurance policy.

7 Q. Now, you said that you've started your own
8 new business?

9 A. Yes.

10 Q. What's the name of that business?

11 A. 0 Base Design.

12 Q. What does it do?

13 A. Engineering services. I'm writing SBIR
14 proposals, working with some other primarily
15 defense-related companies.

16 Q. I'm sorry. SBI proposals?

17 A. SBIR. Small business innovation research
18 contracts.

19 Q. What is that?

20 A. It's a, it's a small business contract that
21 the federal government offers to anybody. It's an open
22 solicitation. They occur anywhere from one to three
23 times a year by all of the various groups within the
24 department -- within the federal government.

25 Q. Okay. Now, you said you did engineering

1 services. What engineering does this new company
2 provide?

3 **A. Mechanical engineering, systems engineering,**
4 **system architecture, design type work.**

5 Q. Okay. What is, can you define those for me?
6 What is mechanical engineering as opposed to systems
7 engineering?

8 **A. So mechanical engineering is normally the,**
9 **the study of mechanical designs and elements, the**
10 **creation of designs, fluid mechanics, thermodynamics,**
11 **heat transfer, various other elements. System design is**
12 **normally a broader multidisciplinary function that**
13 **includes mechanical engineering, electrical engineering,**
14 **computer engineering, overlooking large systems that may**
15 **encompass functionality from all those areas.**

16 Q. What engineering projects have you worked on
17 since starting this business, 0 --

18 **A. Base Design.**

19 Q. -- Base Design?

20 **A. I have been working on nanocomposite thin**
21 **film coatings with another company for automotive and**
22 **reverse osmosis desalinization proposals. I have been**
23 **working on a proposal for an unmanned aircraft. I have**
24 **worked on proposals for coatings associated with**
25 **unmanned autonomous vehicle engines. I have worked on**

1 some simulation work related to helicopter applications;
2 specifically, rotor blade interaction with, with
3 particulates in unimproved landing and takeoff sites.

4 Q. Okay. Now, you said you've worked on
5 proposals for these things?

6 A. Yes.

7 Q. What do you mean by a proposal for these
8 things?

9 A. So in most of these areas you have to propose
10 the work, get -- gain funding, and then have the work
11 put on contract before you can actually get the work.

12 Q. Have you gained funding for any of those
13 projects?

14 A. We have, I have one that has been awarded.
15 The contract not has actually -- that's not true. Yes,
16 I have one that has been awarded. The contract actually
17 just came in this week. And another one that the
18 contract is due in the next few weeks, the contract has
19 been awarded. They're just putting it through, the
20 money through on the vehicles.

21 Q. So as of this date, you have worked on the
22 proposals, but you have not done the actual engineering
23 or mechanical engineering or systems engineering side of
24 the project, correct?

25 A. No. The proposal process involves an

1 **extensive amount of engineering to submit with the**
2 **proposal to be selected and made eligible to be awarded.**

3 Q. What is your job title at 0 Base Design?

4 A. **Principal.**

5 Q. How many employees does it have?

6 A. **Two.**

7 Q. Who is other than yourself? I assume you're
8 one of the two?

9 A. **Yes.**

10 Q. Okay. Who is the other employee?

11 A. **My wife.**

12 Q. Okay. Is she an engineer?

13 A. **No, she's not.**

14 Q. What does she do?

15 A. **She's doing administrative.**

16 Q. So you're the only engineer with the company?

17 A. **At this point, yes.**

18 Q. Have you ever provided expert testimony
19 before?

20 A. **No.**

21 Q. Have you ever been determined to be an expert
22 by any court?

23 A. **No, not that I'm aware of.**

24 Q. What do you bill for your services?

25 A. **What do I bill?**

1 Q. Yeah. How much?

2 A. An hourly rate? 150 or \$175 an hour.

3 Q. What are you being paid, sir, for your
4 services that you're providing to Industrial Heat now?

5 A. \$175 an hour.

6 Q. Is your company, O Base Design, part of any
7 professional organizations?

8 A. No.

9 Q. Are you part of any professional
10 organizations?

11 A. Not presently.

12 Q. Have you been within the last three years?

13 A. Yes.

14 Q. Which organization?

15 A. I have been a member of ASME, a member of
16 SPIE, the Society of Photographic and, and Imaging
17 Engineering, and the American Physical Society.

18 Q. What is ASME?

19 A. American Society For Mechanical Engineers.

20 Q. Why are you no longer a member of that?

21 A. Just because I, I changed addresses and never
22 renewed at my new address.

23 Q. Okay. What about the society for -- I'm
24 sorry, SPIE?

25 A. Yeah. The, I, I am no longer doing imaging

1 systems. And so I used to go to conferences and
2 participate in a lot of those, but I'm not doing that
3 anymore.

4 Q. Okay.

5 A. So I no longer am a member.

6 Q. I'm sorry. The last one was?

7 A. The American Physical Society.

8 Q. Why are you no longer a member of that?

9 A. Just no longer participating in the
10 conferences and proceedings.

11 Q. Now, you said that you have testified before.
12 What type of case was that back in '98, '99?

13 A. There was a dispute between a, a company that
14 manufactured, that built a software compiler technology
15 and a company who licensed their technology. And I had
16 written a proposal for the U.S. Army to actually use the
17 same technology, and we licensed that technology from
18 the supplier. And they were suing each other, the other
19 two companies, and I was asked my opinion about the
20 maturity of the technology and the usefulness of the
21 technology.

22 Q. So you gave opinion testimony in that case?

23 A. Yes.

24 Q. Were you offered as an expert witness in that
25 case?

1 **A. I don't know. It's been so long ago.**

2 Q. Do you recall the name of the case?

3 **A. No. But I, I could probably find it.**

4 Q. Okay. Do you know where the case was
5 pending, what court?

6 **A. Probably in Cleveland I would guess. I lived**
7 **in Washington, D.C., at that time, but I'm not sure.**

8 Q. Do you know if it was a federal or a state
9 case?

10 **A. I do not.**

11 Q. Do you know who the attorneys were in that
12 case?

13 **A. I do not.**

14 Q. What was the name of the company that you had
15 provided testimony for?

16 **A. I don't even recall. They were a small**
17 **company. I, I know the engineer's name that ran the**
18 **company, but I would have to look at, back at my notes.**

19 Q. Other than that, have you ever provided
20 deposition or trial testimony?

21 **A. No.**

22 Q. Sir, can you tell me starting with high
23 school, well, let me just start there. Where did you go
24 to high school?

25 **A. I went to high school at Swartz Creek High**

1 **School in Swartz Creek, Michigan.**

2 Q. Did you have any area of study there, or was
3 it just general academia?

4 A. **It was college prep and technical studies, so**
5 **I studied drafting and design.**

6 Q. Did you pursue a degree after high school?

7 A. **Yes, I did.**

8 Q. And what degree did you pursue?

9 A. **I went to Michigan State University and**
10 **received a degree in mass -- in mechanical engineering,**
11 **a bachelors of science in mechanical engineering.**

12 Q. Any specialty area or just generally
13 mechanical engineering?

14 A. **I spent most of my specialization in heat**
15 **transfer, fluid mechanics, turbulence, and**
16 **thermodynamics.**

17 Q. Did you get a, does your degree reflect your
18 studies in heat transfer and fluid mechanics?

19 A. **No.**

20 Q. Those were just courses that you took?

21 A. **Actually did, I was, I took courses in that**
22 **area, and then I worked in a research laboratory at the**
23 **university.**

24 Q. Okay. How long did you attend Michigan
25 State?

1 **A. I was at Michigan State University from**
2 **August of 1986 until May or June of 1991.**

3 Q. So almost five years?

4 **A. Yes.**

5 Q. You graduated with a degree, sir?

6 **A. Yes.**

7 Q. And you said you were, you worked in research
8 at Michigan State?

9 **A. Yes. So throughout my undergraduate**
10 **education, I came from a very large family. We didn't**
11 **have the resources to go to college, so I worked as a**
12 **co-op engineer throughout. So I would go to school one**
13 **quarter, and I would go to university another quarter.**
14 **So in general I worked the winter and summer quarters,**
15 **and I went to school the fall and spring. So I worked**
16 **at General Motors Truck and Bus throughout my**
17 **undergraduate, and then during the semester I worked in**
18 **the fluid mechanics and turbulence research laboratory.**

19 Q. Fluid mechanics and turbulence?

20 **A. Research, yes.**

21 Q. And what did you do there?

22 **A. Conducted experiments and measurements in**
23 **turbulent flow systems, supported the graduate students**
24 **to a large degree doing experiments.**

25 Q. Okay. Now, after Michigan State did you

1 pursue any additional degrees?

2 A. Yes. I, also I, I studied as an
3 undergraduate, when I was at Michigan State I studied
4 abroad at the Rheinisch-Westfälische Technische
5 Hochschule in Aachen, Germany. So in 1989 I spent about
6 five or six months at RWTH studying abroad. And then
7 subsequent to that I went to the University of Utah and
8 received a masters degree, a masters of science in
9 mechanical engineering where I specialized in fluid
10 mechanics and heat transfer research.

11 Q. Does your degree reflect heat transfer and
12 fluid mechanics?

13 A. No. It's a masters of science, my degree.
14 All of my publications reflect the research area.

15 Q. Okay. I'll ask about your publications in a
16 couple.

17 A. Okay.

18 Q. Did you receive a degree from the University
19 of Utah?

20 A. Yes, I did.

21 Q. What year was that?

22 A. 1993.

23 Q. And for that degree did you have to write a
24 thesis or a dissertation?

25 A. No. I did the publication option, so I wrote

1 papers and presented at ASME conference. There were two
2 options.

3 Q. How many papers did you publish for that
4 degree?

5 A. I believe I had two publications.

6 Q. What were they called?

7 A. Oh, I can't recall.

8 Q. What were they on?

9 A. They were on, the research I was doing at
10 that time was in conjunction with the Army Dugway
11 Proving Grounds. We were doing near-wall turbulence
12 measurements. And the Army had a desire to use a
13 technology called sonic anemometry to make --

14 (Phone ringing.)

15 A. Excuse me. I apologize. Forgot to turn that
16 off. Let me just disable this. I'm sorry. There we
17 go.

18 So my research was, the Army had a desire to
19 do, to make turbulent measurements using a technology
20 called sonic anemometry in the atmosphere; in
21 particular, on the, the salt flats in the Utah desert.
22 And one of the challenges was that the actual physical
23 structure of the sonic anemometer interfered with the
24 flow and, thereby, interfered with the, the fluid
25 structure inside the measurement domain. So we did a

1 very extensive study of the, the turbulent structure and
2 turbulent flow inside the sonic anemometers.

3 Q. Okay. You say an extensive study. How long
4 did that take?

5 A. Probably worked on that for about a year.

6 Q. Full time?

7 A. Yeah. It was my research program.

8 Q. Okay. That was one of your publications?

9 A. Yes.

10 Q. What was the other?

11 A. The other one, my advisor and I worked on
12 analysis of some of his thesis data. He was, he
13 received his PhD and did his post doc at Michigan State.
14 And I, he and I did measurements and a lot of analysis
15 of his data, and that was published in the Journal of
16 Fluid Mechanics.

17 Q. What was his thesis on?

18 A. Sub-grid scale turbulent measurements.

19 Q. Did you take any courses either in your
20 masters program or bachelors program in nuclear
21 engineering?

22 A. No.

23 Q. Did you take any power plant designs or power
24 plants?

25 A. Yes.

1 Q. Okay. What courses?

2 A. As an undergraduate I was required to take
3 two thermodynamic courses, which were fundamentally
4 focussed on power plant design and steam systems. I
5 also took two heat transfer courses that were
6 requirements, and a lot of that was on heat, heat
7 exchange for steam and other types of systems. And I
8 took two fluid mechanics courses as an undergraduate.

9 In my masters program I took a conductive
10 heat transfer graduate study class, which included a lot
11 of study of conductive heat transfer in both steam and
12 gas systems. I took a gas dynamics course in graduate
13 school. The gas dynamics were focussed on turbine and
14 gas dynamics. I also as an undergraduate took a class
15 on gas and steam turbine design.

16 And then subsequent to my masters, in my PhD
17 program I took classes on viscous flow, which also
18 incorporated aspects of turbulent flow in these types of
19 systems. And I took a viscous flow class in, in my --
20 all of my graduate work was effectively focussed on
21 fluid mechanics, heat transfer, and turbulent flows.

22 Q. Now, the three courses that you took,
23 thermodynamics, heat transfer, and fluid measurements in
24 undergrad, those were required courses?

25 A. It was heat transfer, two classes in heat

1 **transfer; two classes in thermodynamics; and two classes**
2 **in, in fluid mechanics.**

3 Q. Yes, sir.

4 A. **Thermodynamics.**

5 Q. I believe you said that those were required
6 courses?

7 A. **Yes, yeah. Required.**

8 Q. And so everyone who got a mechanical
9 engineering degree took those courses?

10 A. **Absolutely.**

11 Q. Okay. What about your masters? I believe
12 you said conductive heat transfer and gas dynamics.
13 Were those required courses?

14 A. **No. I also took a viscous flow course in my**
15 **masters program as well.**

16 Q. And in a hundred words or less, what is
17 viscous flow?

18 A. **Viscous flow is the flow of liquids in either**
19 **internal flow or external flow systems in looking at the**
20 **actual structure of the flow and the losses in the**
21 **flows, in 100 words or less.**

22 Q. In your undergrad or masters program, did you
23 receive any honors, prizes, fellowships, or otherwise?

24 A. **Yes.**

25 Q. And what were those?

1 A. I graduated with honors as an undergraduate.
2 In my graduate program I had an NSF fellow for one of my
3 research years through my advisor, and then in my --

4 Q. What is an NSF? I'm sorry.

5 A. National Science Foundation fellow. So my
6 advisor received a Young Investigator grant. I think
7 now it's called a Young Investigator. Back then I don't
8 know what it was called, but. And with that, he was
9 given funding, research funding to have an NSF fellow
10 work for him, and I received that for one year in my
11 masters. And then my first year in my PhD program I
12 received funding under a NASA fellowship, the same type
13 of thing through my advisor.

14 Q. Okay. So the advisor was awarded the grant
15 money, and you were selected as the fellow to, to --

16 A. To do the research.

17 Q. Okay. Post masters degree did you pursue any
18 additional degrees?

19 A. Yes.

20 Q. What degrees?

21 A. PhD in mechanical engineering.

22 Q. Were you awarded that degree?

23 A. No, I was not.

24 Q. Why not?

25 A. We were living in Washington, D.C., and my

1 son was born, and I had to get a job that paid enough
2 money to pay for my family. So I left my PhD program
3 after I was advanced to candidacy and was completing my
4 thesis. The company I went to work with agreed to give
5 me half time to complete my thesis work and defend my
6 thesis, but it just never happened. They became too
7 emersed in the work and never was able to complete my
8 dissertation.

9 Q. Okay. What was your thesis on?

10 A. My thesis was on sub-grid scale physics for
11 large eddy simulations, the relationship to energy
12 cascades, and dynamic modeling of the sub-grid scales.

13 Q. And in laymen's terms that means what?

14 A. So there are, in general there are three
15 general forms of large scale simulations for turbulent
16 flows and for heat transfer. One is a Reynolds-averaged
17 technique, which is what's commonly used for things that
18 you might see on the news or the weather. The second
19 technique is called a direct numerical simulation.
20 Since then I should note there's another whole emergent
21 technology, but I won't get into that.

22 Direct numerical simulation, the problems are
23 that, the problem with the direct numerical simulation
24 is that you can only do very, very trivial, small
25 problems because of the computational resources it

1 takes. It's a Fourier transform of the Navier-Stokes
2 equation. The solvers are extraordinary. So in the
3 1960s it was proposed that if you took a step kind of
4 halfway between the two extremes and you solved the
5 Navier --

6 Q. Too much.

7 A. Too much information?

8 Q. You're, you're actually confusing me more
9 than when I began that question.

10 A. Yeah.

11 Q. So let me retract that for a moment.

12 A. Okay.

13 Q. During your time, whether in your undergrad,
14 your masters, or your PhD program, did you ever teach
15 courses?

16 A. Yes.

17 Q. What courses did you teach as an instructor?

18 A. I was, I taught a laboratory on fluid
19 mechanics measurement in my masters program as a
20 teaching assistant. And I taught a laboratory on, it
21 was compressible flow. So it was a supersonic flow,
22 basically running the supersonic wind tunnel.

23 Q. Wind tunnel you said?

24 A. Yeah, wind tunnel.

25 Q. Have you prepared or presented any

1 professional seminars?

2 A. Excuse me. Meaning presentations?

3 Q. Presentations to other people in your field.

4 A. Yes. Yes.

5 Q. And how many of those have you prepared and
6 presented?

7 A. I have presented at ASME conferences in the
8 '80s. I presented at the Division of Fluid Mechanics
9 annual meetings at the American Physical Society in the
10 '80s. I don't remember the exact year. I remember one
11 was in Atlanta and one was in San Diego, and one of them
12 I remember distinctly because it was disproving the
13 fundamental tenants of my thesis, so.

14 Q. I'm confused, sir. You, you said that --

15 A. '90s, I'm sorry. '90s, early '90s. It was
16 in my masters program when I did ASME presentations
17 related to the sonic anemometers. And, and then
18 Division of Fluid Mechanics meetings were in, let me
19 think, '94 and '95, about those, that time frame. Could
20 have been '96.

21 Q. Were there any publications affiliated with
22 those presentations?

23 A. Yeah. Actually, I think the, the actual
24 presentations are published through American Physical
25 Society for the Division of Fluid Mechanics, and the

1 ASME I believe are also published. You can find them
2 online.

3 Q. Have you, do you -- I'm sorry. Do you have
4 any continuing education requirements?

5 A. No.

6 Q. Have you taken any continuing education
7 courses or otherwise --

8 A. Yes.

9 Q. -- in your field?

10 When is the last time you took one?

11 A. November.

12 Q. And what was that course in?

13 A. I was, it, within the last year I took two
14 courses on a simulation technology called OpenFOAM.
15 It's a new emergent 3D-simulation technology used for
16 fluid mechanics and heat transfer, and I've been
17 actually attempting to use it for about six or seven
18 years. I tried to get my engineering team to use it
19 some years ago, but I never had the time or the
20 resources, so in the last year I've had training twice
21 on that.

22 Q. Okay. So they were both on that?

23 A. Yes.

24 Q. How, okay. You said that was training. Was
25 it a continuing education course or just training on

1 that software?

2 A. I don't know if I could differentiate between
3 the two. What, what do you mean?

4 Q. Were you, was it presented by the software
5 company?

6 A. Well, it was, there was -- yeah. Actually,
7 it was one of the developing companies that does it.
8 They offer training for these courses.

9 Q. How long were the courses?

10 A. The first one was three days. I'm sorry.
11 No. The, the first one was two days. The second one
12 was three days, and it also included one day for a, a
13 forum where people came from around the world and
14 presented their research on this tool.

15 Q. I'm sorry. What was the tool called again?
16 Open phone?

17 A. OpenFOAM.

18 Q. O-P-E-N?

19 A. FOAM, F-O-A-M.

20 Q. F-O-A-M?

21 A. Uh-huh.

22 Q. Is that a software that you can purchase?

23 A. It's actually freeware. You can download it.

24 Q. Sir, do you hold any licenses or
25 certifications?

1 **A. No.**

2 Q. Do you have an engineering license?

3 **A. No.**

4 Q. Are you a professional engineer?

5 **A. No.**

6 Q. Have you ever applied to become a
7 professional engineer?

8 **A. No.**

9 Q. Have you ever applied for any other license
10 or certification?

11 **A. No.**

12 Q. Now, I'd like to walk through your employment
13 history prior to 0 Base Design.

14 **A. Okay.**

15 Q. I'm sorry. When did you begin working with 0
16 Base Design?

17 **A. I formed the company I think the first week
18 of November 2016.**

19 Q. Prior to that where were you employed?

20 **A. Immediately prior to that I was employed by
21 Industrial Heat.**

22 Q. What was your title there?

23 **A. Vice President of Engineering.**

24 Q. And when did you begin working as Vice
25 President of Engineering for Industrial Heat?

1 A. About May of 2015.

2 Q. As an employee?

3 A. I began in May of 2015 as a, being paid as a
4 consultant because of my medical insurance, to carry my
5 medical insurance over to the end of the year from my
6 previous company.

7 Q. And I'm going to come back obviously to --

8 A. Yeah.

9 Q. -- your time at Industrial Heat, but prior to
10 working for Industrial Heat, beginning in May 2015 where
11 were you employed?

12 A. I was employed by a company that I had
13 started in 2003. The name of the company was 3 Phoenix,
14 and we sold that company to a British publicly traded
15 company called Ultra Electronics in February of 2014,
16 and I was one of the co-founders and principal in that
17 company.

18 Q. How many co-founders were there?

19 A. There were five co-founders.

20 Q. What did that company do?

21 A. We built systems for the Department of
22 Defense. We built radar systems. We built A --
23 engine -- let me see. We built radar systems. We built
24 sonar systems. We built imaging systems, a number of
25 different imaging systems. We built test systems for

1 torpedos, heavyweight torpedo, it was the Mark 710
2 system to test the torpedos. We did a lot of innovative
3 research contracts as well, SBIRs.

4 Q. Okay. What do you mean by you built systems
5 such as radar systems? Were you building radar towers?
6 Were you designing --

7 A. No.

8 Q. -- the system?

9 A. So our role at 3 Phoenix was primarily, when
10 the Department of Defense had a challenging problem and
11 a, and a very limited amount of time to get it done,
12 they would often hire us to build the system. So they
13 would have a set of requirements; for example, we need a
14 certain range resolution or other technical
15 requirements. We would document those requirements. We
16 would design both a physical hardware and software
17 system to address those requirements.

18 We would build EDM, engineering development
19 model, prototypes of that system. We would test those
20 systems with our Department of Defense customers, and
21 then we would do low-rate initial production typically.
22 And that's typically when we would end. Some systems
23 have gone on since then to a full-rate production, but
24 we would typically end at low-rate initial production.

25 Q. Okay. Now, when you say you built these

1 systems, is that for, are we talking about designing
2 them on paper and saying, hey, guys, this is how you
3 build your system, or is this actual physically
4 constructing --

5 A. We did everything.

6 Q. -- the system?

7 A. Yeah. We, we, we developed the requirements.
8 We went through requirements reviews with our customers.
9 We turned those requirements into designs, and normally
10 we would go through what's called a preliminary design
11 review and then a, a final design review or critical
12 design review. It depends on the customer. After,
13 between the preliminary and the critical we begin to
14 develop prototype elements; in particular, risk
15 reduction areas where they might be high risk. We
16 develop either software to hardware or address that.
17 And then after critical design review is finished, we
18 would actually build the system, physical hardware and
19 software.

20 Q. What were your job duties at 3 Phoenix?

21 A. I was, as I said, I was a principal and
22 co-founder. And I wrote a lot of proposals. I designed
23 a lot of systems. I was a chief system architect. I
24 oversaw the analysis and validation of the system
25 against the requirements.

1 Q. Did the U.S. government require that the
2 design systems or the engineering be signed off by a
3 professional licensed engineer?

4 A. No.

5 Q. Did you have professional licensed engineers
6 working for you?

7 A. No.

8 Q. What were you paid while you were with 3
9 Phoenix?

10 A. I was paid, well, at the beginning we started
11 in my basement, myself and two other principals, and we
12 were paid zero. And my salary once we began to make
13 money was I believe \$165,000 a year. All the principals
14 had the same salary, and gradually over the 10-year
15 period my salary went up to I think about 310,000 or
16 \$320,000 per year. And that was my, my salary. We also
17 had bonuses and other aspects of compensation.

18 Q. Now, you said you sold the company in
19 February 2014?

20 A. Yes.

21 Q. How much did it sell for?

22 A. We sold the, the total value of the sale was,
23 was really in three parts. There was money up front,
24 which was \$70,000,000. There was \$10,000,000 of
25 retention bonus, and then there was an additional

1 \$7,000,000 of earn-outs if the company met their, their
2 objectives. So the total value of the sale was
3 \$87,000,000.

4 Q. And what was the portion you received?

5 A. About 20 percent. This is maybe 12 or
6 \$14,000,000.

7 Q. Now, were you retained by the company that
8 purchased that business for any period after it was sold
9 in 2014?

10 A. Yes.

11 Q. For how long?

12 A. I left after about 15 months, but I left,
13 they, they preferred that I would have stayed, but I was
14 just, between the due diligence process and the
15 integration process, I was just tired in the end, needed
16 to take a break.

17 Q. So --

18 A. So I left in April 2015.

19 Q. And when you left what was your salary?

20 A. 300 whatever, whatever I said before.
21 315,000, 320,000. I don't really recall. Per year.

22 Q. And you left on your own accord?

23 A. Yes.

24 Q. And you said that they asked you to stay?

25 A. Yes.

1 Q. What did you do -- did you go directly from 3
2 Phoenix to --

3 A. Yeah. That wasn't the plan.

4 Q. -- Industrial Heat?

5 A. But that's what ended up happening. My, my
6 plan was that I was going to take about six months and
7 just not do anything, but. And when I decided to leave
8 3 Phoenix I had been in discussion, I had, actually I
9 had lunch with Dewey Weaver. And he said, you know,
10 this group he's working with, Industrial Heat, they're
11 ramping up and they need to set up an engineering
12 operation, would I be interested. And I said I might
13 be. And he said, well, they're getting money to set
14 this up and, and so, you know, let me know if you're
15 interested. And I said, okay, I would be interested.

16 And my presumption was, like everything I had
17 done for the previous 20 years with the Department of
18 Defense, that anytime somebody says they're going to get
19 money, it always takes six months longer, so I didn't
20 think it would be an issue. And then so it turns out
21 that as soon as I had left 3 Phoenix, it was not, it was
22 within a week or two that they called and said we
23 received our funding and we need to get going.

24 So I, I worked just at arms lengths for a
25 little while, just saying I'll help you out, get

1 organized, get things, you know, in place that you need
2 to get in place, and then became fully engaged there in
3 about, you know, mid to late May.

4 Q. We'll come back to that. Prior to 3 Phoenix
5 where were you employed?

6 A. I worked for Digital Systems Resources, which
7 in September of 2003 was bought by General Dynamics
8 Corporation. And I was at Digital Systems Resources
9 from May of 1996 until September -- I'm sorry, until
10 December of 2003 I believe. About.

11 Q. Now, what was your title or role at Digital
12 Systems Resources?

13 A. When I, when I started there I was a systems
14 engineer working on acoustic systems. Acoustic systems
15 have a lot of similarity to a lot of the mechanical
16 systems that I was working on in my PhD studies. Excuse
17 me. And so I started as a system engineer on a program
18 called MARS, the Multistatic Active Receiver System and
19 then rapidly progressed up in my title. At the end
20 ultimately was Director of Strategic Technologies.

21 Q. Now, you said you left there around December
22 of 2003?

23 A. Yes.

24 Q. Why did you leave?

25 A. So after, we were a, we were a smaller

1 company. When I started at Digital Systems Resources we
2 were about 65 people and we grew the company to be about
3 500 people, and then we were bought in 2003 by General
4 Dynamics. General Dynamics was a perfectly good
5 company. They're a great company, but they operate in a
6 very different way than a small dynamic company. And it
7 was clear that the innovation and the speed and some of
8 the things that we had brought to the table were not
9 going to continue within the, the General Dynamics
10 family. So I decided that I needed to go back to an
11 environment where we could do innovative system
12 development.

13 Q. All right. Now, you said they worked on
14 acoustic systems?

15 A. They, they actually built all kinds of
16 systems.

17 Q. Okay.

18 A. Yeah. They worked, they, their biggest
19 program was a program called ARCI, the Acoustic Rapid
20 COTS Insertion. It was a very innovative program
21 injecting technology into the submarine fleet. I worked
22 on ARCI. I worked on a program called APB, Advanced
23 Processing Build. I worked on a program called Tech
24 Insertion. I worked on a program called Weapon Control.
25 I worked -- WC. TC, Tactical Control. I worked on the

1 MARS systems. I worked in the Tech Insertion Photonic
2 Mass Workstation. I worked on CEC, Cooperative
3 Engagement Capability. I worked on TSM, Total Ship
4 Monitoring system. I was overseeing the architecture
5 and the development of that system for 688 submarines,
6 Seawolf submarines and Virginia Class submarines. The
7 list goes on. We did a lot of programs.

8 Q. Did that company work at all on power plants?

9 A. Did they work -- no, they did not.

10 Q. Did 3 Phoenix work on power plants?

11 A. We worked on power systems.

12 Q. What is a power system, sir?

13 A. So --

14 Q. And, and before you answer I'm going to ask
15 you to give it to me at a third-grade level. I took two
16 science courses in college, and I may have slept through
17 one of them.

18 A. Okay.

19 Q. So.

20 A. So we, we built systems that took in very
21 large high voltage and, for example, AC 483 phase or
22 shipboard power, 2160 3-phase power, things of that
23 sort, kind of the stuff you would see in like big
24 industrial applications. And we built systems that
25 converted that or transformed it into power appropriate

1 for systems like acoustic transmitters or radar systems.
2 So we built 25-kilowatt power systems, and we built, we
3 actually designed preliminary design and proposed a, a
4 1-megawatt power system for the Arleigh Burke cruisers
5 for their new radar system that they were building.

6 Q. Arleigh Burke cruisers, what is that? I'm
7 sorry.

8 A. It's a, it's a United States Navy surface
9 vessel. It's a cruiser, a mid-sized attack vessel.

10 Q. Okay. And so the system you built would be
11 contained within that ship?

12 A. Yes. Most of the systems were actually for
13 aircraft carriers. It was part of a system called the
14 TWS, Torpedo Warning System, which is an active transmit
15 and receive acoustic system for detecting torpedo attack
16 on aircraft carriers and then localizing the incoming
17 torpedos and then firing countermeasure weapons. We
18 built that entire system.

19 Q. Now, when you say you proposed this
20 1-megawatt system, that was receiving one megawatt of
21 energy and then, for lack of a better term and I'm
22 probably using it wrong, diverting that energy into the
23 different systems that would operate based on it? Is
24 that --

25 A. Yeah, converting it.

1 Q. Converting.

2 A. So it, it brought in what we would describe
3 as dirty power --

4 Q. Okay.

5 A. -- directly from the turbine gensets, brought
6 in that dirty power and filtered it, cleaned it up, and
7 it converted from AC 2160 VAC, very high current, into
8 1-megawatt total output. And then that one megawatt
9 went into actually another switching system that tran,
10 that, that broke it up into pieces and put it out on the
11 individual elements of the radar.

12 Q. Okay. So your, your work with that project
13 was, after you had received this dirty power as you put
14 it, it, your work on that did not include the production
15 or generation of that power?

16 A. No.

17 Q. Okay. Have you ever worked on a system with
18 respect to power generation or the, the production of
19 that power prior to Industrial Heat?

20 A. Yeah, not directly in the production. I
21 worked, when I was at General Motors I worked on a
22 program in the steam plant. The actual steam generation
23 was a central facility, and I worked in a facility that,
24 that was a joint customer of the steam plant. So this
25 was a very large General Motors facility with three

1 major plants, and in that plant we received and we had
2 to pay for steam. And so one of my projects was
3 actually, in the management of that steam, specifically
4 looking at the instrumentation and reducing cost
5 associated with that, the steam plant.

6 Q. Okay. And that was while you were an
7 undergrad?

8 A. That was when I was a co-op engineer, yes, at
9 General Motors.

10 Q. In your undergraduate program --

11 A. Yes.

12 Q. -- right? What was your title at General
13 Motors?

14 A. Intern engineer.

15 Q. Did you work under other engineers?

16 A. Yes.

17 Q. Who was ultimately responsible for making
18 recommendations for determinations in that position?

19 A. For, for that program?

20 Q. Yes.

21 A. The, the supervisor of plant engineering.

22 Q. What was his name?

23 A. I don't recall.

24 Q. Did you work directly for the supervisor of
25 plant engineering?

1 A. Yes. During that program, yes.

2 Q. And how long were you with GM in that
3 position?

4 A. As an intern engineer I was there, let's see,
5 one, two... about six or seven quarters. We were,
6 Michigan State was on a quarter system at that time.
7 Approximately.

8 Q. Less than two years?

9 A. No. More than two years. So all the way
10 through my, so -- that's probably, yeah, total,
11 aggregate, yeah, about two years.

12 Q. Okay. And was that full time or was that
13 part time?

14 A. It was full time on the quarters when I
15 wasn't at school. So I would go to school in the spring
16 and fall, and then in the winter and summer I would work
17 full time.

18 Q. Okay. And that was in what years?

19 A. I began at GM Metal Fab Truck and Bus in, I
20 think it was about 1987. I think it was the Summer of
21 1987, was my first co-op intern quarter.

22 Q. Have you worked in a steam plant since then?

23 A. Not a steam plant, but many plants that, in
24 fact, almost every system I worked for, worked on in the
25 Department of Defense was a chilled-water cooled system.

1 So we kind of had the opposite problem. We had to take
2 the heat out of the systems and dissipate it to the
3 chilled-water systems on ships or submarines or their
4 platforms.

5 Q. Now, you said you designed these systems.
6 Did you actually work on them or work on designing
7 systems? Are we talking about actually being in these
8 plants and these facilities, or are we talking about
9 designing them on paper?

10 A. At General Motors I was actually in the
11 plants.

12 Q. No, I understand that.

13 A. Oh.

14 Q. I'm talking about after that.

15 A. Oh, the Department of Defense systems?

16 Q. Yes.

17 A. Yeah. We actually designed them on paper.
18 We built them. We deployed them. I spent time on
19 ships, submarines. We had to install them. We had to
20 support the -- in the Navy there's an entire
21 organization called HM&E, which is the hull machine
22 group. And they have to approve your installations and
23 make sure that all your documentation is current. So we
24 would work with them and we would work on the
25 installations and all the testing and validation,

1 independent testing. Most of the systems had to go
2 through an independent validation test.

3 Q. How would you remove heat from the water?

4 A. It was actually the other way around.

5 Q. I'm sorry.

6 A. We were removing, we were removing heat from
7 the systems to dissipate it to the water so the ships or
8 submarines could, could manage it in a very controlled
9 and, and very quiet way, effectively was the key. So we
10 would use heat exchangers in our rack enclosures, were
11 pretty typical.

12 And we would normally be allocated a budget
13 of flow rate, temperature and pressure, and a maximum
14 pressure drop across the system. We would use heat
15 exchangers, and then we would do a lot of design work to
16 actually flow the air inside the cabinet through that.
17 And then we would also have a budget for allocation to
18 the chilled-water system as well as allocation to the,
19 the open space around the racks. So we had, it was a
20 very careful dance because the chilled-water systems had
21 limited capacity on the ships.

22 Q. Okay. What is a rack enclosure?

23 A. Oh, so the systems in most military
24 applications are enclosed in a rugged rack, so like a, a
25 cabinet, if you will, with a door. And inside of it you

1 may have a bunch of electronics or specialty hardware
2 sensors, other things, and then you would have a heat
3 management system, so heat exchanger system. And then
4 the chilled water would flow in, in a, in the case of a
5 chilled-water system, and out. And then there would
6 also be allocation to the space. So the rack itself is
7 like a ruggedized enclosure, computer enclosure for
8 shipboard applications.

9 Q. Okay. And that's where the chilled water
10 would be heated presumptively by --

11 A. By the system, yes.

12 Q. -- by the system. Okay. How long, I'm
13 sorry. How, how large were these rack enclosures?

14 A. Well, it depended on the system. For
15 example, on the AN/SPS-74 radar, periscope detection
16 radar system we built for the aircraft carrier, that
17 system had two large racks. So they were, I think they
18 were probably 30 inches wide, 30 inches deep, 6 feet
19 tall, each of those two racks. But other systems like
20 ARCI, the Acoustic Rapid COTS Insertion, the TC and WC,
21 they might have 20 racks in a system or even more. It
22 just depends on the system.

23 Q. And how much heat was transferred?

24 A. In each one of those systems?

25 Q. In each one of those systems.

1 A. It depended on the, the budget allocation of
2 a system. So typically in a system like that, each of
3 the functions, depending upon mission criticality of the
4 function, would have a certain allocation of sea water
5 or, I'm sorry, of chilled water. And so very critical
6 systems would have a larger allocation to ensure that
7 they operated within their, their, their temperature
8 range, whereas less critical systems would be, have the
9 ability to be disabled during critical, mission critical
10 events or evolutions.

11 So it really depended, but some of them were
12 10 kilowatts. Some of them were higher. The power
13 solution that we, the radar power solution, that was a
14 1-megawatt system. And the most difficult requirements
15 associated with that system was, in fact, the
16 chilled-water requirement because in that 1-megawatt
17 system we were only authorized to, to put somewhere
18 between 40 and 50 kilowatts of power into the
19 chilled-water system, which meant that our power
20 conversion had to be extraordinarily efficient.

21 Q. 40 or 50 kilowatts over what period of time?
22 Is that kilowatt hours per hour or is that --

23 A. So we have to be very careful. People often
24 confuse the use of power and energy. So the unit of
25 kilowatt is 1,000 watts, and a watt is the joules per

1 second. The unit of energy is the joule. So energy per
2 second is watt. So when you say kilowatt hours, what
3 that is, is it's joule scaled be 3,600. So a kilowatt
4 hour is a unit of energy, whereas a kilowatt hour per
5 hour, the hours cancel and it's actually a unit of
6 power. So we have to be careful.

7 So, and it's very important -- I know a lot
8 of people think this is nit-picking, but it's very
9 important to know that because in a system, if you have
10 a pulse of power, and a lot of the systems we built were
11 pulsed, you may have a lot of power in a very short
12 period of time, but your average power over some long
13 period of time might be very low. And so you have to be
14 able to design to accommodate for these, these changes
15 in power. So power and energy is very important to
16 understand the differences there.

17 THE VIDEOGRAPHER: Guys, we've got five
18 minutes.

19 Q. Okay. So you said there was a 1-megawatt
20 system?

21 A. Uh-huh.

22 Q. How much, correct me if I'm using these
23 incorrectly. How much power was put into that system
24 per hour? Is that --

25 A. Okay. So that, it depends upon the duty

1 cycle of the system. So in the case of that system,
2 which was the design that we prepared, that system had
3 a, a power input of one megawatt, but then it had a duty
4 cycle on top of that. So it might operate at a certain
5 number of pulses per second. So the aggregate power or
6 the aggregate energy used in an hour would be lower than
7 the cumulative, say, 1-megawatt hour. It would be a
8 lower value. And I don't recall off the top of my head
9 what the duty cycle for that particular system was
10 required to be.

11 Q. How large was that system?

12 A. Oh, it was, that was a big system. I think
13 that that system was proposed as -- the prototype, the
14 EDM phase was proposed as two ISO containers, so 20-foot
15 conex boxes. And, and that may have included the, the
16 actual test apparatus. Because to manage that level,
17 that's an extraordinarily high amount of power for that
18 kind of density, so to manage that much power you really
19 have to be very careful. So we had to have loads to
20 dump the power, and we had to have special
21 infrastructure to load it in. Our partner on that
22 program was a company called Dynapower, and they had
23 some of those resources available.

24 Q. When you say dump the power, what do you mean
25 by that?

1 A. So when you're testing a system, in a case of
2 a system like this, what you need to do is you need to
3 be able to verify all of the requirements of the system
4 are met, but you don't usually do that with a
5 potentially hundreds-of-millions-of-dollar radar on the
6 back end. You do it in a test configuration.

7 So what you do is you would have an interface
8 to, for example, grid power. And you would condition
9 that power to look like the genset power that would come
10 in on the ship. And then the output load that would
11 normally go to the other system for distribution of the
12 radar, you would dump it into something that emulates
13 that. So it would absorb all that power and allow you
14 to measure it and determine what's happening, the
15 quality, and does it meet the requirements, does it meet
16 the duty cycle, does it meet the thermal requirements,
17 the heat transfer, all of those other things as well as
18 in those systems a huge focus is on reliability and mean
19 time between failure.

20 Because the systems are so large, you
21 actually had have to cut a hole in the ship to get them
22 in, and generally people don't like to do that. Those
23 are, you know, those are very, very expensive
24 operations. So to get them in and out, you need to --

25 Q. So that particular system that you worked on,

1 the 1-megawatt system, the heat transfer was from dry
2 heat, not steam, or was it?

3 A. No. The heat transfer in, in the, in that
4 proposed system was actually from the power electronics.
5 So what we were doing was we were taking 4160 high
6 current power and we were conditioning it and switching
7 it into DC power, so we were making 1,000 volt DC at a
8 very high current. And so to do that, what you had to
9 do was you had to put it through switching electronics
10 like silicon carbide and gallium arsenide and other
11 technologies for switching that power.

12 And when you switch that power, there are
13 inefficiencies in those semiconductors, and so they
14 dissipate heat. Some percentage of that heat or some
15 percentage of that power gets converted to heat, waste
16 heat. And so you had to remove that power from that
17 area so it didn't melt and turn the, the entire
18 switching apparatus into just a puddle of molten
19 semiconductor.

20 Q. Okay. So when you say one megawatt of power
21 that's going through, that's not the amount of heat
22 that's being released; is that correct?

23 A. No. If you released that amount of heat in a
24 space that small, you would melt and destroy everything.

25 Q. Okay. And that was cooled you said by cool

1 water or that was --

2 A. Chilled-water system.

3 Q. -- chilled-water system?

4 A. Yeah, system, the ship chilled-water system.

5 Yes.

6 Q. Okay. Have you ever worked on any plants
7 that involved heat exchangers that are air cooled?

8 A. Air to air? What, what do you mean?

9 Q. Well, and maybe I'm using it wrong, but where
10 the heat dissipation is done by air flow as opposed to
11 using chilled water.

12 A. Well, all of those systems had heat
13 exchangers. And so in any kind of a heat transfer
14 system you're normally transitioning heat from a gas to
15 either another gas or to a liquid. And so the direction
16 of the heat transfer is dictated by the direction of the
17 Delta T, so it's the same system.

18 Q. I'm sorry. Maybe I didn't understand. When
19 you use the term heat --

20 A. Yes.

21 Q. -- is that a gas?

22 A. No. Heat is, heat is energy, and it's
23 typically measured by a temperature difference. So when
24 there's a temperature difference, there's a diffusive
25 process that transmits the heat through materials. It

1 could be a gas. It could be a liquid. It could be a
2 solid. It could be a plasma. Any of the four normal
3 states of matter. And so in a heat exchanger normally
4 what you're doing is you're transferring heat from a hot
5 side to a cool side. And whether that hot side is in
6 the water or that hot side is in the, in the gas, it
7 doesn't matter. It's just the direction of the heat
8 transfer.

9 Q. Okay. So in the, in the example of the
10 1-megawatt plant you did for the DOD --

11 A. Yeah. That was a proposed plant, yes.

12 Q. So it was releasing heat into a fluid system,
13 correct?

14 A. Yes. It was transferring heat into a fluid
15 system.

16 Q. Okay. So --

17 A. And heating that fluid.

18 Q. So heat from the air presumptively to --

19 A. It was from the semiconductor, the, from the
20 solids.

21 Q. Okay.

22 A. That gets transferred through very
23 sophisticated heat transfer devices into the
24 chilled-water system, yes.

25 Q. Okay. We'll take a short break here.

1 THE VIDEOGRAPHER: We are off the record at
2 9:52 a.m.

3 (Recess taken 9:52 a.m. to 9:58 a.m.)

4 THE VIDEOGRAPHER: We are back on the record
5 at 9:58 a.m.

6 BY MR. ANNESSER:

7 Q. Sir, to continue our discussion on that
8 1-megawatt plant for the DOD that you had been
9 previously discussing. So if I understand it correctly,
10 as you said before, you were transferring heat from
11 these solid-state conductors and whatnot equipment to
12 liquid --

13 A. Yes.

14 Q. -- correct? So you were going from a solid
15 state to a liquid state?

16 A. Uh-huh.

17 Q. What is the mathematical computation for
18 that? How do you determine how much heat is being
19 transferred?

20 A. I don't recall off the top of my head.
21 That's a complicated analysis.

22 Q. Okay. Do you happen to know what the
23 computation is to go from a gaseous state to a solid?

24 A. The heat transfer?

25 Q. Yes. From gas to a solid.

1 A. Again, it depends upon the, the details of
2 the system, how you transfer the heat. So there are
3 three primary modes of heat transfer. There's radiative
4 heat transfer. There's conductive heat transfer, which
5 typically is solid to solid, and then there's convective
6 heat transfer. So if you were going from a, a solid to
7 a gas, the primary mode in lower temperature Delta Ts
8 would be convection heat transfer. And then depending
9 upon the temperature differential, you could get into
10 radiative, but it's, those are detailed analyses that
11 you have to look at on a, kind of a design-by-design
12 basis.

13 Q. Okay. And you don't know sitting here today
14 what, how you would go about doing that?

15 A. It depends on the system and the details of
16 that system.

17 Q. It's been a while since you've done that I
18 take it?

19 A. Well --

20 Q. That was back in --

21 A. Yeah. It depends on the system. I mean you
22 just have to look at each one of the systems and look at
23 the details specifically.

24 Q. When was the last time you did that type of
25 calculation?

1 A. The heat transfer calculation?

2 Q. Yes.

3 A. I did some for Industrial Heat in the fall
4 for various types of systems. Actually, that, what year
5 is this? This is 2000 -- primarily we were looking at
6 different types of heat transfer for the various
7 investments between let's say the Fall of 2015 to the
8 Summer of 2016.

9 Q. And what were those heat transfers? Were
10 they from -- was that conductive heat transfer?

11 A. It depends. There were three primary areas
12 of investment that Industrial Heat had made. And my
13 job, being in charge of engineering, was to, was really
14 twofold. We were to validate and verify each one of the
15 investments and then, any of the investments that
16 merited reproduction, then we would do an independent
17 reproduction of that.

18 And so each one of the systems was very
19 different because there were electrolytic systems, there
20 were plasma-based systems, and then there were
21 solid-based systems. So every one of the systems had
22 nuanced differences, and each one of the inventors and
23 technologists, they all came up with all their own
24 schemes for calorimetry and measurement of that heat
25 transfer.

1 Q. Of all the systems you tested in Industrial
2 Heat, were there any that you were able to validate and
3 verify?

4 A. No.

5 Q. Why not?

6 A. We went through, the process was we worked
7 with the inventors. So there were, as I said, I don't
8 remember if there were five or six different groups,
9 probably name them. What we did was we went to work
10 with each one of the investments, and we looked at all
11 of the data that they were willing to share with us.
12 Almost all of them were completely transparent and open.
13 We went to their labs. We worked with them. We
14 collected their data, and we looked at it. We analyzed
15 it. And in many cases the heat that they were
16 producing, the excess heat, the anomalous heat was very
17 small. They, they had amounts that were very small.
18 And so any small errors in their sensor systems or small
19 errors in their assumptions would mask that level.

20 So we went through and carefully analyzed
21 their data, and in a few cases we actually reproduced
22 their experiments. We had two groups that in the
23 validation verification phase we came up with what I
24 would describe as nebulous results. They weren't
25 positive, but we certainly just couldn't say here is a

1 major problem that has to be overcome before we could
2 legitimately verify and validate it. And so in those
3 cases we worked very closely with the inventors and
4 organizations to help them do independent reproduction
5 in our lab.

6 Q. Okay. And those were successful
7 reproductions?

8 A. No. Ultimately, the reproductions, yeah, we
9 didn't find anything that had excess or anomalous heat.

10 Q. Okay. And what were those two?

11 A. What were those two?

12 Q. Yeah.

13 A. If --

14 Q. You know, who were the inventors?

15 A. The first one was Dr. Mizuno in Japan. That
16 was a plasma-based system. And the second one, which
17 was very much at arms length, I did not have privy or
18 access to this one, was HMRI. It was a, it was only a
19 partial investment into it. And so I was kind of, me
20 and the rest of the engineering team were kept at arms
21 length. We weren't allowed to have access to all of
22 their data, so I just got summary reports and briefings
23 on some of the things they had done.

24 Q. I thought you were able to reproduce their
25 experiments in your lab.

1 A. So, yeah. No, we, what we did was, based on
2 the limited knowledge we had of their system, we
3 reproduced an electrolytic cell that to the best of our
4 ability looked like what we had understood they were
5 doing. And we could not achieve the same results that
6 they were giving us at this kind of arms length.

7 Q. Okay. What about Dr. Mizuno? Were you able
8 to identically reproduce what he was doing?

9 A. No, we were not. So Dr. Mizuno had conducted
10 a, a series of these plasma-based technique tests in his
11 lab in, in Sapporo, Japan. And so myself and some of
12 the other engineers went to Sapporo and looked at his
13 test apparatus and, and looked at his data. He was very
14 forthright, shared all of his data, everything he had
15 with us. There were some challenges just because of his
16 physical environment. He had a very small lab. He
17 didn't have good control over the environmental
18 conditions in the lab.

19 And so we had some reservations, but he had
20 some results that were just anomalous. We couldn't
21 quite understand them. So what we did was we didn't
22 notice that during his testing he -- and I should note,
23 you know, he's a, he's a wonderful person, but I should
24 note that he was one person and an assistant. He didn't
25 have a lot of people to help him. So what we found was

1 that in the middle of his experimentation or kind of
2 towards the tail end he had changed a piece of
3 equipment. And so that was a concern, because you never
4 want to see in the middle of a test somebody changing a
5 piece of equipment. You could introduce all kinds of
6 problems.

7 So what we did was we worked with him to go
8 back to his experiments, instrument them with a much
9 more robust instrumentation set, and then re, have him
10 reproduce the experiments exactly as he had before. And
11 once we re-instrumented the, the equipment and put a
12 little better controls in his lab on the environmental
13 conditions, we couldn't get the same result again. And
14 that was in his lab.

15 Still, the, the senior management at
16 Industrial Heat, they, their view was if any of these
17 technologies have even one percent probability of
18 success, they want us to go all the way to the end to
19 find if anything works, because they were very eager to,
20 to find something that was successful. And so, so at
21 that time we didn't see results. So what we did was we
22 set up an independent test of Dr. Mizuno's in our lab,
23 and we completely replicated his system and we followed
24 his recipe. We couldn't get it to work.

25 And so then Dr. Mizuno sent over a system

1 that he had prepared for us and brought it to our
2 facility, and then he came over and he spent, I don't
3 know if it was a week or ten days, he spent some time in
4 our lab setting that up and going through his process
5 that he had defined to validate it. And we, and there
6 were some nuances. I mean between the translation
7 between Japanese and English, and there were some
8 nuances that he highlighted while he was there that were
9 subtle differences, but we did his exact procedure and
10 process on his reactor in our facility, and we still
11 were not able to do it.

12 So, so our concern, you know, our conclusion
13 was that the one set of data where he had changed some
14 instrumentation was indeterminate. We couldn't make
15 head or tails of it, but we were not able, in any of the
16 series of experiments, able to produce that result, so.

17 Q. Why was it necessary for him to come over and
18 do the experiment in North Carolina as opposed to just
19 relying on the one that you had built?

20 A. How do you mean?

21 Q. Well, you said you, you constructed it based
22 on his formula, his, his design and tested, and it did
23 not produce results.

24 A. Right.

25 Q. So why then did you have to have him come

1 over and test it again?

2 A. Well, because Mr. Darden was, wanted us to
3 drive to the end, that if there was even one percent
4 chance that that one measurement he did was correct,
5 then let's get to the bottom of it. And there was a big
6 language barrier. So what we did was we had him, after
7 we were able using all of his information, able to
8 reproduce it or not able to reproduce it, what we had
9 him do was we had him to come over and use one of his
10 reactors in our facility to see if there was something,
11 some nuance difference that we just weren't getting, and
12 then try to reproduce it. But we were not able to get
13 it to work even with him there.

14 Q. Would you say that it is essential to work
15 with the inventor in order to make sure that you're
16 getting absolutely everything to attempt to replicate
17 these tests?

18 A. In my opinion, yes. I mean if, these are
19 very nuanced and subtle areas. And so if you don't have
20 access to, to these people, it's very difficult to
21 really understand all of the, the small nuance
22 differences.

23 Q. Did you ever try to reproduce or test an
24 E-Cat device designed by Dr. Rossi?

25 A. I did not.

1 Q. So you've never tested an E-Cat device?

2 A. We created a device that was as close as
3 possible to the best of our ability without, without the
4 ability to communicate with Mr. Rossi. We, we did the
5 best we could. So we created some reactors that were
6 similar to some of the reactors that he had tested at
7 the Triangle Drive facility before I was part of
8 Industrial Heat, and we tested those systems.

9 Q. Okay. Now, you said a couple things there I
10 want to ask you about. You said with no communication
11 with Dr. Rossi?

12 A. Uh-huh.

13 Q. Why didn't you have communication with
14 Dr. Rossi?

15 A. Well, so when I came on board, so in June of
16 2000 -- let me get the year right -- 15, Industrial Heat
17 was, had just received their funding. I don't know if
18 it was in April or May. They had received funding, and
19 they were in negotiations for several other investments.
20 And so those were ongoing, and the lawyers, you know,
21 not to say anything bad about lawyers, but the lawyers
22 were doing their thing. And so they were taking a long
23 time to kind of get to the point where we could really
24 engage and work with the various groups.

25 So in June of 2015 Tom Darden and John

1 Mazzarino asked me to look at in detail what Mr. Rossi
2 was doing. So I took all the information that, that
3 they could provide me, and it was insufficient
4 information incidentally. There were, there were no
5 red-line drawings of the plant. There were no details.
6 And on top of that, this is another kind of detail, Tom
7 Darden was the keeper of the trade secrets. Nobody else
8 knew anything about the details of the fuel technology.

9 So what we did was we focussed on the heat
10 transfer and the coefficient of performance as they had
11 been defined so that we could figure out if we could
12 replicate it. Because Tom and John insisted that if
13 there's even one percent chance he's right, they want to
14 move ahead and figure out how to do this.

15 So in 2000 -- June of 2015 I went through
16 everything I could find. And, and there were some
17 commissioning reports I think they were from Mr. Penon.
18 And I was going through those, and there were a lot of
19 typos and errors, and so that was concerning. And so I
20 developed a whole bunch of questions. Like, for
21 example, in the commission report they had the flow rate
22 in the system was 36,000 -- let me think of the unit --
23 kilograms per day, day after day after day, which I
24 thought was suspicious, but in the body of the text he
25 had written 3,600.

1 So I thought, oh, 3,600 would be a lot more
2 logical. It was kind of consistent with what everybody
3 was describing as the coefficient of performance, those
4 types of things. So I thought, okay, well, maybe
5 there's an error there. Maybe it's just a simple typo.
6 I mean somebody could have transposed a number. That's
7 not a big deal. Things happen.

8 So we went through all of that. And I was
9 looking at it. I just couldn't figure it out because I
10 couldn't figure out where, in a thermodynamic sense
11 where the various sensors were. Because you have to
12 have the pressure and the temperature and the volume or
13 mass flow rate of the condensate return, and you need
14 the pressure and the temperature and the volume or mass
15 flow rate of the steam to, to measure the system.

16 Q. I'm going to stop you for just a minute.

17 A. Okay.

18 Q. We will get into that. I'm going to give you
19 plenty of --

20 A. Okay.

21 Q. -- opportunity to tell me about it.

22 A. Okay.

23 Q. But I want to go back to the testing that you
24 did.

25 A. Okay.

1 Q. Okay. So the question again was why you had
2 no communication with Dr. Rossi.

3 A. Right. So that was where I was getting to.
4 So at the end of that analysis -- thanks for reminding
5 me because I'm out in the weeds. At the end of that
6 analysis I just couldn't make heads or tails of what was
7 going on, so JT Vaughn and Tom Darden and John Mazzarino
8 said you need to go down and meet with Mr. Rossi,
9 understand what he's doing, look at the plant. He said
10 if we don't have the documentation, at least you can
11 look at the plant and understand what's going on. I
12 said fine, I'll go down and meet with Dr., with
13 Mr. Rossi.

14 So in July of 2015 we were going to fly down
15 and visit him. And I don't know exactly what happened,
16 but JT had informed Mr. Rossi we were coming down and
17 he, he said I couldn't come to the building. So that
18 kind of put up a big barrier. And so subsequently what
19 we did was we, I engaged with Barry West, and Barry West
20 was on leave or vacation. I think it was in August time
21 frame. He would, I think he would work five weeks and
22 take a week off or maybe work four and take two. I
23 don't remember what the details were, but he was back up
24 in North Carolina, and I met with him to get some
25 details to try to figure out what was going on.

1 Q. Okay. Now, going back for just a minute to
2 your testing. Well, first of all, in that time period,
3 and I understand JT Vaughn sent an e-mail to Dr. Rossi
4 as you explained. Did you ever send an e-mail to
5 Dr. Rossi?

6 A. I don't believe I ever did, no.

7 Q. Did you ever introduce yourself to Dr. Rossi?

8 A. First time I met him was actually the day
9 that you and I were at the plant for the first time.

10 Q. Okay. Did you have any preconceived notions
11 about Dr. Rossi when you met him?

12 A. Yeah. I would say yes, I did.

13 Q. And what were those notions?

14 A. Mr. Darden, Tom Darden and John Mazzarino,
15 they engaged with me directly and said, look, you just
16 have to be aware that he's very deceptive, and you just
17 have to be careful with that. And I said I'm only about
18 the data --

19 Q. When did they tell you that?

20 A. -- and so. I think after the meeting was
21 canceled in July, that, about that time frame.

22 Q. Did they tell you that that meeting was
23 likely not going to go over well with Dr. Rossi?

24 MR. LOMAX: Objection to the form of the
25 question.

1 A. I don't, what --

2 Q. Did they ever tell you that, you know, just
3 them even suggesting that you come down is probably
4 going to upset Dr. Rossi?

5 MR. LOMAX: Objection to the form of the
6 question.

7 A. I, I don't know. I, I would have anticipated
8 that, based on their relationship as it was kind of
9 presented to me, that, you know, there would be some,
10 some reception actually at that time, because Mr. Darden
11 and others were taking other people down there to look
12 at the plant and talk to them, and so I thought I was
13 just going to be another person to visit.

14 Q. Okay.

15 A. So.

16 Q. Did they ever tell you he would be upset by
17 your visit, but, you know, to do it anyways?

18 MR. LOMAX: Objection to the form of the
19 question.

20 A. I don't recall, but they may have. They may
21 have indicated that. It may have been after though
22 that, once he actually said you can't come in. I don't
23 remember the exact time line that all of that happened.

24 Q. Now, just back for a second with Mr., and I'm
25 sorry, Dr. Mizuno. So is it your belief that his

1 testing protocol that was undertaken at his lab in Japan
2 was faulty?

3 A. I believe that the test protocol that he
4 executed in Japan prior to us being able to go in and
5 inspect what he was doing did have errors and, and
6 problems, yes.

7 Q. To your knowledge, did Industrial Heat invest
8 in Dr. Mizuno's technology?

9 A. To my knowledge I believe, and I'm not deep
10 into this, my understanding is that we paid him kind of
11 a monthly stipend to, to support his research and
12 development activities.

13 Q. To your knowledge, has Industrial Heat sued
14 him?

15 A. I am not aware of that, no.

16 Q. All right. Now, sir, taking a large step
17 back from what we've been discussing. When did you
18 first come into contact with Industrial Heat?

19 A. When did I first come into contact with
20 Industrial Heat or with the personnel associated with
21 Industrial Heat?

22 Q. Well, let's go ahead and say the personnel.

23 A. Okay. So I met Dewey Weaver --

24 THE VIDEOGRAPHER: Mr. Murray.

25 THE WITNESS: Oh, I'm sorry. Sorry about

1 that.

2 A. I met Dewey Weaver probably ten years ago.
3 I'm estimating. One of Dewey Weaver's colleagues was a,
4 was an engineer that worked for me starting in probably
5 around 2007, and I met Dewey Weaver at that time.
6 Subsequent to that, some years later, and I don't
7 remember exactly the time period, Dewey always was
8 trying to figure out a way that we could work together
9 and then he -- oh, go ahead.

10 Q. I'm sorry. Is --

11 A. Go ahead.

12 Q. Is Dewey Weaver an agent of Industrial
13 Heat --

14 MR. LOMAX: Objection --

15 Q. -- to your understanding?

16 MR. LOMAX: Objection to the form of the
17 question.

18 A. I don't know what that means. What do you
19 mean by agent?

20 Q. Was he acting on behalf of Industrial -- you,
21 you started off by saying, you know, are we talking
22 about the, the people at Industrial Heat.

23 A. Right, right.

24 Q. And then you went into Dewey Weaver. Is he
25 one of the people at Industrial Heat --

1 A. At, at --

2 Q. -- to your understanding?

3 A. At this time before, long before I had ever
4 heard of Industrial Heat, he was just a, you know, kind
5 of an entrepreneur working on various different things.
6 At some point along the way he became what I would
7 describe as an independent business development person
8 for Industrial Heat.

9 And so I think about the time line of about
10 2012 Dewey actually engaged with my former employee,
11 Bill Moscrip, who is unfortunately passed away, to see
12 if Bill could help them understand some of this research
13 that was going on in this area. And, and Bill, actually
14 I don't know if he looked at it or he didn't do it, but
15 Bill came to me to get permission as an employee of mine
16 to make sure that that was okay. And I said, yeah,
17 that's absolutely fine. You can do, you know, that's,
18 it's completely outside of the, the realm of anything
19 that we're interested in at 3 Phoenix.

20 So Bill was going to work with Dewey. And
21 then Dewey became aware that we had bid on and won a
22 program called the Mark 710. The Mark 710 is a
23 heavyweight torpedo test program. It tests live weapons
24 for heat transfer, power generation, cooling, acoustics,
25 engine performance, everything, every single component

1 of the live weapon. And it's a, it's a very
2 sophisticated test apparatus.

3 And so Dewey became aware of that. And he
4 said, hey, we're doing some research, and we may need
5 some sophisticated test equipment and test capability
6 and test engineering capacity. Would you guys be
7 willing? And I said as a, as senior executive at 3
8 Phoenix, I said certainly we would be interested in
9 bidding on it or at least understanding it.

10 So sometime in 2012, and I don't recall if it
11 was once or twice, and I don't know if it was 2011 or if
12 it was 2012, you know, thereabouts. Tom Darden and JT
13 Vaughn and Dewey Weaver, I think on the first occasion
14 it was Tom Darden, JT Vaughn, and Dewey Weaver, came to
15 understand what our capabilities were in this
16 instrumentation and test space. So I kind of gave him
17 an overview of the things that we were doing, gave him a
18 tour of our facility, showed him the laboratory spaces,
19 showed him, you know, kind of our engineering capacity,
20 showed him our production spaces.

21 Subsequently they came back. I don't know if
22 it was a month or three months later or six months
23 later. Just at some point in the future they came back,
24 and that time they bought -- they brought T., T. Barker
25 Dameron along with them. And so we, we then gave them

1 an update and said, you know, this is our capability.
2 These are the types of systems we're building. And we
3 had very robust capability in that space.

4 And they wanted to know if we were capable of
5 building a test and instrumentation system for a reactor
6 type of system like this. And I said, yeah, it's
7 actually very similar to a lot of other things that we
8 work on, so we'd be more than happy to, to bid on it.

9 Q. And when was that?

10 A. I want to say 2012.

11 Q. Okay.

12 A. I don't know if it was summer or when. At
13 about the same time, I have to caveat that, at about the
14 same time we were going through the sale of our company.
15 We were working with M&A, and so my work load at that
16 time was pretty extraordinary. So I don't remember the
17 exact dates, but there about that time frame. And they
18 sent me some information on Mr. Rossi's background, and
19 I commented on it and said, yeah, you know, this is the
20 type of thing we could analyze. I said I really have no
21 idea what this technology is, but at the end of the day
22 we don't really care what the technology is. If it
23 produces heat, then you can make it useful.

24 Q. Okay. So among the things that they sent
25 you, you said something about his background?

1 **A. About?**

2 Q. You said they sent you something about --

3 **A. No, they gave me his name, and I just looked**
4 **on the internet and saw that.**

5 Q. Now, they sent you a copy of the license
6 agreement, did they not, with Dr. Rossi?

7 **A. I don't recall that. They may have. I,**
8 **actually I, I doubt very seriously they did.**

9 Q. Were you under a non-disclosure agreement at
10 that time?

11 **A. Probably, but I don't, I don't recall.**

12 Q. Now, did you ever work at 3 Phoenix with a
13 gentleman by the name of Fred Zoful (phonetic)?

14 **A. Fred Zoful?**

15 Q. Yes.

16 **A. No, we never had an employee named Fred Zoful**
17 **that I'm aware of.**

18 Q. So you never worked with him on any projects
19 that you know of?

20 **A. Not that I'm aware of.**

21 Q. So based on what you've told me, you told
22 them, yes, we can build a testing apparatus of some sort
23 for this technology. You said it would be pretty easy?

24 **A. I would not characterize it as easy.**

25 Q. Okay.

1 A. But I would say it would be very consistent
2 with other sophisticated systems. I mean heavyweight
3 torpedo is not easy. It's very sophisticated.

4 Q. Okay.

5 A. But, yeah, within our capacity.

6 Q. Did you bid on the job?

7 A. No. It went, it went all quiet about that
8 time. And then we became very heavily engaged in the
9 sale of our company, and I was focussing on really the
10 sale and the due diligence process with that and
11 ultimately the integration of the company.

12 Q. You said it went all quiet --

13 A. Yes.

14 Q. -- on their side? They didn't ask you for
15 the bid?

16 A. No. Never heard anything. We never got a
17 formal proposal. We did, we did indicate to them that
18 we had part of a building that would be a very nice site
19 to do that testing, if they wanted to sublet it or take
20 a lease or other things, but no, we never, never heard
21 anything further.

22 Q. Did you give them pricing?

23 A. I may have in the meetings kind of gave,
24 given them ROM pricing on kind of this is generally what
25 systems of this sort cost.

1 Q. Do you recall what that might be? I mean a
2 range?

3 A. I don't know.

4 Q. Are we talking millions of dollars? Are we
5 talking hundreds of thousands or 100 bucks?

6 A. Yeah, I would say middle hundreds of
7 thousands to a million dollars to, to really build out a
8 proper test apparatus. Without knowing the details.

9 Q. So that was sometime you said in 2012 or
10 2013?

11 A. Yeah. Best estimate, yes.

12 Q. Okay. And then what is the next you heard
13 from them?

14 A. Well, the due diligence process when you're
15 selling a company to a foreign, publicly traded company,
16 and particular in defense space, is extraordinarily
17 difficult. And I was the principal responsible for
18 that. So most of my attention throughout 2000 -- late
19 2012 and all the way through 2013 was on the offers that
20 we received to buy our company.

21 And so I was focussed on the sale of the
22 company, execution of a couple of key programs that I
23 was heavily involved with. And, and so really all the
24 way up until February of 2014, I don't even know that I
25 even talked to Dewey. I, I really never talked to JT or

1 Tom Darden at that point. They were off doing whatever
2 they were off doing, and so.

3 Q. But if Dewey or Tom Darden or JT had sent you
4 an e-mail, you would have responded, correct?

5 A. Maybe. I mean at that time I was, I probably
6 personally evaluated, prepared, and reviewed over 10,000
7 pages of documentation including documentation requests
8 by the United States Senate for the sale of my company,
9 and so I can't say I would reply to everybody's e-mail
10 at that point. I'm, I try, I would try to reply to
11 people's e-mails, but I can't --

12 Q. Sitting --

13 A. -- promise that I would.

14 Q. Sitting here today, sir, do you have any
15 recollection specifically about them reaching out to you
16 and trying to further obtain your services?

17 A. Not that I'm aware of.

18 Q. Okay.

19 A. No.

20 Q. Until you said about February 2014?

21 A. No. February of 2014 we sold the company.

22 Q. Okay.

23 A. And then subsequent to that I spent really
24 about, we had some fiduciary responsibilities related to
25 employee stock ownership plans that we had to take care

1 of. I mean it was our fiduciary, so we had to take care
2 of that. So I spent probably the next six months
3 focussing on the integration with Ultra and getting some
4 of those fiduciaries taken care of.

5 Q. When is the next time you heard from
6 Industrial Heat?

7 A. When I had, when I decided to leave 3 Phoenix
8 and just take a little bit of decompression time, I had
9 lunch with Dewey Weaver at the Glenwood Grill, and I
10 would guess it was probably February of 2015,
11 thereabouts. I was at that point preparing to, to leave
12 and letting the Ultra people know that I was going to
13 bug out.

14 Q. Okay. Sir, I'm going --
15 (Whereupon, Exhibit 1 was marked for
16 identification.)

17 Q. I'm going to show you a document which we'll
18 mark as Exhibit 1. Of course, I marked my copy. Have
19 you seen this document before, sir?

20 A. Yes. This appears to be a contract or
21 employment contract, consulting contract.

22 Q. Okay. Have you seen it before?

23 A. Yes, yes.

24 Q. Okay. And at the end of this document do you
25 see your signature?

1 A. Yes.

2 Q. And the signature of JT Vaughn?

3 A. Yes.

4 Q. Is it your understanding that as of the 1st
5 day of June 2015 you began doing work for Industrial
6 Heat?

7 A. No.

8 Q. Okay.

9 A. I did not want to go directly back to work.
10 I was trying to take some down time, just decompress.
11 And so really in beginning of May I told JT I would, I
12 would help him get some things organized. He was trying
13 to find a property. He was trying to do things, and so
14 I, I said I'll help you, but I don't want to be paid.
15 So we executed a non-disclosure agreement, and I said,
16 look, I'll just help you from -- I'm not going to come
17 in full time.

18 And then, you know, by the middle of May they
19 were absorbing more and more of my time. And so in the
20 beginning of June JT said we just have to pay you. I
21 mean it's, we have to pay you. And, and I felt
22 obligated, if they were paying me, that I would have to
23 give my full effort. So beginning in June, that's,
24 that's when it kind of, they started paying me. But I
25 really started working about a month before that.

1 Q. What type of work were you doing for them
2 during that month in May?

3 A. Helping them find a property, helping them
4 figure out how to hire people, what kind of employee
5 manual, looking for equipment, starting to kind of get a
6 little bit of a feel for what the other various
7 investments were, so --

8 Q. Administrative type work?

9 A. Well, I would say a mix of administrative and
10 technical.

11 Q. You weren't doing engineering or testing or
12 anything like that at that time?

13 A. No testing, but engineering, yes. I was
14 doing technical reviews of some of the documents, of
15 some of the information that they would provide me.
16 Like they had shared with me information about a company
17 called CCT, and they had shared information with a, a
18 researcher named Dennis Letts. They had shared with me,
19 they indicated that they were engaged with a company
20 called Lenuco out of University of Illinois,
21 Urbana-Champaign area. So they kind of gave me that
22 information, and I was looking at some of the materials
23 just trying to get familiar with them in technical
24 review.

25 Q. During that time did they disclose to you

1 anything about their relationship with Dr. Rossi or the
2 Leonardo Corporation?

3 A. I think that was not the focus. I think that
4 I was aware that they had some type of an agreement and
5 an ongoing activity with him, but the details of that
6 really didn't, it was in June when John Mazzarino and
7 Tom Darden came to me and said we need you to look at
8 this and understand it.

9 Q. Now, pursuant to this agreement, if you look
10 at Paragraph B, payment, you were to be paid \$20,000 per
11 month?

12 A. Yeah.

13 Q. So \$240,000 a year?

14 A. Yes.

15 Q. So a step down from what you were making
16 before?

17 A. Yeah. Yeah.

18 Q. Why would you take a one-third pay cut?

19 A. Because I didn't really care. I was
20 interested in technical work and just doing things I was
21 interested in. So it was not really a, money was not my
22 principal motivator.

23 Q. Do you know why it is that they hired you as
24 a consultant as opposed to an employee?

25 A. Yeah. Actually, I, I insisted on that. My

1 medical benefits renew -- I use a HSA medical plan, and
2 they renew at the beginning of the year. And so when I
3 left Ultra I was in the middle of a, kind of a plan
4 year. And my daughter was sick. She needed some
5 surgery, and I didn't want to mess with the insurance.
6 So I just said, look, let me just consult until the end
7 of the year, and then we'll convert to an employee at
8 the end of the year when the medical plans turn over.

9 Q. Now, as a consultant were you given a title
10 within the company?

11 A. Because the intention was for me to
12 transition to a full-time employee, yeah. My title was
13 Vice President of Engineering.

14 Q. So you were Vice President of Engineering
15 from day one?

16 A. Kind of from the beginning, yeah.

17 Q. I'm going to show you a document, sir, that
18 we'll mark as Exhibit 2.

19 (Whereupon, Exhibit 2 was marked for
20 identification.)

21 Q. Have you seen this document before, sir?

22 A. One second. Let me see. Yes, I actually
23 think I prepared this document.

24 Q. Okay. Now looking, sir, the, the date on the
25 front of this document appears to be January 2016?

1 **A. Uh-huh.**

2 Q. Okay. What I'd like you to turn to -- and
3 I'm sorry. This document is a document with a bates
4 number IH00053931. I'll ask you to turn to the sixth
5 page of the document with the bates number IH00053936.

6 **A. Uh-huh.**

7 Q. There is an organizational structure there?

8 **A. Uh-huh.**

9 Q. And it lists engineering, J Murray. Is that
10 you?

11 **A. Yes.**

12 Q. Okay. And it has categories in which I
13 believe you're responsible: Development, integration
14 and tests, data management, project management, modeling
15 and simulation?

16 **A. Yes.**

17 Q. Okay. What development did you do for the
18 company?

19 **A. We developed data acquisition systems and**
20 **replication reactor systems. We developed calorimetry**
21 **systems. We developed a wide range of test assets. We**
22 **developed databases to archive and store all of the**
23 **information from every test that we did. I don't know.**
24 **Just broad range of development activities.**

25 Q. Didn't those exist before?

1 A. No, not to, not to my knowledge.

2 Q. Did they have any systems in place when you
3 joined them in May or June of 2015?

4 A. This, this was for the new facility. So
5 we -- I don't recall when they got the lease on the new
6 facility. I think it was about August or maybe
7 September of 2015. So what we were doing is setting up
8 this entire new organization in the new facility. And
9 so these systems, I -- not that I'm aware of. I don't
10 know what they really had at Triangle Drive. I know
11 they did, they were doing some electrolytic system
12 testing at Triangle Drive at that time. I had gone over
13 there one or two times, but I wasn't really too versed
14 in what they were doing.

15 Q. Okay. Integration and tests, what was that?

16 A. So integration and tests is actually taking
17 the development assets, bringing them together and
18 executing test programs using those. So the integration
19 is kind of a validation procedure for the infrastructure
20 that lives over top of, for example, a reactor or we had
21 chambers and other equipment. So we were integrating
22 all that equipment together, and then we were testing it
23 and validating it to make sure that it was operating as
24 we had specified in the development phase.

25 Q. So that wouldn't be the testing and

1 evaluation of the underlying LENR technology? And by
2 LENR do you understand what I mean?

3 **A. Yes, I do.**

4 Q. Low energy nuclear reaction?

5 **A. Uh-huh. It would be, in fact, a combination**
6 **of testing of the equipment and infrastructure necessary**
7 **to test those reactors as well as the test of those**
8 **reactors --**

9 Q. Yeah.

10 **A. -- when it was appropriate and when we got to**
11 **that point.**

12 Q. Data management?

13 **A. So in my experience, many companies fail to**
14 **adequately archive and manage data. So what we were**
15 **doing is we put a very robust plan in place to store and**
16 **archive the data and metadata associated with tests so**
17 **we could reproduce it.**

18 Q. Okay. Project management?

19 **A. Over --**

20 Q. Is that anything other than the common term,
21 project management, overseeing all these projects?

22 **A. It's project management.**

23 Q. Modeling and simulation?

24 **A. Right. So we, we attempted to model and**
25 **simulate as many of the systems as we could so we could**

1 understand what the anticipated performance was in
2 different scenarios. So we looked at, we used OpenFOAM,
3 that tool that I described, to do 3D simulations of
4 various reactors. We used a series of tools called,
5 it's Python, NumPy, and other associated infrastructure
6 tools to do analysis and modeling of it. So we modeled
7 electromagnetic fields. We modeled the current and
8 voltage supply timing. So general modeling and
9 simulation associated with an engineering system.

10 Q. Okay. What are the limitations on that, if
11 any? I mean --

12 A. On modeling and simulation?

13 Q. Yeah.

14 A. Oh, there are significant limitations. It
15 really depends on the fidelity and how you describe it,
16 the boundary conditions, but it really depends. We use
17 it as guidance for understanding kind of the range of
18 potential outcomes. So we use it as a tool to guide the
19 development of a test plan and procedure.

20 Q. Okay. So is there any, within that system
21 what, what is the error rate for the modeling as opposed
22 to the actual testing?

23 A. I don't know, I don't understand what you
24 mean.

25 Q. How closely can you predict a result with

1 that system?

2 A. It really depends on the system. So for
3 example, we modeled one of the reactor system, and we
4 provided specific perimetric information of how much
5 power and what temperatures we measured. And then the
6 simulation was used to, we tuned the simulation to make
7 sure that it was, reflected that. And the results
8 actually were very good. I would say within probably
9 order of two to five percent.

10 But it also just depends. I mean it depends
11 on the scale, depends on how good the information is.
12 It depends on what your objective is. You might want to
13 do simple models and simulation in certain cases just to
14 kind of guide your thinking --

15 Q. Which reaction system did you model?

16 A. We modeled a reactor system called RCT 005.

17 Q. Okay. Which was the brain child of which
18 inventor?

19 A. It was a replication of one of the reactor
20 systems that T. Barker and Mr. Rossi had tested
21 previously, earlier on.

22 Q. Okay. And what was the result of that
23 modeling?

24 A. Modeling was that the, the, the heat transfer
25 as we had envisioned was actually almost identical to

1 what we had measured in the calorimetry system.

2 Q. Okay. So when did you do that modeling?

3 A. We began doing that about probably October of
4 2015. And we engaged with a group to consult on how to
5 structure and lay out those models, and then
6 subsequently we ran those models in maybe December and
7 January, which was synchronous with when we were
8 actually doing the testing.

9 Q. December 2015 --

10 A. January of 2016.

11 Q. -- and January of 2016?

12 A. Yes. And sorry for talking over you.

13 Q. I apologize. I may have interrupted you
14 there. Okay. What was the purpose of this document?

15 A. I think January of 2016, I think that either
16 Woodford came to our facility in Cary or we went there.
17 I went there once, and they came to our facility a few
18 times. And I think this was just a, an overview of how
19 we were structuring and moving forward with the various
20 investments.

21 Q. And so at the time you did the modeling and
22 the, the testing of the reactor built by Mr. Dameron
23 that you said was similar to what Dr. Rossi had tested,
24 still at this time you had had no conversation with
25 Dr. Rossi directly?

1 A. No, we had not. Incidentally, it was not a
2 reactor that was designed and built by Mr. Dameron.
3 Myself and my engineering team designed and built it,
4 and it was modeled after a reactor that Mr. Rossi and T.
5 Barker Dameron had built previously.

6 Q. Now, when you say modeled after and, and
7 you've used the term similar, were there differences?

8 A. Yeah, there were differences. Because what
9 we, what we were trying to do is have a very robust data
10 capture. So what we did was we actually built the
11 reactor with a gas pressure gauge and the ability to
12 capture gases out of the reactor. We built it as a
13 framework to, to build up more and more sophisticated
14 testing to see if we could try to emulate results that
15 had been suggested. And so we added coils. We, it was
16 a, it was an incremental test. We started out very,
17 very simple, and then we added more and more
18 sophistication to see if we could find out what was
19 going on.

20 Q. Okay. And what information did you use to
21 base or to model after Dr. Rossi's reactor? What
22 information were you provided in order to build your
23 device?

24 A. So we used a physical geometry and materials
25 that were the same. And then --

1 Q. Wait, I'm going to stop you for a second.

2 A. Okay.

3 Q. You, you said they were the same?

4 A. Yes.

5 Q. How --

6 A. The physical --

7 Q. -- do you know they were the same?

8 A. Because T. Barker Dameron had some old
9 reactors that he had brought from Triangle Drive.

10 Q. Okay.

11 A. And we looked at them, measured them, and
12 then figured out how to improve them. And then we had
13 ours built and tested, you know, tested for pressure and
14 things of that sort because they had to have welded
15 ends, and so we had to do pressure validation and things
16 of that nature.

17 Q. Okay. The, you said T. Barker Dameron had a
18 couple old reactors. Did you test any of the old
19 reactors?

20 A. We did not.

21 Q. Okay. Do you know if Mr. Dameron did?

22 A. I believe he did. There was a, at some point
23 on, on Weston Parkway there was a test apparatus set up
24 in the back room which had ceramic reactors. Each one
25 was a single-phase input. I don't know the details of

1 it because T. Barker kind of was operating independent
2 of the primary engineering team. So he was doing
3 testing. He did, you know, a whole series of testing on
4 those systems.

5 Q. Did he, other than bring in the old reactors,
6 did he assist you at all in the construction of the
7 reactor you built?

8 A. He would sit in on the engineering meetings.
9 He would participate, listening in, providing comments,
10 but he was heavily involved with doing an electrolytic
11 test that replicated Dennis Letts's dual red laser
12 electrolytic experiments. So he was primarily spending
13 his time on that and then these other small tests like
14 the one that I just described in the back room.

15 Q. Do you consider Mr. Dameron to be competent
16 to do those type of tests?

17 A. I would say that --

18 Q. I, I promise I will not show him this
19 transcript. I can't speak for counsel over there, but.

20 A. So I think that, I think that T. Barker is a,
21 is a decent engineer. I would not say -- he would not
22 do things to the standard that I would set for our team.
23 I wouldn't -- I expect complete control over data,
24 complete control over calibrations of information. And
25 so he operated I think in a little more of a freelance

1 way, in my opinion.

2 Q. Okay. Mr. Vaughn I believe it was testified
3 that he did not believe Mr. Dameron to be competent to
4 review a test plan and determine whether it was
5 sufficient. Do you have that same feeling?

6 A. I think that T. Barker's ability to
7 critically evaluate a test plan in the context of the
8 systems that we were building was inadequate. I don't
9 think he had a broad enough set of skills.

10 Q. Okay. As of January 16, I'm sorry, January
11 2016 when you prepared this document -- I'd like to ask
12 you to look at the last page, Page 13 of this
13 document -- had you had any successful LENR
14 replications?

15 A. No.

16 Q. Okay. So it says, "Professional inventing
17 areas of focus. Works in progress." Am I to understand
18 that's stuff you were working on at the time?

19 A. This slide was actually produced by Letao
20 Qin. She was our inhouse IP attorney.

21 Q. Okay. Did you see it before?

22 A. Yeah, I've seen it.

23 Q. Okay. Did you disagree with it?

24 A. I really didn't pay much tension to it.

25 Q. Okay. Well --

1 A. There was an ongoing series of invention,
2 kind of invention capture that was ongoing, yes.

3 Q. Okay. So works in progress, were you working
4 on an LENR steam engine?

5 A. An LENR steam engine?

6 Q. Yes, sir.

7 A. Let me think. Let me think of the time line.
8 The, the folks at Lenuco, which I don't remember when
9 the acquisition occurred, but we were funding them
10 before that, and so we were engaged with them at some
11 point. The folks at Lenuco had come up with a, a
12 concept for a Stirling cycle low-energy nuclear reactor
13 engine. And so we had talked actually in the fall about
14 using excess heat from the, one of these reactors as an
15 application, but at some point along the way we, we
16 described it in a, probably in an invention disclosure,
17 but as we went forward they had actually described it in
18 a lot of detail and produced a invention disclosure on
19 that front.

20 Q. Was that something that Industrial Heat was
21 working on?

22 A. This was just part of our activities on
23 capturing IP. So what we would do is we would write
24 invention disclosure. Anywhere anybody had an idea, we
25 would document it, and then we would give those

1 documents to Letao. And then what we would do is we
2 would sort out is it good enough information, is it,
3 should we pursue more research. So it was I would say a
4 little more nebulous than that.

5 Q. Was Industrial Heat working on a HVAC system
6 retrofitting?

7 A. We had a concept for that, yes.

8 Q. Okay. A concept. Were you working on it?

9 A. No. We had a concept that we were preparing
10 as part of our invention process.

11 Q. What about an LENR battery systems?

12 A. I would imagine that we, that was probably
13 related to Lenuco.

14 Q. Okay. What about portable heat and power
15 devices?

16 A. Yes.

17 Q. Heat distribution within homes and buildings?

18 A. Yes.

19 Q. Okay. What I'm having a hard time
20 understanding, sir, is that these are all applications
21 for the LENR --

22 A. Yes.

23 Q. -- technology, but why was Industrial Heat
24 working on all these applications if they could not
25 replicate a reaction?

1 A. So our, our approach to invention was, was to
2 actually take a step beyond the, the application space.
3 And we were investing in, again I don't know if it was
4 five or six groups. And the hope was that one or
5 multiple of those five or six different groups would,
6 would be validated and verified and then reproduced.
7 And after that we weren't really as interested in the,
8 the science. We were interested in application.

9 So what we asked the engineers to do as we
10 were building up and trying to do validation
11 verification was go a step further and come up with
12 concepts. Where might we want to go if we can get one
13 of these things to work? And so it was kind of a
14 progress, a progression down the pike. And, in fact,
15 this model for professional inventing was derived from
16 one of the people that was kind of on again, off again
17 working with us. And he kind of developed this
18 professional inventing model where you project out one
19 or two generations to capture IP.

20 Q. Who was that?

21 A. Paul Morris.

22 Q. He was working with Dewey Weaver?

23 A. Actually, no. I think he was working --
24 well, I don't remember. He worked with Industrial Heat,
25 and then he, he was off for a while, and then he came

1 back and worked again. So, I, you know, he was on and
2 off, but he developed this model for professional
3 inventing.

4 Q. Now, on a new technology like this, isn't
5 that putting the cart before the horse?

6 A. Actually, no. I, I was, I as an engineer,
7 not as steeped in the, kind of the art of the patent
8 office. I would have thought that, but, in fact, the
9 case is that most companies are actually moving out two
10 or three generations out, producing IP and blocking IP.
11 So this model I thought was fascinating to me. So it
12 was one of the tasks that the engineering team, if
13 you're thinking of things, how could we apply this, how
14 might it work, and we would just document it in an IBD.

15 THE VIDEOGRAPHER: We have three minutes.

16 Q. Okay. Sir, you said you did testing on
17 Mr. Mizuno's device, and I believe you said there was
18 another. Who was the other? HMRI you did limited
19 testing?

20 A. We, we did testing on, tests, well, we did
21 validation and verification on all of the investments
22 made to the extent that was possible. Like with
23 Mr. Rossi's technology, we really weren't that able to
24 get too much information just because we were at arms
25 length. Likewise with HMRI, the way the contract was

1 structured, we were kind of at arms length, so we only
2 got a little bit of information, and the information we
3 were able to receive, we structured some experiments to
4 understand it. That was actually very late. That was
5 probably June of 2016. We also did extensive testing of
6 Lenuco's technology, which was a nickel oxide
7 technology, a powder, nanoparticles.

8 So we had Mizuno, HMRI, Lenuco. We had a
9 company called CCT, Cooper Core Technology, out of
10 Albuquerque, New Mexico. CCT was doing nickel foam in
11 heavy isotope environments. We evaluated theirs. In
12 fact, what we found was that their technology was so
13 immature and it was so, I don't know, it was so
14 speculative that we didn't even make any investment. We
15 actually terminated in the due diligence process.

16 We also worked with, excuse me, Dennis Letts.
17 Later on there was a little bit of funding for Dennis
18 Cravens. That was kind of very late, and it was just
19 kind of seed funding. Let me think. There, there might
20 be others.

21 Q. Okay.

22 A. So.

23 Q. Now, I want to, I want to draw a distinction
24 between trying to validate and verify other people's
25 test data versus attempting to replicate --

1 **A. Right.**

2 Q. -- the data. How many replication tests did
3 you perform at Industrial Heat?

4 **A. We replicated, let's see. We replicated**
5 **Mr. Rossi's. We replicated HMRI. We replicated Mizuno.**
6 **We replicated Dennis Letts. We replicated -- did I say**
7 **Lenuco?**

8 Q. No.

9 **A. Lenuco. We didn't do anything with Claytor**
10 **and Fowler. They were more of just kind of providing**
11 **testing services. I think about that group.**

12 Q. Okay. So back in 2012, 2013 when you first
13 had contact with Mr. Darden and Mr. Vaughn, you had
14 said, hey, we can set up this testing system for you to
15 evaluate these devices. Did you ever build that testing
16 system?

17 **A. I need to be a little careful. The answer is**
18 **no, we did not build that testing system, but at that**
19 **time we were only talking about the one technology of**
20 **Mr. Rossi's.**

21 Q. Okay.

22 **A. That's all.**

23 Q. But you never built that system?

24 **A. No.**

25 Q. How many tests did you run on the device that

1 you built that was similar to Dr. Rossi's?

2 A. We ran that, so it was, it was almost a
3 continuous test for a period starting in December of
4 2015, and I think we ultimately shut it down in maybe
5 late February or March, and within that RCT 005 archival
6 of the databases we probably had six or seven distinct
7 tests where we had incrementally improved or changed.

8 Q. I'm sorry. How many?

9 A. Six or seven. I'm guessing. I would have to
10 look back at the data, but approximately.

11 Q. Now, you said you never tested one of
12 Dr. Rossi's old devices, correct?

13 A. We, the engineering team did not. T., as I
14 described, T. Barker had set up one in the back room and
15 tested that. I think that was at the request of Tom
16 Darden and John Mazzarino.

17 Q. Okay. But you don't believe that he had the,
18 the ability to properly run a test, correct?

19 A. I don't.

20 Q. Okay.

21 A. No.

22 THE VIDEOGRAPHER: Counsel.

23 MR. ANNESSER: Okay. We have to take a short
24 break.

25 THE VIDEOGRAPHER: We're off record at 10:57

1 a.m.

2 (Recess taken 10:57 a.m. to 11:05 a.m.)

3 THE VIDEOGRAPHER: We are back on the record
4 at 11:05 a.m.

5 (Whereupon, Exhibit 3 was marked for
6 identification.)

7 BY MR. ANNESSER:

8 Q. Sir, I'm going to hand you a document, which
9 I have marked as Exhibit 3. It's an e-mail from Tom
10 Darden to yourself dated December 1, 2015, bearing bates
11 number IH 00087704.

12 A. Uh-huh.

13 Q. Have you seen this e-mail before, sir?

14 A. Yeah, it looks vaguely familiar.

15 Q. Okay. In an e-mail that you wrote to
16 Mr. Darden on December 1st you state, "We should have at
17 least TBD Legacy Ross -- Rossi system in calibration and
18 our system alive."

19 A. Uh-huh.

20 Q. That TBD Legacy Rossi system, what did you
21 mean by that?

22 A. T. Barker Dameron Legacy Rossi system.

23 Q. Okay. Why --

24 A. That was the system in the back of the
25 building.

1 Q. Why did you call it the T. Barker Dameron
2 Legacy Rossi system?

3 A. Because it was the system that he had
4 developed I guess with Mr. Rossi at Triangle Drive. At
5 this time we were trying to get everything out of
6 Triangle Drive and into the new building, and so I think
7 we set a deadline for T. Barker to get all of his stuff
8 out of the old building and into the new building on
9 December 1st. And so they wanted to know are we out of
10 the Triangle Drive building. And so he was coming over
11 and he was setting up, as I described, this 3-reactor
12 system in the back room, and he was setting up his dual
13 red laser system in the main area.

14 Q. Okay. So as of December 1, 2015, you had not
15 tested any Rossi system, correct?

16 A. No. We were at the same time buzzing out our
17 system --

18 Q. Okay.

19 A. -- in the controller. So we had started in
20 October to build up the, the replication systems, but we
21 really didn't get in the facility until November. I
22 mean we were kind of in it while it was under
23 construction, but we finally had our lab space. And so
24 we started to build up those systems. And when I said
25 buzzing out lines, what we were doing was we were

1 testing all of the instrumentation and testing the
2 temperature controller and testing the ramping
3 functions, all the things, but it wasn't a fuelled
4 reactor.

5 So we began a fuelled reactor, my
6 recollection was just a little bit before Christmas.
7 Maybe 16th, 17th of December, and we ran it all the way
8 from that point going forward.

9 Q. Okay. So taking just a quick step back. You
10 never tested the T. Barker Dameron system. You were
11 testing your own system?

12 A. Right. We were testing ours.

13 Q. Okay.

14 A. And T. Barker was testing his in the back
15 room.

16 Q. Okay. And you don't really know what he was
17 doing other than --

18 A. He was --

19 Q. -- just --

20 A. Yeah, I remember he had a thermal imager, and
21 he kind of described it to us a little bit. I recall
22 asking him to set up a test plan and test procedure and,
23 so we could document what was going on, and that just
24 fell by the wayside.

25 Q. Did you set up a test plan and test procedure

1 for your test?

2 **A. Yes, we did.**

3 Q. Do you know if that was produced in
4 discovery?

5 **A. I'm pretty sure it was. We took the entire**
6 **body of all the data and shared it. So I would imagine**
7 **it's somewhere in there, test plans and test procedures.**

8 Q. Okay. And where is the device that you
9 tested now, if you know?

10 **A. I can't say today, but I know before we**
11 **closed up shop we took everything related to the**
12 **litigation under the direction of Jones Day and we put**
13 **it all together, and we boxed it up and we put it into**
14 **the locked facility in the back of the building. So I'm**
15 **sure it's all in there.**

16 Q. Okay. So you left it personally with --

17 **A. Industrial Heat.**

18 Q. -- Industrial Heat? All right.

19 **A. Yes. I'm sorry.**

20 Q. Now, after that system was not successful in
21 your replication attempts, did you think it would be
22 prudent to test one of the devices that Dr. Rossi had
23 built to see if you could get it to work?

24 **A. We did not. Most of those devices were**
25 **damaged. And in our, in my opinion and, in fact, the**

1 engineering team's opinion, they were poorly constructed
2 and poorly designed, and so it would have been difficult
3 to do an adequate job with the instrumentation.
4 Furthermore, a lot of the testing techniques that they
5 were using were actually dangerous, and so we were
6 trying to be very careful not to have anybody be, get
7 hurt.

8 Q. Okay. So the, the device that you created or
9 your team created was built without, well, what you I
10 guess define as defects or poor construction? It was
11 built more solid and safer in your opinion?

12 A. I would describe it as we built a very,
13 carefully constructed and designed the system relative
14 to the requirements, the parameters, the pressures and
15 temperatures that we thought it would experience. And
16 so we did that to, yeah, to protect anybody that was
17 working around it.

18 Q. In doing so, before you built this system did
19 you study the report from Dr. Penon from the validation
20 test?

21 A. Which report was that?

22 Q. The report from 2013 testing.

23 A. I am confident that we had, we had looked at
24 that, but we felt that using infrared thermal imaging
25 was inadequate, and so we took a different strategy as

1 far as how to actually measure the system and how to
2 collect the data.

3 Q. And how did you measure the system?

4 A. We took an array of thermocouples that we
5 placed on the reactors. We had both an active and a, an
6 active reactor with fuel from Tom Darden, and we had a,
7 a reactor that had only the nickel powder, so an
8 inactive reactor. We made them completely identical.
9 We put a pressure transducer on it. We included a
10 vent-off system so we could dump off any overpressure to
11 the hood, to dump the gas outside. You don't want the
12 gases lingering around the lab.

13 We put an array of thermocouples down the
14 reactor. We insulated the reactor, and then we put an
15 array of thermocouples inside the chamber. And then we
16 took the chamber, and we operated it on a continuous
17 rate. And we measured the power, the voltage, and the
18 current at every point in the system and, and operated
19 it that way. That was the baseline system. And then
20 gradually over time we added more and more capability
21 based upon what we, what we inferred was happening with,
22 with Mr. Rossi's system.

23 Q. That's fairly substantial differences from
24 Dr. Rossi's basic device, is it not?

25 A. How is that?

1 Q. Well, you, you just talked about adding a
2 number of thermocouples, a vent, and a number of other
3 things.

4 A. Yeah, I wouldn't describe it -- the actual
5 physical structure was same physical geometry, same
6 materials, same size. What we basically did was put a
7 stainless steel tube on the end with a, with a, a valve
8 and a pressure transducer, and we put a series of
9 thermocouples on it to measure the temperature
10 throughout as an array, and then we measured the
11 environment and the power going into it. I would say
12 that from an engineering perspective, I would say that's
13 a baseline, minimum acceptable test.

14 Q. Okay. Now, you said Mr. Darden prepared the
15 fuel?

16 A. Yes.

17 Q. Did you watch him prepare it?

18 A. No.

19 Q. Do you know if he followed the formula?

20 A. I have no idea.

21 Q. Okay. Do you know when he prepared the fuel?

22 A. We had those, so we went through and
23 validated the operation of the empty reactors. And then
24 about, around Christmas, a little before Christmas Tom
25 came into the lab, I think it was on a Saturday, and he

1 brought fuel from some other site. And he asked I think
2 myself and one other person were there, he asked us to
3 actually leave the lab area and go up into the office
4 area. And then he went back under the chemical hood and
5 fuelled up the one reactor and then put just the nickel
6 powder in the other reactor, closed them all up, sealed
7 them, and then we put them into the, into the test
8 chamber.

9 Q. So you don't know sitting here today whether
10 he properly fuelled the reactor or not?

11 A. Absolutely not. No, I have no idea what was
12 even in the fuel.

13 Q. Okay.

14 A. Other -- I shouldn't say I have no idea. I
15 have read the patent, and the patent describes the basic
16 constituent materials, so, but other than that, Tom was
17 the sole keeper of the trade secret, as he described it.

18 Q. Okay. So, but I just want to make sure.
19 Sitting here today you don't know whether it was
20 properly mixed or not?

21 A. Absolutely not. Absolutely not.

22 Q. He could have put a handful of gravel from
23 outside --

24 A. Absolutely.

25 Q. -- for all you know?

1 A. Yeah. I mean gravel would have been hard to
2 fit through the hole, but, but he could have put
3 anything in there --

4 Q. Sand.

5 A. -- yes. Absolutely, yes.

6 Q. Do you have any ownership interest in
7 Industrial Heat?

8 A. I have stock options. When I came on as an
9 employee, they gave me stock options, yes.

10 Q. Do you have any stock?

11 A. So part of the severance agreement, which I
12 really didn't pay much attention to, was that some of
13 the stock vested the first year increment, vested. The
14 rest of it was forfeited at severance. And then at some
15 point, like probably within the last month, it converted
16 from one type to another type, but to be honest I didn't
17 really pay much attention to it.

18 Q. So you own, you own stock in the company?

19 A. I own some kind of stock in the company, yes.

20 Q. Okay. Now, is it your understanding that
21 Industrial Heat received monthly e-mails with the
22 operational spreadsheets from the Doral facility that
23 was testing the, Dr. Rossi's E-Cat plant?

24 A. I know that there were some reports that were
25 coming in. I don't know what the exact increment. From

1 time to time I would get a copy of an updated report,
2 could have been a monthly. It could have been a weekly.
3 I really don't know, but I did get copies of those from
4 time to time. In addition, I got copies of an invoice
5 request as well.

6 Q. And were you asked to do anything with those?

7 A. We cataloged them and just kind of tried to
8 make sure that we understood what was happening in the
9 spreadsheets to make sure the calculations were
10 consistent based on the numbers that were provided.

11 Q. And did you ever notice inconsistencies?

12 A. Yes.

13 Q. Okay. Did you bring that to anyone's
14 attention?

15 A. Yes.

16 Q. Whose?

17 A. Tom Darden, JT. All the way back in June of
18 2015 I had highlighted a number of inconsistencies. And
19 as things came in, units changed. It was, they changed
20 from kilowatts to watts. They changed from, I don't
21 know, pascals to bar. And so different things were
22 changing, so we had to be a little careful. And I did
23 highlight that and told people, hey, we have to be
24 careful with this, make sure we track this carefully.

25 Q. So you had mentioned earlier that you met

1 with Barry West?

2 A. Yes.

3 Q. Did you ever speak to him on the phone when
4 he was down in the Doral facility plant?

5 A. Yes.

6 Q. How often?

7 A. Two or three times. Well, I should say
8 either by phone or text message, so some combination of
9 those. Maybe two or three times.

10 Q. Okay. And what was the subject matter of
11 that, those conversations?

12 A. I was trying to get, because there were no
13 red-line drawings of the system configuration that were
14 made available to me, I was trying to understand what is
15 the configuration. Because in the Penon report, you
16 know, as I pointed out earlier, there was a discrepancy
17 of an order of magnitude in the flow rate between the
18 body of the text and the, and the spreadsheet. And so I
19 wanted to understand, you know, I mean is this just
20 simply a typo or is this, you know, which one is right?

21 Q. Okay.

22 A. So I, I was trying to get information on what
23 is the power meter, how is it used --

24 Q. Okay.

25 A. -- for the incoming power and, second, where

1 are these flow meters. Is there a steam flow meter? Is
2 there, you know, just give me information about what you
3 can see and what you know.

4 Q. What did he tell you?

5 A. He gave me -- so I met with him in person as
6 I described in about the August time frame down actually
7 at the beach. We had lunch, and he described kind of
8 everything he knew. And he sent me a couple of pictures
9 of the, the power meter, and he said he just didn't know
10 much. He was kind of, you know, an electrician and just
11 collecting, you know, just there to help as much as he
12 could.

13 Q. Well, I can understand the, the concern over
14 the amount of flow rate, you know, being zero left off
15 either by accident or on purpose, and you needed to
16 understand that. Did you ever ask him to go look at the
17 flow meter and say, hey, this is what it is today?

18 A. Yeah, we did.

19 Q. Okay.

20 A. He was unaware that it existed.

21 Q. He was unaware that it existed?

22 A. Yes.

23 Q. Okay. Did you tell him to go look at it?

24 A. I didn't know it existed either. So I had
25 never been to the plant. I was looking for what is this

1 flow meter, what is the model. I didn't have that
2 information until actually February 16th or 17th when we
3 were all at the plant. That was the day. I was like,
4 oh, there it is. So that was the condensate return flow
5 meter.

6 Q. So how else would they have measured flow?

7 A. I have no idea.

8 Q. Okay. So that wasn't a concern to you?

9 A. Oh, it was absolutely a concern.

10 Q. Did you tell him, hey, look --

11 A. It was concerning --

12 Q. -- look for the pipes?

13 A. Yeah. Yeah. Yeah, he was, he was very
14 hesitant to do anything. He, he would only kind of do
15 things where he felt comfortable. He didn't want to go
16 looking around because he felt like he was being
17 watched. And he didn't feel comfortable doing much. I,
18 I asked him, I said, well, you know, where is the flow
19 meter? Where is, is there a flow meter on the steam
20 side? You know, where is this stuff? There has to be
21 this information if, if it's a functioning plant. And
22 he wasn't capable of answering.

23 Q. So he never once, once went and read the, the
24 flow meter for you?

25 A. No, not that I'm aware.

1 Q. Did you ever talk to Fulvio Fabiani?

2 A. Yes, I did.

3 Q. Okay. Did you ask him about the flow meter?

4 A. I don't believe I asked Fulvio anything about
5 the flow meter until 2016 when we were in the plant and
6 then subsequently when he met with us at Jones Day. He
7 came over and provided a bunch of data and information
8 and described lots of things to us at that meeting. And
9 I think that was a point when I asked him about the flow
10 meter and things like that.

11 Q. So you never asked about the flow meter to
12 Mr. Fabiani before 2016?

13 A. The first time I communicated with
14 Mr. Fabiani I believe was in 2016.

15 Q. Why didn't you call him beforehand?
16 Certainly somebody at Industrial Heat had his number.

17 A. Yeah. I think JT Vaughn was in contact with
18 him, but I had never met him.

19 Q. Do you know if JT Vaughn ever asked for a
20 reading of the flow meter?

21 A. I don't.

22 Q. Do you know if, well, did you ever ask JT
23 Vaughn to get that information for you?

24 A. Yes, I asked everybody. I said we need
25 information from the flow meter, and we need to know

1 what the model of the flow meter is. We need to know
2 the type. We need to know what flow meter is on the
3 condensate line, what flow meter is on the steam side.
4 We needed all that information.

5 Q. Did you, did you look at the, the test plan?

6 A. I did, yes.

7 Q. Okay. And that didn't indicate anything to
8 you?

9 A. At some point along the way after the fact
10 once, once I actually got my eyes on what they were
11 doing down in the plant in February of 2015 when we were
12 there on that, those two days and I saw what they were
13 doing, I went back and scoured through all the
14 documents. And there was a document where they had a
15 bullet line of what the flow meter was --

16 Q. Okay.

17 A. -- on the condensate line, but I had not seen
18 that before that.

19 Q. So they had that though?

20 A. There was a --

21 Q. That was information that Industrial Heat
22 had?

23 A. There was a document that had that, yes.

24 Q. Okay. And you hadn't seen that before?

25 A. I had not noticed it, no.

1 Q. Okay. But Industrial Heat had it. It wasn't
2 a secret. It wasn't --

3 **A. That's right.**

4 Q. Okay. Now, you're dealings with Mr. Fabiani,
5 did he ever tell you that he felt like he was between a
6 rock and a hard spot, you know, sitting there between
7 Industrial Heat and Dr. Rossi?

8 **A. Yes. Yes.**

9 Q. Okay. Do you have any reason to believe that
10 that wasn't the case?

11 **A. No. He described his relationship with**
12 **Mr. Rossi when he was at Jones Day with us. He**
13 **described his relationship as he, he was very close to**
14 **Mr. Rossi's wife. I don't recall her name. He, he**
15 **described it as she was kind of like a sister or a**
16 **mother to me, and that he felt like he was really in a**
17 **hard spot because he couldn't do anything without being**
18 **under the scrutiny of Mr. Rossi.**

19 Q. Did he ever tell you that Dr. Rossi was very
20 disappointed in him because he thinks that he is an IH
21 spy?

22 **A. I don't recall those exact words, no.**

23 Q. Okay. I'll show you a document that we'll
24 mark as Exhibit 4. It bears the bates number
25 IH00087145.

1 (Whereupon, Exhibit 4 was marked for
2 identification.)

3 MR. LOMAX: Thank you.

4 Q. Do you recall receiving this e-mail, sir,
5 which was sent by Mr. Fabiani to yourself on April 25,
6 2016?

7 A. Yes.

8 Q. And do you recall him telling you that he is,
9 I think the words he used is between the hammer and
10 anvil?

11 A. I don't recall the specific e-mail, but yeah,
12 I mean this, this looks like almost the same as what he
13 described when we met before this at Jones Day.

14 Q. And isn't it true, sir, that Industrial Heat
15 refused to pay him for his last invoice?

16 MR. LOMAX: Objection to the form of the
17 question.

18 A. Okay. Mr. Fabiani committed to delivering to
19 us a final report that he was preparing. And so when we
20 met with him in, at Jones Day prior to this, he said the
21 next day he would produce two things; all of the data
22 that he had collected, and he would produce a final
23 report with all of the details of what he had done
24 during the one-year period. And, and we said as soon as
25 you do that, we'll release your final payment and we'll

1 go from there. And the next day he said he would not
2 release that information, and then we began a dialogue
3 of continually not getting the information.

4 Q. That, that information, I'm sorry, that final
5 payment was already past due, was it not?

6 A. I have no idea.

7 Q. Okay. Now, Mr. Fabiani sent reports on a
8 regular basis to Industrial Heat, did he not?

9 MR. LOMAX: Objection to the form of the
10 question.

11 A. I am not --

12 MR. ANNESSER: What's the objection?

13 MR. LOMAX: It's leading.

14 MR. ANNESSER: He's an opposing party
15 witness, Chris.

16 MR. LOMAX: It's just my objection for the
17 record.

18 MR. ANNESSER: Okay. Thank you.

19 BY MR. ANNESSER:

20 Q. Go ahead, sir.

21 A. Can you repeat the question?

22 Q. Yes. Isn't it true that Mr. Fabiani sent
23 regular updates and reports to Industrial Heat?

24 A. I'm not sure. Those in my, in my best
25 judgment would probably have gone to JT Vaughn.

1 Q. Okay. Were they ever shown to you?

2 A. Not that I recall.

3 Q. Would those have been helpful to you in your
4 replication efforts?

5 A. I don't know what the content of the, the --

6 Q. If --

7 A. -- reports were.

8 Q. If he sent reports regarding the amount of
9 power used or water flow, or anything for that matter?

10 A. No, I don't believe those would be valuable
11 relative to the replication efforts.

12 Q. But --

13 A. It would have been useful information
14 relative to understanding what was happening in that
15 facility.

16 Q. Did you ever ask JT Vaughn for anything that
17 they received?

18 A. I don't recall.

19 Q. Power usage reports from Mr. Fabiani?

20 A. Actually, yeah, I recall at some point,
21 probably after the test was complete, getting a PDF file
22 with a spreadsheet. I mean I have a vague recollection
23 of this, but subsequent to that, when we met at Jones
24 Day Mr. Fabiani provided us with a series of
25 spreadsheets and data that we actually analyzed.

1 Q. Okay. Have those spreadsheets and data been
2 provided do you know in discovery?

3 A. Yes, I believe they have. I should say we
4 have provided them to Jones Day. What they provide I, I
5 don't know.

6 Q. Okay. So when Mr. Fabiani met with you, was
7 it with Jones Day or without Jones Day?

8 A. With Jones Day.

9 Q. Okay. What was discussed at that meeting?

10 A. He had, he had indicated that he had a lot of
11 data and that he would share that data with us. So
12 initially we were just having small talk, you know. He
13 kind of -- introduction. We had never really formally
14 met in a, a less kind of stressful environment. So we
15 chatted. He kind of gave me a little bit of his
16 background. I gave him a little bit of my background.
17 He was familiar with some of my defense background, and
18 I was familiar with some of the work that he had done in
19 Israel.

20 So we had small talk, and then we had a
21 discussion about what he had done and the data that he
22 would provide us, and he gave us a little bit of
23 information. He gave us some, several spreadsheets, and
24 then subsequently he made a commitment to give us
25 additional data that we, actually I don't know if we've

1 received it now, but at that point we had not received
2 it.

3 Q. So you haven't analyzed that now?

4 A. I'm sorry?

5 Q. You haven't analyzed the additional data that
6 he's given you?

7 A. I don't know if we've received it.

8 Q. So you don't recall ever seeing monthly,
9 monthly spreadsheets?

10 A. No. I, I received monthly spreadsheets from
11 Mr. Fabiani when we met at Jones Day, and we analyzed
12 that data. And at some point probably in the first, you
13 know, first part of 2016, maybe after the test,
14 somewhere thereabouts there were some spreadsheets that
15 were in PDF form that were shared with us.

16 Q. And that meeting was in 2016 after the test
17 was --

18 A. Completed, yeah. I think it was in March. I
19 would have to look back to see when I flew down to
20 Miami.

21 Q. So you never received monthly spreadsheets --

22 A. Before.

23 Q. -- before that from anyone?

24 A. Not that I'm aware of.

25 Q. Did you receive --

1 A. Oh, there were the monthly or -- the reports
2 that Mr. Penon had submitted, I don't know if they were
3 monthly or quarterly. And from time to time I would get
4 those updates, and we would look at those. That's the
5 ones that I was describing as units were changing and
6 there were some, you know, things that we had to be
7 careful with.

8 Q. So I know I asked you this before, but I need
9 you to refresh my recollection. When is the first time
10 that you saw the test plan for the test being performed
11 by Mr. Penon?

12 A. Probably, you know, it's hard to know which
13 one. I saw a commissioning report. That's what I
14 reviewed along with the, all of the information that was
15 available at that point in June of 2015. The test plan,
16 kind of the precursor to that, I think it was kind of
17 incorporated in it, but it wasn't exactly the same.
18 These things, the reports kind of changed over time.

19 Q. Okay.

20 A. So I don't really know exactly when I saw the
21 test plan, but I know that after we went on the 15th and
22 16th and I saw the flow meter, I went back and scoured
23 through all the documents I could find, and then I found
24 a document that had a reference to a flow meter in it.

25 Q. Okay. And what was that document, if you

1 recall?

2 A. I, I think it was a, a early test plan. I, I
3 don't know if that's actually -- it wasn't, I don't
4 believe it was included in the commissioning report,
5 which kind of went through April time frame is my
6 recollection.

7 Q. Okay. Who is Jed Rothwell?

8 A. I'm sorry?

9 Q. Jed Rothwell?

10 A. Jed Rothwell is a guy that follows low-energy
11 nuclear reaction technology. I think he's based in
12 Atlanta.

13 Q. Do you know if he's ever been paid by
14 Industrial Heat for any services?

15 A. I do not know.

16 Q. Have you ever worked with him?

17 A. I've met him once.

18 Q. And --

19 A. I've never worked with him.

20 Q. When did you meet him?

21 A. He was coming through the area. He was
22 traveling from somewhere up north back to Atlanta. I
23 want to say about June or July of 2016, thereabouts.

24 Q. What, did he come to the facility?

25 A. Yes, he did.

1 Q. Did you show him anything you were working
2 on?

3 A. I don't think I did. I think that he was
4 with either Dewey Weaver or JT Vaughn, my recollection.
5 And I think they gave him a, a very limited tour of some
6 of the things that we were doing.

7 Q. Now, sir, you said earlier in this deposition
8 that there came a time that JT Vaughn reached out to
9 Dr. Rossi and said he would like to bring you down?

10 A. Yes.

11 Q. Had you ever talked to Dr. Rossi before that?

12 A. No, I haven't.

13 Q. You've never been introduced to him?

14 A. Not as far as I, I personally had never met
15 him or been introduced to him until February of 2016.

16 Q. Okay. So to your knowledge he, he wouldn't
17 have known you from --

18 A. Adam.

19 Q. -- Adam?

20 A. No.

21 Q. Okay.

22 A. Excuse me.

23 Q. Was there a reason why you or Mr. Vaughn
24 wanted to get Dr. Rossi worked up by proposing that you
25 come down?

1 **A. Not that I'm aware of.**

2 Q. I'm going to show you a document, sir, that I
3 will mark as Exhibit 5 to this deposition. It bears the
4 bates number IH00088952.

5 (Whereupon, Exhibit 5 was marked for
6 identification.)

7 MR. LOMAX: Thank you.

8 Q. There's two e-mails on this first page.

9 **A. Uh-huh.**

10 Q. The first one is from JT Vaughn to Dr. Rossi
11 in which he says, "Also, I would like to introduce you
12 to one of our new team members, Joe Murray. He and I
13 have booked a flight down on Tuesday afternoon and will
14 depart Wednesday afternoon. I hope we can come see you
15 at the plant on Tuesday afternoon." And then it
16 continues.

17 **A. Uh-huh.**

18 Q. Is that the e-mail to your understanding that
19 Mr. Vaughn sent Dr. Rossi to alert him of your trip?

20 **A. Yes.**

21 Q. Do you know if there's any other introduction
22 made at that time prior to that?

23 **A. I have no idea.**

24 Q. Okay. Is there a reason why he wouldn't have
25 referred to you as the new Vice President of

1 Engineering?

2 MR. LOMAX: Objection to the form of the
3 question.

4 Q. Okay.

5 A. I have no idea.

6 Q. And then there's an e-mail above that from JT
7 Vaughn to you. And it states, "All right. He'll start
8 getting worked up now. Should be a fun trip."

9 A. Uh-huh.

10 Q. What did you take that to mean?

11 A. That Mr. Rossi did not want us to actually
12 have access and see what was happening in the plant.

13 Q. Now, why did you take it to mean that?

14 A. Because the data didn't support what was
15 happening in the plant, and we had a lot of questions,
16 and I wanted to understand it. And so as part of the
17 task that John Mazzarino and Tom Darden gave me, they
18 said evaluate it, figure it out. And, and consistent
19 with their, their drive that even if there's a one
20 percent or a half a percent chance that he's right, they
21 said we have to find out.

22 Q. Has, to your knowledge has Dr. Rossi ever
23 refused anyone else to go to the plant?

24 A. I am not aware.

25 Q. Do you know if T. Barker Dameron has ever

1 been down there?

2 **A. I think he had when they were setting up the**
3 **plant, yes.**

4 Q. Did you ask him about his trip down there or
5 how things were set up?

6 **A. Yes.**

7 Q. And you still didn't know the configuration?

8 **A. No.**

9 Q. Did he ever try to come back down --

10 **A. I am not --**

11 Q. -- to your knowledge?

12 **A. -- aware. I am not aware.**

13 Q. So why would Dr. Rossi -- or why would he say
14 he'll start getting worked up now?

15 MR. LOMAX: Object --

16 Q. You said you, you said you took that to mean
17 that he didn't want you coming down?

18 **A. Yes.**

19 Q. Well, so you knew that before --

20 **A. No, no, no. He sent --**

21 Q. -- he even asked?

22 **A. I believe he sent this e-mail --**

23 Q. Two minutes after the original e-mail.

24 **A. -- after, he sent that e-mail to me saying,**
25 **well, he's going to start getting worked up now.**

1 Q. He sent, no, he sent an e-mail --

2 A. Yeah.

3 Q. -- to Dr. Rossi, July 13, 2015, at 9:10 a.m.?

4 A. Yes.

5 Q. Two minutes later at 9:12 a.m. on July 13,
6 2015, he sent you an e-mail saying, "All right. He'll
7 start getting worked up now. Should be a fun trip."

8 A. Uh-huh.

9 Q. Did, did he tell you beforehand that he would
10 get worked up and oppose you coming?

11 A. I think everybody thought that me, being an
12 engineer, coming down to inspect the plant was going to
13 cause Mr. Rossi some concern.

14 Q. T. Barker Dameron is an engineer, isn't he?

15 A. He is.

16 Q. He was never refused access, was he?

17 A. I am not aware.

18 Q. T. Barker Dameron worked with Dr. Rossi for
19 some time?

20 A. Uh-huh.

21 Q. Are you aware of any problems with that?

22 A. No, I'm not aware.

23 Q. Okay. Any reason to believe that Dr. Rossi
24 knew anything about you, Joe Murray?

25 A. I don't know. I, I believe that at some

1 point Tom Darden indicated that he was hiring an
2 engineering team and that they were bringing, ramping up
3 Industrial Heat. I don't know if they shared that
4 information with Mr. Rossi though.

5 Q. Okay. Well, it certainly appears that JT
6 Vaughn knew that Dr. Rossi would get upset by that
7 suggestion.

8 A. Of bringing somebody new in the plant?

9 Q. Yeah.

10 A. It appears that way, yes.

11 Q. And Dr. Rossi didn't know you from Adam at
12 that point in time. And specifically at that point in
13 time isn't it true that you weren't even an employee of
14 Industrial Heat?

15 A. No. I was --

16 Q. You were a consultant?

17 A. -- working as a consultant, that's correct.

18 Q. Okay. So at that point in time you knew as
19 of two minutes after they sent that e-mail, before
20 Dr. Rossi ever responded, that it was going to be a
21 problematic situation?

22 A. According to what JT sent me, yes.

23 Q. That was the intent of this original e-mail,
24 wasn't it?

25 MR. LOMAX: Objection to the --

1 Q. To create a problem?

2 MR. LOMAX: Objection to --

3 **A. Absolutely not.**

4 MR. LOMAX: Excuse me. Objection to the form
5 of the question.

6 MR. ANNESSER: What's the objection?

7 MR. LOMAX: You asked him was the intent of
8 the e-mail to --

9 MR. ANNESSER: If he knows.

10 Q. Go ahead, sir.

11 **A. Absolutely not. The intent was for me to go**
12 **down to the plant, inspect the plant, figure out what**
13 **was going on, and then try to understand the, the**
14 **content of the reports.**

15 Q. Now, it says, "I have booked a flight down
16 Tuesday afternoon."

17 **A. Uh-huh.**

18 Q. So you booked the flight. You, you guys
19 booked your flight before even telling Dr. Rossi, hey,
20 we'd like to bring Joe Murray down?

21 **A. Yeah. I think, I think that the, the**
22 **Industrial Heat people booked the flight, yes.**

23 Q. Okay. To your knowledge, did anyone call and
24 say, hey, Andrea, we got this new guy, he's great, Joe
25 Murray, he's on board, he's our VP of Engineering, we'd

1 like to bring him down, prior to this e-mail?

2 **A. I have no idea.**

3 Q. Okay. How did Dr. Rossi respond to this
4 e-mail, Mr. Vaughn's original e-mail?

5 **A. The trip was canceled. I was not going to be**
6 **allowed into the facility.**

7 Q. How did Dr. Rossi respond?

8 **A. I, I don't recall.**

9 Q. Do you know if it was canceled because of
10 Dr. Rossi?

11 **A. It was canceled because I was not going to be**
12 **allowed into the facility.**

13 Q. By who?

14 **A. By Mr. Rossi.**

15 Q. Did you ever speak with Mr. Rossi about that?

16 **A. I did not.**

17 Q. Did you ever reach out to him at any point
18 before or after that and say -- you know, by, by mid
19 July when that e-mail was sent, you had been working
20 May, June, so two and a half months with Industrial
21 Heat?

22 **A. Uh-huh.**

23 Q. As the head of engineering? Or, I'm sorry,
24 the Vice President of Engineering?

25 **A. Uh-huh.**

1 Q. And you never reached out to Dr. Rossi and
2 said, hey, nice to meet you, I'm really interested in
3 your work, we should talk?

4 A. No.

5 Q. Is there a reason?

6 A. There was no contact. I wasn't provided
7 information. I, I think at some point I said, hey,
8 should I send an e-mail, but.

9 Q. And what did they say?

10 A. As far as I know, I never did send an e-mail.

11 Q. Who did you ask that to?

12 A. I think John Mazzarino, Tom Darden, and JT
13 Vaughn. I think. Is my recollection.

14 Q. Are you aware that Mr. T. Barker Dameron had
15 been instructed not to confer with Dr. Rossi?

16 A. No, I was unaware of that.

17 Q. Were you ever given that instruction?

18 A. Not that I'm aware of.

19 Q. Okay. So you were never told not to contact
20 Dr. Rossi?

21 A. Uh-huh.

22 Q. You just elected never to talk with him?

23 A. No. We were working on multiple different
24 initias at the same time. And so I was instructed to
25 analyze all the data we have; if we have the

1 opportunity, go down, look at the plant, try to figure
2 out what's going on, and move forward. The instruction
3 was if there is even one percent or a half a percent
4 chance that this works, we want to know so we can move
5 forward.

6 Q. Well, I absolutely understand you want to do
7 your, your investigation. So after Dr. Rossi originally
8 said no to you coming to the plant, did you follow up at
9 all? Did you say, hey, why don't I, you know, why don't
10 I give him a call?

11 A. No.

12 Q. You don't --

13 A. I was never introduced to him.

14 Q. Okay. Is there a reason? I mean --

15 A. Not that I'm aware of.

16 Q. Do you know of any reason why this Dr. Rossi
17 that you've never met would dislike you so much to say,
18 no, you can't come?

19 A. Not that I'm aware of.

20 Q. That didn't bother you at all?

21 A. We had numerous things moving at the same
22 time, lots of different activities. So it was just one
23 of the things.

24 Q. Do you know of any attempts whatsoever after
25 that to have you come down?

1 **A. Not that I'm aware of, not until 2016.**

2 Q. Now, after that you said -- how long after
3 that e-mail was sent did you meet with Mr. West?

4 **A. I think in August is my recollection.**

5 Q. So a month or so after?

6 **A. Yeah. Two to four weeks later, yes.**

7 Q. Okay. Was, was that meeting because an
8 attorney told you --

9 **A. No.**

10 Q. -- to have that meeting by any means?

11 **A. I was trying to, you know, as part of the**
12 **effort of all of these different activities and hiring**
13 **people and getting the facility organized, I was trying**
14 **to get a handle on all the different projects. And, and**
15 **it was suggested, hey, Barry's down there working, talk**
16 **to Barry and get, get whatever information you can from**
17 **Barry. And so T. Barker and I -- Barry was back on one**
18 **of his leave. And T. Barker and I went and had lunch**
19 **with him down at the beach.**

20 Q. So that wasn't, that meeting wasn't in
21 preparation for litigation, was it?

22 **A. Not that I'm aware of.**

23 Q. I'm going to show you, sir, a document which
24 we'll mark as Exhibit 6.

25 (Whereupon, Exhibit 6 was marked for

1 identification.)

2 MR. LOMAX: Thanks.

3 Q. Have you seen this document before, sir?

4 **A. Yes. I wrote it.**

5 Q. Okay. Sir, this says, "Subject, summary of
6 the Swansboro meeting."

7 **A. That's --**

8 Q. Where is Swansboro?

9 **A. That's at the beach.**

10 Q. Beach where? What state?

11 **A. North Carolina.**

12 Q. North Carolina. Okay. The date on it is
13 July 18, 2015.

14 **A. Okay.**

15 Q. It's not, so that --

16 **A. That was only a few days later.**

17 Q. So just a couple days --

18 **A. So July. Yeah, July, not August.**

19 Q. All right. So just a couple days after this
20 initial refusal you set up this meeting?

21 **A. Yes.**

22 Q. Okay. And the first thing you put in bold
23 letters is, "This document is protected by
24 attorney-client privilege."

25 **A. Yes.**

1 Q. Why?

2 A. Because I was told to write it was protected
3 by attorney-client privilege.

4 Q. By who?

5 A. By Tom Darden and John Mazzarino.

6 Q. Do you know why?

7 A. I don't.

8 Q. It's because they were trying to set up
9 litigation, isn't it?

10 A. I have no idea.

11 Q. Okay. Do you know if they were anticipating
12 litigation at that point in time?

13 A. I think that they probably were expecting
14 that there was going to be a problem.

15 Q. Why?

16 A. Because Mr. Rossi wouldn't allow me in the
17 plant to see what was going on.

18 Q. Okay. So if I understand correctly, and tell
19 me if I'm missing something here, but you asked to come
20 down on July 13th?

21 A. Uh-huh.

22 Q. And by July 18th they, and there's one
23 communication; hey, we're going to come down. Dr. Rossi
24 says, no, I'm not letting Mr. Murray in, but the rest of
25 you can come. And then after that, within five days

1 they're anticipating litigation with no further attempts
2 to say, hey, no, trust me, Joe's really a good guy?

3 **A. Yeah, I have no idea what their intention**
4 **was. I just wrote a report on what I had found and**
5 **marked it as they told me to mark it.**

6 Q. You can see though how it appears to me that
7 this was a setup, this was a setup for litigation?
8 They, they knew two minutes after sending the e-mail
9 that they were going to create a problem, and then
10 within a week they have you write a report that says,
11 "This document is protected by attorney-client
12 privilege." Do you see that?

13 MR. LOMAX: Objection to the form of the
14 question.

15 **A. It would be speculation on my part to know**
16 **what John Mazzarino and Tom Darden were thinking and JT**
17 **Vaughn, but.**

18 Q. So you never asked why they wanted
19 attorney-client privilege on there?

20 **A. I think that they were concerned that the**
21 **refusal to let me in was problematic.**

22 Q. So that wasn't your idea though?

23 **A. No.**

24 Q. Okay. What was the purpose of this
25 memorandum?

1 **A. To --**

2 Q. Did they ask you to prepare this?

3 **A. Yeah. I, this was a summary report of**
4 **everything I had gathered and everything we talked about**
5 **with Barry when T. Barker and I had lunch with him. So**
6 **I just wrote it all up so I can move on to the next**
7 **project and kind of put this in the folder and move on.**

8 Q. Okay. So as of this time, July 18, 2015, you
9 were still a consultant --

10 **A. Yes.**

11 Q. -- correct? And it says in the second
12 paragraph of this document, "The data reviewed in
13 support of the proposed July 14th introduction and plant
14 tour included background contract documents" --

15 **A. Uh-huh.**

16 Q. -- "requests for invoice from Henry W.
17 Johnson, President of JM Products, and reports from LI's
18 consultant and advisor, Dr. Fabio Penon." --

19 **A. That's correct.**

20 Q. -- correct? So you had seen the contract at
21 least by that point?

22 **A. I think I saw either a term sheet or**
23 **documents that I thought were the contract, yes.**

24 Q. Do you know why those were shown to you?

25 **A. Yes. So I could understand the requirements**

1 associated with the plant, and we could figure out what
2 was going on.

3 Q. What do you mean the requirements associated
4 with the plant?

5 A. So what was the operating time, how much
6 power was it supposed to be producing, what was the
7 relationship with Johnson Matthey Products,
8 Incorporated, etcetera.

9 Q. Okay. Did you look at the requirements
10 pursuant to the testing required in the license
11 agreement?

12 A. I don't recall. I don't recall which part,
13 which document. I may have broadly described the
14 contract as the licensee agreement or the, the contract.
15 In fact, they may be the same thing as far as I'm
16 concerned.

17 Q. Now, this appears to contain your take of
18 reports from, or from information you received from
19 Barry West?

20 A. Yes.

21 Q. Okay. Number 3 says, "It was indicated that
22 there was a steam flow sensor installed in the system by
23 Dr. Penon. This sensor was located in the steam line
24 between the source and the sink, but the device burned
25 out at some point and, therefore, no data on mass or

1 volume flow is readily available."

2 A. Yes.

3 Q. Do you see that?

4 A. Uh-huh.

5 Q. Do you know that to be true or?

6 A. I don't. I only know what Barry said.

7 Q. Okay. Now, he seems to provide you quite a
8 bit of information for a guy that didn't even know where
9 the flow meter was.

10 A. Yeah.

11 Q. He's a very observant guy?

12 A. Yeah, I don't know if I would agree with
13 that. I think that he was around the plant a lot and he
14 collected, you know, he looked at and worked on the
15 systems quite a bit. So I think at this point he was
16 probably there for more than six months, kind of in that
17 plant for eight hours a day.

18 Q. And at this time did you discuss with him the
19 equipment being used to monitor?

20 A. Yes. Specifically, the PCE-830. And as much
21 information as he could give us about flow rates. That
22 was a principal concern, is how are they measuring, how
23 are they closing the thermodynamic system. And so if we
24 can understand that, we can understand, hey, do we have
25 a, do we have a coefficient of performance, because the

1 numbers were an order of magnitude higher than they
2 needed to be. So we just wanted to understand, hey, if
3 he has something, if there's an error, that's okay. We
4 just have to understand what it is.

5 Q. Now, in here you talk about, "BW" -- Barry
6 West, now I'm looking at Number 13 -- "reports to the
7 plant and works regular hours on a four week on, one
8 week off schedule. BW generally reports to the plant in
9 the morning, approximately same time as Mr. Fabiani."

10 Now, do you know if he was generally working
11 when Dr. Rossi was there?

12 A. I do not know.

13 Q. Okay. So you don't, did he ever have time in
14 the plant that Dr. Rossi was not present?

15 MR. LOMAX: Objection to the form of the
16 question.

17 Q. Do you know?

18 A. I'm not, I --

19 Q. Did you ask him?

20 A. As far as I was aware, there was a kind of a
21 day shift and a night shift, and my understanding is
22 that Dr. Rossi came in in the afternoon and then left
23 kind of in the morning, and there was some overlap.

24 Q. Okay. But there were times when Dr. Rossi
25 was not there?

1 **A. I would imagine, yes.**

2 Q. Okay. Now, you had testified before that
3 Mr. Fabiani felt like he was being watched and Mr. West
4 was uncomfortable to some degree, but why is it so when
5 Dr. Rossi wasn't there for substantial periods of time
6 that they were?

7 MR. LOMAX: Objection to the form of the
8 question.

9 **A. I think that both of them felt very**
10 **intimidated. That was my perception of their**
11 **description. They felt like they were being watched**
12 **continuously while Mr. Rossi was in the building.**

13 Q. Okay. Now, you put here that, "At one point
14 Mr. Fabiani indicated to Barry West that he would cause
15 him physical harm if Barry West interfered with the
16 plant. The nature and motivation for this threat should
17 be better understood." Did you ask him about that?

18 **A. Did I ask who?**

19 Q. Mr. West.

20 **A. Yeah, we talked to him. We said, well, what**
21 **was that about? He just said that, you know, he**
22 **threatened him. And I thought, my feeling was that that**
23 **is not an environment to be in. And I brought that to**
24 **the attention of John Mazzarino and Tom Darden and JT**
25 **Vaughn, that you don't want employees in that type of a**

1 **situation.**

2 Q. Did, did you ask him about the facts or
3 circumstances around that threat?

4 **A. Not really.**

5 Q. Problem I've got is we did speak with
6 Mr. West. And as far as his relationship with
7 Mr. Fabiani, it was all flowers and sunshine. So what
8 I'm trying to understand is why this would appear in
9 your report if Mr. West didn't indicate that to us.

10 **A. I just documented what he said.**

11 Q. So you have no independent knowledge of that?

12 **A. No.**

13 Q. And you have --

14 **A. Only what he said.**

15 Q. -- none of the facts or circumstances behind
16 that?

17 **A. No.**

18 Q. So based on your understanding, do you have
19 any reason to believe that Mr. Fabiani and Dr. Rossi
20 were colluding to skew the results of this test?

21 **A. No.**

22 Q. What about Dr. Rossi and Mr. Barry West?

23 **A. Not as far as I'm aware.**

24 Q. Now, sir, you started drafting a report to
25 undermine the testing protocol used by Dr. Penon, did

1 you not?

2 A. I never prepared any report to undermine
3 anything. I prepared a report on a review of the
4 documents that I was provided.

5 (Whereupon, Exhibit 7 was marked for
6 identification.)

7 Q. I show you, sir, a document marked as Exhibit
8 Number 7. Have you seen this document before, sir?

9 A. Not in this form. It looks, it looks
10 familiar, but it doesn't seem like it's complete.

11 Q. Did you prepare this document, sir?

12 A. It appears to be part of a document that I
13 prepared.

14 Q. Well, it says that it's an appendix. Is
15 there a larger document?

16 A. Well, this was after the test, so I would
17 imagine that there is more to this document, yes.

18 Q. Do you know why it hasn't been produced?

19 A. I have no idea.

20 Q. Who asked you to prepare this document?

21 A. After the visit on the 20 -- I'm sorry, on
22 the 16th and 17th, Mr. Chris Pace of Jones Day asked
23 me --

24 Q. 16th and 17th of?

25 A. I'm sorry. Of February of 2016.

1 Q. Thank you.

2 A. I have to be careful.

3 MR. LOMAX: I'm going to instruct you not to
4 divulge conversations you had with counsel.

5 THE WITNESS: Okay.

6 A. I was instructed to write down all of my
7 notes and information about what I had observed.

8 Q. Who instructed you?

9 A. Counsel.

10 Q. Counsel for Industrial Heat?

11 A. Yes.

12 Q. I'm sorry. You were instructed to write down
13 your notes and everything that you had observed?

14 A. Yes.

15 Q. Is there a more complete report other than
16 this?

17 A. I believe that, you know, based on what's in
18 here, there's lots of redactions and at least the front
19 matter is removed. I'm still going through it, but
20 yeah, there's a lot of redaction.

21 Q. Do you know why it would be redacted?

22 MR. LOMAX: Objection to the form of the
23 question.

24 A. Because I prepared it for Industrial Heat's
25 attorneys.

1 Q. Is it your understanding it would be used for
2 litigation?

3 A. Probably. If the litigation were to, to
4 happen.

5 Q. Does any of this form the basis of your
6 opinions in this case?

7 A. Yes. These were my observations from what I
8 had seen on those days.

9 Q. And do you reference these documents, or did
10 you refer to them in preparing your expert disclosure?

11 A. I don't believe I did at all.

12 Q. So you did this great body of work and never
13 referenced it?

14 A. No, I don't think I did at all. In fact, I
15 think this is the first time I've looked at it in at
16 least 10 or 11 months.

17 Q. Okay. Looking at -- I'm sorry. For the
18 record, this is a document marked or bates stamped
19 IH00120031. If you look at Page 4 of 39 of this
20 document.

21 A. Oh, same one 4?

22 Q. Yes, sir.

23 A. Uh-huh.

24 Q. On the first paragraph, second sentence in
25 you say, "As far as we can tell, none of the sensor data

1 were logged digitally to an archive as required in the
2 FFTP."

3 **A. Figure A2.**

4 Q. I believe it refers to temperature and volume
5 flow rate of the return condensate and measurements of
6 the input powder.

7 THE VIDEOGRAPHER: Six minutes.

8 Q. Do you see that sentence, sir?

9 **A. Yes.**

10 Q. Okay. What is the FFTP?

11 **A. It's the Fabio Penon test plan.**

12 Q. Okay. Do you know, sitting here today,
13 whether any of the sensor data was logged digitally?

14 **A. The test, the data that I was talking about**
15 **here was the volume flow meter on the volume condensate**
16 **return line and the pressure transducer. As far as I'm**
17 **aware, the information in the report was not logged**
18 **digitally. I know that the flow meter was not logged**
19 **digitally because Mr. Penon and Mr. Rossi, as we did the**
20 **exit interview that day, indicated that they had never**
21 **hooked up that interface.**

22 Q. Does it have an interface that could read
23 digitally?

24 **A. Yes.**

25 Q. Okay. That particular flow meter?

1 **A. Yes.**

2 Q. What about the input power? Is that logged
3 digitally?

4 **A. That was logged to the power analyzer. So --**

5 Q. So that was logged?

6 **A. Yeah. It was not clear who logged it because**
7 **the data between Mr. Penon and Mr. Fabiani are virtually**
8 **identical. So it was not clear who was logging it or**
9 **how it was being logged since Mr. Fabiani was not there**
10 **continuously, how it was turned over. There, there's a**
11 **limit to how long you can log. Who was doing that, who**
12 **was resetting it, who was collecting that data was not**
13 **clear.**

14 Q. Okay. Now, looking just below that,
15 Number 2, it says, "Temperature and pressure were
16 measured. Note that the temperature data logger and
17 sensor had expired calibrations."

18 **A. Uh-huh.**

19 Q. When did they expire?

20 **A. They expired I believe, I would have to look**
21 **back at the pictures, but they expired in January or**
22 **February of 2016.**

23 Q. So it was expired by less than a month?

24 **A. About a month, yeah.**

25 Q. How long are those calibrations good for?

1 **A. One year.**

2 Q. Okay. So if it was a year-long test, by the
3 time it's hooked up on the plant, that's to be expected,
4 isn't it?

5 **A. No, it's not.**

6 Q. How do you --

7 **A. When --**

8 Q. How do you do a 400-day test with an
9 instrument that is calibrated every year without it
10 expiring unless you swap it out, send it off somewhere
11 for new calibration?

12 **A. So when you design a plant like this, there**
13 **are really two things you do. For example, on a**
14 **temperature sensor you would put dual redundant**
15 **temperature sensors in a, a bung. There would be a bung**
16 **hole in the pipe. You would screw it in. You would put**
17 **the sensor into it, and you log both sensors. And then**
18 **when it's coming to an intermediate point in the test,**
19 **you can remove one of the sensors while the other**
20 **continues to log and you can take that sensor, have it**
21 **recalibrated and its logger recalibrated, and then you**
22 **put that system, you put that back in while both are**
23 **still --**

24 (Conference call interruption.)

25 **A. So you would, you would install dual. You**

1 would remove the one, have it calibrated while the other
2 one is operational, put that first one back in, remove
3 the second one and have it calibrated and then place it
4 back in the system. It's a standard technique for, for
5 systems, high availability systems.

6 Q. Okay. And that would be set forth in the
7 test plan generally?

8 A. Typically, it would be set forth in a test
9 plan.

10 Q. Okay.

11 A. And procedure. Actually, in the system
12 design.

13 Q. And in fact, that was one of your complaints
14 of Dr. Mizuno's work, was that he changed out some of
15 the equipment --

16 A. Absolutely.

17 Q. -- in the middle of the test?

18 A. Yeah.

19 Q. Okay. Now, you say, "Also, the volume flow
20 rate sensor was operated below the minimum operational
21 threshold of the device throughout the entire test
22 period."

23 A. Yes.

24 Q. Okay. We'll talk about that more later. I
25 will come back to it. I promise.

1 Then another thing, you talk about the
2 external water interface, that there was an external
3 water tank that could supply water to the system, and
4 the volume of the supplemental water was not measured?

5 **A. That's correct.**

6 Q. Okay. So --

7 **A. There were no indication in all the data that**
8 **I received that indicated when extra water was added or**
9 **how much extra water was added.**

10 Q. Now, the, the water in the system, the more
11 water that was circulated, the more energy was put out,
12 correct, from -- or I'm sorry, the more steam produced
13 from that water?

14 **A. I don't understand your question.**

15 Q. Okay.

16 **A. Can you restate it?**

17 Q. The addition of water from that tank, would
18 that have the effect of artificially increasing or
19 decreasing the reported COP?

20 **A. Would the addition of water? The issue with**
21 **the water is understanding the mass or volume flow rate,**
22 **so how much fluid is being pushed through the system, so**
23 **actually it's a control volume analysis. So if you have**
24 **a source of mass, of additional mass in the system,**
25 **there's no telling what it is. You don't know how much**

1 mass is in the system because the only place that the
2 volume flow rate or mass flow rate was measured was in
3 the condensate return line.

4 Q. Okay. Now I'm, I'm going to stop you there
5 for a second. So this additional water tank, did, which
6 side of the water flow sensor did it put water in? Was
7 it putting water in that would be recorded by that
8 sensor or that was unrecorded by that sensor?

9 A. Unrecorded by the sensor.

10 Q. Okay. So the addition of water from that
11 tank, if more water was being added, would that affect
12 the COP that was calculated for that system?

13 A. Would the addition of water at that point
14 affect the COP? I would have to think about that. At
15 this point --

16 Q. You can't answer that right now?

17 A. I can't answer that.

18 Q. Okay. So why did you raise it as a concern?
19 Why did you raise it as a concern?

20 A. I'm sure that when I was writing this I had
21 captured lots of thoughts, and I just can't recall.

22 Q. Okay. I think we need to go off the record
23 for a moment.

24 THE VIDEOGRAPHER: We're off the record at
25 12:06 p.m.

1 (Recess taken 12:06 p.m. to 12:13 p.m.)

2 THE VIDEOGRAPHER: We are back on the record
3 at 12:13 p.m.

4 BY MR. ANNESSER:

5 Q. Sir, we're looking at this report that you
6 prepared, and I'd like to ask you to turn to Page 5 of
7 39.

8 A. Uh-huh.

9 Q. And there is a Section 3.2 flow analysis?

10 A. Yes.

11 Q. And in that you, you take issue and you say,
12 "As described earlier, at most 37 percent of the
13 reactors were potentially still operational. It is
14 unexplained that the system maintained the same power
15 output and the same condensate flow rate while over 60
16 percent of the power sources were disabled."

17 A. Yes.

18 Q. What is the total power that could be
19 produced by that plant?

20 A. What was the total power?

21 Q. If it was running at 100 percent capacity.

22 A. I don't know.

23 Q. Okay. So if the total power was 10
24 megawatts, for example, if it's running at 10 percent
25 it's producing a megawatt, correct?

1 **A. If those numbers were correct, yes.**

2 Q. Okay. So if it was 3-megawatt total possible
3 power, at 37 percent it could be running at one
4 megawatt, could it not?

5 **A. If those numbers are correct, yes.**

6 Q. But you don't know whether it's correct or
7 not? You don't know one way or another?

8 **A. I do not.**

9 Q. Okay. So you would require more information
10 to opine that that is, that that is incorrect, that it's
11 not possible?

12 **A. This report was a, me documenting all of what**
13 **I saw and the information I had at the time, at this**
14 **point in time almost two years ago.**

15 Q. Okay. So you're not stating that the fact
16 that it was running on 37 percent of the reactors is
17 proof that this thing doesn't work, are you?

18 **A. No.**

19 Q. All right.

20 **A. I'm saying that the behavior of the power in**
21 **the diagram that comes up a little bit later on, or**
22 **maybe it was before, when reactors went offline and the**
23 **COP went up is very unusual, that they would be**
24 **inversely, inversely related.**

25 Q. Okay.

1 **A. It's very unusual.**

2 Q. Well, we'll, we'll talk about that. That's,
3 that's an interesting one.

4 Now turning to the next page, 6 of 39.

5 **A. Okay.**

6 Q. You do some calculation regarding the Apator
7 PoWoGaz, Model MWN130-80-NC, serial number blank.

8 **A. Uh-huh.**

9 Q. That's the one that was used for the test?

10 **A. It is, yes.**

11 Q. Okay. You say in here that this device uses
12 a DN80 pipe flange. What does that mean?

13 **A. It's an 80-millimeter pipe flange.**

14 Q. Okay.

15 **A. That's what the manufacturer specified.**

16 Q. Okay. "If we consider that the test was
17 nominally 350 operational days, the minimum required by
18 the contract." What contract?

19 **A. The contract that was supposed to be**
20 **overseeing this.**

21 Q. Okay. So you understood this was the
22 guaranteed performance test pursuant to the contract
23 that was being performed?

24 **A. No. Actually, Mr. Darden and Mr. Mazzarino**
25 **highlighted that -- this was early on in June -- that**

1 this, in fact, wasn't the test. They wanted me to look
2 and see if there was a one percent chance or a half a
3 percent chance. And so they wanted me to go through and
4 find out if this -- what was happening in this test. So
5 I don't, I don't know about guaranteed performance test.
6 I know that there was a contract, but I don't know
7 exactly what that was.

8 Q. You refer here to, "If we consider that the
9 test was nominally 350 operational days" --

10 A. Yes.

11 Q. -- "the minimum required by the contract."
12 So it was understood to you --

13 A. Yes, yeah.

14 Q. -- that this was being compared to the
15 contract provisions?

16 A. Right, but you, you said guaranteed
17 performance. I, I don't know if this was guaranteed
18 performance or not. I know that this --

19 Q. The 350 day test --

20 A. -- came from --

21 Q. -- pursuant to the contract?

22 A. -- the contract. Yeah.

23 Q. Okay. Now, I want to turn back for a moment
24 to, and I apologize I did not mark the exhibit, your
25 summary of the Swansboro meeting.

1 **A. Yes, 6.**

2 Q. Thank you. On the second paragraph you say,
3 "The data reviewed in support of the proposed July 2014"
4 -- I'm sorry -- "July 14 introduction and plant tour
5 included background contract documents" -- which I asked
6 you about.

7 **A. Right.**

8 Q. -- "request for invoice from Henry W.
9 Johnson, President of JM Products"?

10 **A. Uh-huh.**

11 Q. All right. "And reports from LI's consultant
12 and advisor Dr. Fabio Penon."

13 **A. Yes.**

14 Q. Why do you refer to him as LI's consultant
15 and advisor?

16 **A. That's how he was presented, that he was the**
17 **advisor and --**

18 Q. Who told you that?

19 **A. Mr. Mazzarino, Mr. Darden, Mr. Vaughn.**

20 Q. All three of them?

21 **A. Yeah. In the meetings they discussed him,**
22 **they discussed him as that, yes.**

23 Q. Okay. Did they ever say he was the ERV for
24 this test?

25 **A. I've heard the term ERV, but they actually**

1 told me that there was no ERV because it wasn't mutually
2 agreed upon.

3 Q. Okay. And when did they tell you that?

4 A. In, when I began doing the analysis in June
5 of 2015.

6 Q. So they knew as of June 2015 that this was
7 not -- or they did not consider him the ERV?

8 A. They described it to me that way, yes.

9 Q. Do you know if anyone ever told Dr. Rossi
10 that?

11 A. I do not. In fact, I, I don't believe that
12 they did.

13 Q. You don't believe they did?

14 A. I do not.

15 Q. Why, why do you say that?

16 A. I just, I don't remember anybody saying that
17 we, you know, that they had definitively said that. I,
18 just my sense was that they had not.

19 Q. Okay. Why would that be? Why wouldn't they
20 tell him, hey, we didn't agree to this guy, what, what
21 are we doing?

22 A. I have --

23 MR. LOMAX: Objection to the form of the
24 question.

25 Q. If you know.

1 **A. I have no idea.**

2 Q. Okay.

3 **A. Yeah.**

4 Q. Now, sir, looking at Page 6 of 39 that we
5 were on in Exhibit --

6 **A. 7.**

7 Q. -- 7.

8 **A. Yes.**

9 Q. Okay. So continuing there, you talk about,
10 "...the minimum required by the contract. This would
11 suggest that each day was approximately 34.1 cubic
12 meters per day of volume flow rate." Okay. And you go
13 through a calculation, which I'm, I'm not going to read
14 all of it.

15 **A. That's fine.**

16 Q. And down at the bottom it says, "Comparing
17 that with the average of the mass flow rates provided by
18 P" -- Penon?

19 **A. Uh-huh.**

20 Q. -- "results in a less than .6 percent error
21 between the two values."

22 **A. Uh-huh.**

23 Q. What does that tell you?

24 **A. That they're consistent.**

25 Q. Okay. So that's consistent with what, what's

1 being reported?

2 **A. The --**

3 Q. Those numbers are consistent with what's
4 being reported?

5 **A. The data that's being, that was provided in**
6 **the reports by Penon was consistent with the numbers**
7 **that I had seen in the plan, yes.**

8 Q. Okay. Any reason to believe that they were
9 not?

10 **A. Any reason to believe they were not what?**

11 Q. That, that they were not correct, the numbers
12 that you saw in the plan.

13 **A. I just saw the aggregate number.**

14 Q. Okay.

15 **A. So yeah.**

16 Q. Now, on the next page.

17 **A. Which page, Page 7?**

18 Q. Yes.

19 **A. Uh-huh.**

20 Q. Page 7 of 39. The, the first paragraph is
21 really just a description of the figure, which we can't
22 see, but the first full paragraph talks about the
23 minimum flow rate for the flow gauge?

24 **A. Yes.**

25 Q. Okay. And because the minimum flow rate was

1 below that of the average flow --

2 **A. It was above that.**

3 Q. I'm sorry. The minimum flow rate was above
4 the average flow reported by Dr. Penon, you conclude
5 that all of the volume flow rate sensor measurements are
6 invalid?

7 **A. That's correct.**

8 Q. What happens when you fall below the minimum
9 flow rate?

10 **A. These devices are designed to operate with a**
11 **full, completely full pipe. And they're actually**
12 **designed to have a valve on both sides of them. And**
13 **when the flow meters operate below that, you can get**
14 **inconsistent results. For example, you can actually**
15 **have just a very minor amount of water in the channel,**
16 **and it can turn the turbine wheel to indicate a much,**
17 **much higher volume.**

18 **So this particular meter was actually**
19 **designed for a flow rate, a nominal average flow rate of**
20 **about 40 meters cubed per hour, but it was operated**
21 **below its minimum point. So you can't make a valid**
22 **measurement when it's operated below the minimum point.**

23 Q. Okay. Let's talk about this for just a
24 minute. To begin, when it is operating within its
25 minimum and maximum flow rate, this, this meter, what is

1 the margin of error?

2 **A. The, these devices, it's, it depends upon if**
3 **you're in the transitional region or you're above it.**
4 **You, I would have to look at the type certification from**
5 **the manufacturer to know.**

6 Q. But you don't know sitting here today for
7 this particular device?

8 **A. No.**

9 Q. Okay. Now, if you operate outside, is it
10 your understanding that the margin of error increases?

11 **A. Yes.**

12 Q. Okay. Did you ever do any testing on the
13 actual flow meter that was used for the Doral facility
14 350-day test, what we're calling the guaranteed
15 performance test?

16 **A. The --**

17 MR. LOMAX: Objection to the form of the
18 question.

19 MR. ANNESSER: What's the objection?

20 MR. LOMAX: To the extent that it gets into
21 any kind of attorney work product or attorney-client
22 privileged information.

23 Q. Okay. Go ahead and answer, sir.

24 **A. Repeat the question.**

25 Q. Did you do any testing on the actual flow

1 meter used during the guaranteed performance test?

2 A. No. That flow meter was taken by Mr. Penon
3 back to Italy --

4 Q. Okay.

5 A. -- at the end of the test. I took pictures
6 of it and collected data on what it was.

7 Q. Okay. I'd like to ask you to turn to Page 9
8 of 39 of Exhibit 7.

9 A. Uh-huh.

10 Q. And you continue to discuss the flow meter
11 here I believe. And the last sentence of the paragraph
12 on this page states, "In addition, we have estimated
13 that the visible portion of the pipe has about five
14 elbows and one DN40 valve."

15 A. Uh-huh.

16 Q. What are elbows?

17 A. Elbows are pipe elbows. So right angle or
18 45-degree angle turns in a pipe.

19 Q. Okay. Where were those elbows that you
20 were --

21 A. On the inside of the container on the steam
22 side.

23 Q. On the steam side, okay.

24 A. Yeah.

25 Q. How do you know what the inside looked like?

1 **A.** Because at the end of the test you and I and
2 everybody else there had an opportunity to walk through
3 and take pictures of and inspect everything on the
4 inside of the container.

5 Q. On the steam, on the -- I'm sorry.

6 **A.** I'm saying on the reactor.

7 Q. Okay.

8 **A.** It should be located --

9 Q. On the reactor?

10 **A.** Yeah. Near --

11 Q. Okay.

12 **A.** -- the BF units at the back of the reactor,
13 all of the pipes coming off were what I believe are
14 DN40, 40-millimeter pipes. I actually have a picture of
15 a pipe joint that actually flags it as a DN40.

16 Q. Okay. And those feed into a larger pipe,
17 correct?

18 **A.** They feed into a main, and then the main goes
19 across to the Johnson Matthey facility.

20 Q. Okay. So, okay. So here you're talking
21 about the steam flow --

22 **A.** Yeah. We're talking --

23 Q. -- that was --

24 **A.** Yeah.

25 Q. Okay.

1 **A. The, the product steam of the reactors.**

2 Q. Product steam of the reactors. And it goes
3 into what interior diameter pipe to go, once it exits
4 the reactor?

5 **A. I suspect it was a DN80, but I don't know**
6 **because it was covered by insulation.**

7 Q. Okay. But you, you talk about it's about
8 seven meters long?

9 **A. Uh-huh.**

10 Q. From the exit of the reactor ISO container to
11 the location where the pipe kind of --

12 **A. Right.**

13 Q. -- penetrates the JMP wall?

14 **A. Right.**

15 Q. And then you say, "In addition, we have
16 estimated the visible portion of the pipe has about five
17 elbows and one DN40 valve."

18 **A. Yeah.**

19 Q. So, okay. So in one respect you're talking
20 seven meters on the outside of the reactor?

21 **A. Uh-huh.**

22 Q. And then when you refer to the visible
23 portion of pipe has about five elbows, that's on the
24 inside of the reactor, correct?

25 **A. Yes.**

1 Q. That's --

2 A. Not on the inside of the reactor. It's on,
3 it's the output of the reactors to go into the manifold
4 that feeds the full system going across.

5 Q. Inside the shipping container?

6 A. Yes.

7 Q. Okay. And then you say, "It is assumed that
8 the steam system is DN40 because the flow valve shown in
9 Figure A."

10 A. Yes. On the inside of the reactor, yes.

11 Q. Okay. This doesn't say inside. Sorry. I
12 misunderstood it.

13 A. This was a preliminary report. I just wrote
14 all of my data down as fast as I could to get all my
15 thoughts into a file.

16 Q. How do you measure COP? What is the formula
17 to measure COP?

18 A. Power in over power out -- I'm sorry. Let me
19 think about that. Power out over power in.

20 Q. Okay. So --

21 A. It could be energy in over, I'm sorry, energy
22 out over energy in as well. I mean it depends on -- I
23 never saw the actual computational worksheets of
24 Mr. Penon, so I don't --

25 Q. Did you see the formula he used?

1 **A. I saw the formula in the document, but we**
2 **never saw the worksheet.**

3 Q. Yeah.

4 **A. So we just reproduced it and came up with**
5 **values that were very similar to his.**

6 Q. Okay. So your, your values were similar --

7 **A. Based on his data --**

8 Q. -- to --

9 **A. -- yes.**

10 Q. Okay. So you're not saying he did any
11 improper calculations or anything to arrive at his --

12 **A. As far as I'm aware, the calculations were**
13 **consistent.**

14 Q. Okay. Now, so you ultimately visited the
15 plant in Doral, correct?

16 **A. I visited the plant twice in Doral. Once on**
17 **the, I believe it was the 16th and 17th, and then**
18 **subsequently we came back and made some additional**
19 **inspections. I don't remember if it was March or at**
20 **some point after that.**

21 Q. Now, you were permitted to speak with
22 Dr. Penon at the plant, correct?

23 **A. Yes.**

24 Q. Correct?

25 **A. At the end of the test I had a, what I would**

1 describe as an exit interview to find out his thoughts
2 on some of the factors.

3 Q. Okay. And what did you ask him?

4 A. I asked him a series of questions about how
5 the system was closed relative to the first and second
6 law of thermodynamics and conservation of mass and
7 conservation of energy. I asked him questions about the
8 calibration of the data. I asked him about whether or
9 not the, any modifications had been made in the plant
10 between the 16th and the 17th, if anything had changed.

11 Q. What did he say?

12 A. He said not that he was aware of.

13 Q. Okay. What about the, the closed system?

14 A. It was specifically related to understanding
15 what was on the other side of the wall. I asked him how
16 do you close the system if you don't know what's on the
17 other side of the wall? And he said, well, we have the
18 flow meter on the one side. And, and I asked him
19 specifically that if, how was he going to determine what
20 the state of the steam was and the state of the
21 condensate? Because he didn't have temperature,
22 pressure, and volume or mass flow rate on both sides.
23 There was no measurement, as far as I'm aware, of the
24 steam flow rate on the output side of the system.

25 Q. Okay. So let me take a step back. He did

1 have measurements of the temperature of the steam and
2 the steam line going out of the E-Cat plant over to the
3 JM site, correct?

4 **A. Yes.**

5 Q. Okay. Do you know how many?

6 **A. I believe it was two.**

7 Q. Okay. Do you know where they were located on
8 the plant?

9 **A. I don't.**

10 Q. Okay. What -- okay. Now, you said the steam
11 quality. What does that mean?

12 **A. So steam can be in, depending upon the**
13 **thermodynamic state, the pressure, the temperature, and**
14 **the mass or volume flow rate, steam can be any level of**
15 **between the two phases of water, heated water and fully**
16 **saturated steam. If you don't have that information,**
17 **you can't determine what the enthalpy and entropy of the**
18 **steam line is.**

19 So in this system we didn't have a measure of
20 the steam flow rate. We had a measure of the pressure
21 that Mr. Penon provided, but he indicated in the final
22 report -- this was all before the final report I should
23 note. He indicated in the final report that the
24 pressure was zero bar, and bar is an absolute measure of
25 pressure. So zero bar would be a perfect vacuum. You

1 would have to indicate that it's pressure relative or
2 pressure gauge. So normally somebody would say bar G or
3 bar relative. And so what you --

4 Q. What did he report?

5 A. In the report what I saw was bar. And so, so
6 we know that has to be a typo or an error or something
7 has to be wrong there.

8 Q. Well, it could be bar gauge or --

9 A. If he indicated it was bar gauge, then it
10 would say bar G or bar-G or bar relative or -- it could
11 be a lot of things. It was a, it could be a typo. It
12 could have been an error. It could be a
13 misinterpretation, whatever.

14 So when we left the, when we inspected the
15 equipment at the end, I inspected the volume flow meter,
16 and I inspected the pressure gauge that he indicated was
17 used for measuring the steam pressure. That's where he
18 had that zero bar measurement. And so I wanted to
19 understand what are these devices. And so what I did
20 was I went out and I got the manufacturer's information
21 and the manufacturer's type certifications to find out
22 what their capabilities were.

23 And specifically on the pressure side he used
24 a pressure meter that was actually only operational
25 between 0, or I'm sorry, 20 and 50 degrees C, but he was

1 measuring steam temperature of 100 and let's say about
2 102 to 104 degrees C. So the pressure sensor was not
3 operating in its operational range, and the volume flow
4 rate sensor on the condensate line was not operational
5 in its, in its range. The temperature sensors, I think
6 they were fine. I believe they were K type
7 thermocouples, and they logged those to some type of a
8 device. But it was just a series of errors.

9 Q. Can you have liquid water that is 101 degrees
10 Celsius at zero pressure?

11 A. If zero pressure, give -- which pressure?

12 Q. Relative.

13 A. Relative. No, you wouldn't normally have
14 that, but --

15 Q. What about gauge?

16 A. That's the same. Relative is --

17 Q. Okay.

18 A. Absolute?

19 Q. What about absolute? Sorry.

20 A. Oh, you could -- you would not have at a, at
21 a pressure of zero absolute, your water would absolutely
22 be a gas.

23 Q. Okay. And so at relative or absolute, or
24 gauge or absolute, water could not be at the temperature
25 of 101 degrees Celsius in the liquid form --

1 A. So we --

2 Q. -- correct?

3 A. Well, I would have to look at the
4 thermodynamic tables and look at exactly what the, the
5 state is. We don't know what the flow rate is. We know
6 what a temperature is, and we know we have a pressure
7 measurement that is outside of the operational range of
8 the pressure transducer.

9 Q. Sir, I'm, I'm asking you, if you have zero
10 relative pressure or zero absolute pressure, whether
11 water can exist in its liquid form at 101 degrees C.

12 A. No.

13 Q. Okay. So is it your understanding, sir, that
14 Dr. Penon put one of the temperature gauges at the
15 bottom of the steam pipe and one at the top?

16 A. I don't know where he had, I don't know where
17 he had those.

18 Q. Okay. You don't know sitting here today one
19 way or another?

20 A. I don't know where they were, no.

21 Q. Would you agree with me, sir, that if the, if
22 there was a sensor at the bottom of the pipe and it
23 recorded consistently temperatures over 101 degrees C,
24 then it was not submerged in water?

25 A. I would not agree with you.

1 Q. Okay. Explain.

2 A. So it is not possible to take atmospheric
3 pressure, zero bar or 14.7 PSIG or PSIA water and expand
4 it into steam, which has an expansion ratio of 1700 to
5 1, and put it through a system and not have a pressure
6 increase. You're expanding water by a factor of 1700 to
7 1.

8 So what that would require is that on the
9 other side of the plant they would actually have to have
10 a, a pressure of, a vacuum pressure on the other side of
11 the plant, on the other side of the wall to draw that
12 steam across, because that steam has to go through all
13 of this network of pipes where there are losses. The
14 bends in the pipe introduce losses. And it causes the,
15 the steam to degrade. It will, it will condense. It
16 will, it will turn into water. And you have to have a
17 pressure. So that is why I wouldn't agree. You would
18 have to have a completely defined thermodynamic state to
19 be able to say that.

20 Q. Okay. I know you, you have your doubts, but
21 what I asked was not specifically with respect to this.

22 A. Okay.

23 Q. If there is a pressure sensor on the bottom
24 of the pipe and it is consistent, let's say there's open
25 ends except for the side that has steam supplied to it,

1 5-foot pipe with a pressure sensor at the bottom that
2 consistently reads 101 degrees C.

3 A. I, a pressure sensor doesn't read --

4 Q. I'm sorry. I said pressure sensor.
5 Temperature sensor. You're absolutely right.

6 A. Okay.

7 Q. Temperature sensor that reads 101 degrees C,
8 can there be water sitting on top of it, sir?

9 A. And can you give me the rest of the, this,
10 this kind of scenario? What was the pressure?

11 Q. Zero.

12 A. Zero. So in that case you would still have a
13 loss of energy into the surrounding, which would cause
14 condensation on the inside of the pipe, and you would
15 collect water at the bottom. That's why you have --

16 Q. And that would lower --

17 A. -- steam traps.

18 Q. That would lower the temperature, would it
19 not?

20 A. No, no. The, because you're accumulating a
21 pool of water, and so your rate at that point -- water
22 does not convert to steam exactly at 100 degrees C.
23 It's a, it's a process that goes between the, the system
24 entropy. It's the total process. So it would, it would
25 require -- it would be impossible to know without having

1 a proper steam trap at the bottom.

2 Q. So in one respect you've told me that water
3 in its liquid state cannot exist at atmospheric pressure
4 in liquid form at 100 degrees C, right?

5 A. Say that again.

6 Q. Water in its liquid form cannot reach the
7 temperature of 101 degrees C at atmospheric pressure,
8 correct?

9 A. It's not that simple. It's --

10 Q. What about 102 degrees C?

11 A. It's not that simple. There, you can have
12 water at 200 degrees C --

13 Q. At atmospheric?

14 A. No. Depending upon the pressure --

15 Q. You're --

16 A. -- and the amount of column you're
17 accumulating.

18 Q. Sir, I --

19 A. It depends on the geometry and the specific
20 nature of the system.

21 Q. I, I can tell you don't want me to agree with
22 me, but I'm asking you specifically at atmospheric
23 pressure.

24 A. And at atmospheric in a, in an idealized
25 world where you don't have real pipes and you don't have

1 real, a real system, then the, theoretically you would
2 say that at 0 PSI, absolute or relative -- at 101?

3 Q. 101.

4 A. -- 101, you should have steam.

5 Q. Now, when water condensates within the pipes
6 and returns to a liquid state, that water is below 101
7 degrees, is it not?

8 A. It depends on how much pressure accumulates.
9 So water has head.

10 Q. Zero atmospheric pressure, sir.

11 A. Okay. But --

12 Q. We're --

13 A. -- accumulation --

14 Q. Let's stay consistent.

15 A. Right.

16 Q. I'm not asking about the world of
17 information.

18 A. Accumulation of water creates head. That,
19 that's pressure. Right, so $(\rho)gh$. So you can
20 accumulate water at a temperature, and that's why in a
21 steam system you have traps, so you can trap that water
22 and get it out of the system because you don't want to
23 transmit wet steam to another system.

24 Q. But that water has dropped below 101 degrees
25 Celsius?

1 **A. No, because the pressure in the water, as you**
2 **accumulate it, it builds pressure on the water. So you**
3 **could, you could go up slightly. You could go to higher**
4 **temperatures.**

5 Q. How high?

6 **A. We would have to understand the head, and**
7 **we'd have to understand the specific geometry.**

8 Q. Did you do any of those calculations, sir?

9 **A. I didn't have any of the design, the detailed**
10 **design documentation or red-line design documentation**
11 **for the plan.**

12 Q. Okay. Now, sir, you requested at some point
13 of Engineer Penon the reports and test plan and
14 everything that was in place for the plant; is that
15 correct?

16 **A. While we were there, yes.**

17 Q. While you were there. Did he ever send it to
18 you?

19 **A. He sent me some documents by e-mail I think**
20 **probably in, probably in March of 2015.**

21 Q. Okay. When, when did you meet him again at
22 the plant? The January -- I'm sorry, February?

23 **A. February 16th and 17th, I think --**

24 Q. Okay.

25 **A. -- those were the two days.**

1 Q. Do you know --

2 A. Might have been the 15th and 16th, 16th and
3 17th.

4 Q. Do you know why it would have taken him so
5 long to send those to you?

6 A. I don't know.

7 Q. Okay. Maybe it's because he didn't take so
8 long to send them to you?

9 A. Maybe he sent them sooner. I don't know.

10 Q. Okay. Yeah. Let's look at a document we'll
11 mark as Exhibit 8.

12 (Whereupon, Exhibit 8 was marked for
13 identification.)

14 Q. This e-mail appears to be from Fabio Penon to
15 yourself --

16 A. Yeah.

17 Q. -- Mr. Darden, and Dr. Rossi on February 23,
18 2016?

19 A. Yes.

20 Q. So a few days later, less than a week?

21 A. Yeah, about that. Yeah.

22 Q. Okay. So he, he didn't hesitate in sending
23 those to you?

24 A. No.

25 Q. There was no delay whatsoever?

1 **A. Yeah.**

2 Q. And he includes, among other things, the
3 energy plant in Miami test plan, plant start-up, first
4 step, second step, and second step with different dates,
5 correct?

6 **A. That's what he indicates, yes.**

7 Q. Okay. So looking at the second page of this
8 document, which we have now marked as Exhibit 8, there
9 is a picture.

10 **A. Uh-huh.**

11 Q. What would you call it, a configuration?

12 **A. I would call it a block diagram.**

13 Q. A block diagram. We're going to use your
14 term because it's probably correct. Now, sir, you had
15 this block diagram previously, had you not?

16 **A. Uh-huh, uh-huh.**

17 Q. Okay. What is --

18 **A. Or it was something very similar. If it**
19 **wasn't this one, it was very similar, yes.**

20 Q. So what is it that you didn't have in terms
21 of the setup?

22 **A. So we don't know how many valves, how many**
23 **elbows, pipe size, the insulation surrounding these**
24 **things. We don't have anything. We don't know -- I**
25 **don't see in here where the flow meters are, how he's**

1 closing the state of the system.

2 Q. Did you ever request that specifically of
3 him? Send him an e-mail and say, hey, I need to know
4 where the, where the elbows are, how many --

5 A. So this was after the system was shut down as
6 a post system test. So normally in any plant of this
7 magnitude you would have drawings or specifications, and
8 you would have red-line drawings. So where
9 modifications were made, people would red line. And
10 that's perfectly acceptable engineering practice to red
11 line. If you change something or if you modify
12 something, you would red line it so there was a record
13 of what was changed and done to the system during its
14 existence. So I would have expected that at the plant
15 we would have had detailed as-built drawings with
16 red-line information.

17 Q. That's what you would expect, you said,
18 right?

19 A. Yes.

20 Q. Okay. Did you ever ask for it, is the
21 question.

22 A. I did, yes.

23 Q. When?

24 A. When we were sitting at the exit interview I
25 asked him. I, in fact, when we arrived on the 15th or

1 16th, I don't recall which day --

2 (Phone ringing.)

3 A. -- I asked for that information.

4 Q. All right.

5 A. And, and then at the exit interview I, I
6 specifically asked where are the red-line documents,
7 where is the as-built drawings, all that information.

8 Q. Now, by this point, okay, you're talking
9 February 2016, you had been employed with Industrial
10 Heat since May 2015?

11 A. Yes.

12 Q. So you're talking about nine months, give or
13 take?

14 A. Uh-huh.

15 Q. And that was the first time that you ever
16 requested that information from Engineer Penon?

17 A. Yes. It was the first time I had ever
18 actually met him, was that day.

19 Q. Could you have e-mailed him?

20 A. I didn't have his e-mail address, but I did
21 ask T. Barker, Tom Darden, JT Vaughn, on repeated,
22 repeated occasions for that data. I said there is no
23 way we can evaluate a plant without this documentation.
24 They gave me what they had, but in my opinion it was a
25 complete failure that all parties involved did not have

1 adequate engineering data for this program.

2 Q. Okay. So, so this first document,
3 IH00011096, which is identified as E-Cat MW1 Energy
4 Plant in Miami, Plant Start-Up?

5 A. Uh-huh.

6 Q. Correct?

7 A. Yeah.

8 Q. You had seen this?

9 A. I had, I had seen a version or some variant
10 of it. I don't know that I had seen this exact
11 document. Excuse me.

12 Q. Do you have a reason to believe that there
13 was some other version of it?

14 A. Well, all of the documents kind of had the
15 same template and form. And, you know, every, every
16 time that Mr. Penon would submit a document they were,
17 they were kind of similar. So he would repeat the
18 diagrams and, you know, keep sending them in. So I
19 couldn't say if I saw this one or if I saw, you know,
20 the one that was submitted in April or whatever, but one
21 of them. It was very similar to this, yes.

22 Q. Well, you were, you were saying you, you
23 know, as of July 18th when you had that meeting with
24 Barry West, you had no idea where the or how the test
25 was set up or how the plant was set up?

1 A. No, I didn't say I had no -- what I said was
2 I had no idea where the volume flow meter was and if
3 there was a steam flow meter. This is the document that
4 subsequently, and I believe it was actually when
5 Mr. Penon sent this to me that I found the flow meter
6 Adaptor M, MWN130-80NC. Had I seen this before, that
7 would have been a great question to ask, you know --

8 Q. So why --

9 A. -- what is this.

10 Q. Why is it that Industrial Heat didn't show
11 that to you before?

12 A. I have no idea.

13 Q. They had it --

14 A. Yeah.

15 Q. -- clearly.

16 A. I mean it may have been one of the documents
17 that was provided in the, you know, in the information I
18 had, but I did not notice that.

19 Q. Turning to the second page of this document,
20 bates number IH00011097, not only does it identify the
21 flow meter down at the bottom, does it not?

22 A. It does, yeah.

23 Q. But it also points to the location of the
24 flow meter. Do you see that in the diagram above?

25 A. Yeah. That's weird. I actually have never

1 noticed that before.

2 Q. So had, had you wanted to, you could have
3 taken a look at that and called Barry West and said,
4 hey, look on the pipe, but you didn't?

5 A. No. We did not.

6 Q. And in fact, if you turn to the next page of
7 this document, it lists all the other equipment that was
8 being used, correct?

9 A. Yeah. And this is really where we started to
10 have other issues. For example, the digital manometer,
11 Kelly -- or Keller, Type LEO 1, that's the device that
12 only has an operational temperature up to 50 degrees
13 Celsius on the steam line. And furthermore, when you go
14 down, this document was dated -- let me see what the
15 date is on the front of this. Oh, it's not dated. Do
16 we, do we know what the date is on this document?

17 Q. E-mailed 5/28/15.

18 A. No, no, no. I'm saying when the, the
19 document was actually produced to Industrial Heat
20 originally.

21 Q. 5 --

22 A. Oh, there it is. I'm sorry. There it is.
23 Is it -- right here, 2/10/2015. Now, if you look down
24 here under identification of electrical measurement
25 equipment and you look down there on the power analyzer,

1 the thing that struck me was that the calibration date
2 for the power analyzer is April 20, 2015. Fully three
3 months after this document was supposedly produced.

4 Q. Actually, sir, I want you to look at
5 something. This is the plant start-up document,
6 correct?

7 A. Yeah. That's what I just asked, was --

8 Q. Yeah. And look, plant start-up document was
9 e-mailed 5/28/2015.

10 A. 5?

11 Q. Oh, and -- 5/28/2015.

12 A. So --

13 Q. Now --

14 A. -- test plan, oh, I'm sorry. This is out of
15 order.

16 Q. Sir, and I --

17 A. I'm sorry.

18 Q. I want to point something out to you. You
19 had described this system where there were, for testing
20 equipment where there were two, I think you said with
21 a --

22 A. Redundant.

23 Q. -- connection or redundant?

24 A. Yeah.

25 Q. There's two power analyzers here, aren't

1 there?

2 **A. That's correct.**

3 Q. Yeah. The, the first one has a issue date of
4 1/28/15, does it not?

5 **A. It does.**

6 Q. Okay. And one with a later issue date,
7 because they're good for a year, correct?

8 **A. That's correct.**

9 Q. And so that's what you would want to see,
10 correct?

11 **A. Absolutely.**

12 Q. All right. So that, that's --

13 **A. So --**

14 Q. -- what you would want to do?

15 **A. Absolutely.**

16 Q. Perfect.

17 **A. So this -- where is the test plan? This, is**
18 **this just out of order?**

19 Q. It may be.

20 **A. Okay. Let me just take a quick look.**

21 **Because what we noticed was that, in fact, in the**
22 **documents they showed an earlier document that there**
23 **were meters, and we were questioning how could you have**
24 **a meter in an earlier document. Boy, where is that?**
25 **That's second step. Maybe it's further back. Test**

1 plan.

2 Q. Yes, it is document number 00011128.

3 A. There it is, yes. So if you look at this, in
4 this plan they indicate the first unit and no second
5 unit. And then if you go back and we just compare --

6 Q. Where are you looking, sir?

7 A. I'm sorry. I'm looking at IH00011129. And
8 I'm comparing -- which was the test plan. I believe
9 this was the document from February of 2015.

10 Q. Uh-huh. Yeah.

11 A. So if we look at this and we start to compare
12 the sensors, we have a flow meter, which in this one is,
13 the detailed information is not provided. So we had no
14 means in February of 2015, which I was not in the
15 company at this point, to know what the flow meter was.

16 Q. Did they ever ask for the flow meter
17 information?

18 A. I have --

19 Q. And by the way --

20 A. -- no idea.

21 MR. LOMAX: Objection to the form of the
22 question.

23 A. Okay. I have no idea.

24 Q. Okay. And it says test report number 0120-15
25 dated. So that, that's a defined piece of equipment.

1 Did they ever ask for that? Do you know if they had
2 that report number?

3 A. I have no idea what they asked for.

4 Q. Do you know if --

5 A. But I know that I saw this, and I did not
6 know what this was, and I never saw a test report.

7 Q. Do you know if they had the test report, sir?

8 A. I do not.

9 Q. Okay. So did you ask, did you ask Mr. Vaughn
10 or Mr. Darden --

11 A. Absolutely.

12 Q. -- for that test report?

13 A. Yes, I did.

14 Q. Okay.

15 A. I asked them for all documentation related to
16 this test.

17 Q. Okay.

18 A. And if we just keep going down and we look at
19 the power analyzer, so what we see is there is a
20 PCE-830, calibration certificate 05/18/15.

21 Q. Yeah.

22 A. That's the first one.

23 Q. Yes, sir.

24 A. So at some point in, along the way they
25 switched power analyzers, which actually, if they were

1 running them redundantly, that would have been fabulous,
2 so they would have had that data. But, in fact, what
3 happened was at some point along the way in the time
4 frame of about April they removed one power meter and
5 substituted the other one. I suspect, and I'm not
6 suggesting that something nefarious or anything bad
7 happened, I suspect that the unit failed and so they
8 replaced it, which is fine.

9 Q. Hold on.

10 A. Okay.

11 Q. We discussed this system, this duplicative
12 system where you have two meters.

13 A. Absolutely.

14 Q. And you said, your words, that you would
15 remove the one before or as it expires, the
16 certification --

17 A. Yeah.

18 Q. -- and the other one would remain in place so
19 that you had continuous monitoring?

20 A. Absolutely.

21 Q. And yet you flaw -- now --

22 A. I'm not flawing.

23 Q. Hold, hold on. Dr. Penon had indicated in a
24 test plan, which is before the test started, February
25 2015, that he had the initial calibration certificate

1 0518-15 dated January 28, 2015, for the test meter,
2 correct?

3 **A. That's right.**

4 Q. Okay. So that was the one -- but mind you,
5 if the test started in February, that --

6 **A. It would have expired.**

7 Q. -- would have expired --

8 **A. Absolutely.**

9 Q. -- during the course of the test?

10 **A. Absolutely.**

11 Q. Okay. So it's odd to you that there was a
12 second test meter that he got certified in, what is it,
13 April of 2015? If you look at --

14 **A. Yeah, about April. April 20th.**

15 Q. April 20, 2015, so there would be no time
16 period where there was an expired certification?

17 **A. No, no, no. What I'm -- I am not saying that**
18 **that is bad practice. What I'm saying is that this**
19 **meter that he identified with the calibration was not on**
20 **the premise. I, that was not available to me at the end**
21 **of the test. When I took pictures of all these**
22 **instruments, it was only the second one.**

23 Q. Well, do you know if it was being sent back
24 for recertification since it had expired by that point
25 in time?

1 A. I have no idea what it was.

2 Q. Or for --

3 A. It was not on the facility. It was not at
4 the facility.

5 Q. Or for testing?

6 A. I have no idea what their plan was.

7 Q. Do you know if that equipment was ever
8 certified?

9 A. What equipment?

10 Q. The equipment used for this test, any of it.

11 A. You know what, this week there were a bunch
12 of documents that came through, but they were all, some
13 of them were in Italian, so I didn't have a chance to
14 review them.

15 Q. Okay.

16 A. But just to continue here. If we look at
17 this, the other sensors that are reported here in the
18 plant start-up are still different than the sensors that
19 are shown here in this list. So we have a HT --
20 HSTC-TT-TI-24S. That's there. Okay. That's a digital
21 thermometer.

22 Q. Okay.

23 A. From Omega. And we have a TC-T-NPT-U-72-SMP,
24 which is the sensor, which is not identified here.

25 Q. I believe it is.

1 A. I'm sorry. Actually down below it is. If
2 you look at the, the TU-T-NTP-U-72, that is over here on
3 the Omega steam pressure measurement.

4 Q. Yeah.

5 A. I'm sorry, steam temperature measurement.
6 And then we look for the Keller LEO 1 steam pressure.

7 Q. Where do you see the Keller LEO 1?

8 A. In the plant start-up.

9 Q. Okay.

10 A. That's the pressure sensor that Mr. Penon
11 indicated was used for making pressure measurements.

12 Q. I'm sorry.

13 A. I'm sorry. Yeah, we're crossing documents
14 here, so.

15 MR. LOMAX: It's probably better if you
16 reference the page.

17 A. I'm sorry. Let me reference the page. So on
18 IH00011098, the digital, the third bullet down is
19 digital manometer Keller --

20 Q. Okay.

21 A. -- Type LEO 1 with a certificate. And the
22 issue date, interesting enough, a full month after the
23 test started they added on another sensor, which is
24 fine. There's a redundancy there. So to your point,
25 that's a good thing. The only problem is that it's not

1 **appropriate for this application.**

2 Q. The, the second one?

3 A. **The digital manometer, that's correct.**

4 Q. Okay. But the first one was?

5 A. **Yeah. We don't know where the -- this is the**
6 **device that Dr. Penon indicated was used to capture the**
7 **pressure data for the system. So I'm not saying that he**
8 **was lying or misleading me or anything else. I'm just**
9 **saying that these sensors were not appropriately**
10 **selected. They were not appropriately sized, that**
11 **collectively some of these sensors were not**
12 **appropriately selected or sized for this system.**

13 Q. Sir, and I understand that you take issue
14 with the test plan in this case.

15 A. **Yes.**

16 Q. I understand that and it certainly could have
17 been more robust, but this was no secret. This is
18 information that --

19 A. **Absolutely.**

20 Q. -- Industrial Heat had?

21 A. **Absolutely.**

22 Q. Okay.

23 A. **I, I fault everybody. I think it was poor**
24 **engineering and just overall an inappropriate way to do**
25 **it.**

1 Q. We can agree on something.

2 A. **That's, that's for sure.**

3 Q. Fault everybody. All right. Do you feel
4 that Mr. Penon has hidden any information from you?

5 A. **No.**

6 Q. Okay. Do you --

7 A. **I think he's been quite transparent.**

8 Q. Do you feel Mr. Fabiani has hidden any
9 information from you?

10 A. **Yes, I do.**

11 Q. What information?

12 A. **Well, he committed to providing us data that**
13 **he said he had encrypted and stored on a server in**
14 **Russia, and he committed to providing us with a final**
15 **report. And so I feel that he was not being transparent**
16 **with us in providing us the information in a timely way.**

17 Q. Has he provided those now?

18 A. **I don't know. I, I'm, really I'm not -- I**
19 **saw --**

20 MR. LOMAX: Objection to --

21 A. **I'm not sure what they provided.**

22 MR. LOMAX: -- to the extent it gets in to
23 communications with counsel.

24 Q. You have never seen them?

25 A. **I have seen -- I have not reviewed the**

1 detailed data. I have seen a couple of files. I
2 haven't reviewed them, but I have never seen a final
3 report by Mr. Fabiani.

4 Q. Was he engaged to do a final report?

5 A. Yes. And he said he was producing a final
6 report. He had it almost complete. He was doing a
7 final few things, and he was going to provide that to us
8 in about March of 2016. I gotta get my years right.

9 Q. In the work that you do, sir, when the new
10 client comes in, do you tell them how much the project
11 is going to cost?

12 A. Uh-huh.

13 Q. Do they pay you something before you begin
14 work?

15 A. No.

16 Q. They don't?

17 A. No.

18 Q. It's a bill as you go?

19 A. Most of the work that I do is with Department
20 of Defense, and they have very rigorous accounting and
21 payments terms.

22 Q. Okay.

23 A. In almost every, in almost every aspect.

24 Q. And you're pretty secure you're going to get
25 paid. It's the government, right?

1 **A. Yeah.**

2 Q. It may not be fast, but it's --

3 **A. Yeah.**

4 Q. -- going to come.

5 **A. Sometimes they're fast, yeah. And I often**
6 **work for other companies, and most of the time the, the**
7 **payment terms are paid when paid or paid within a**
8 **certain number of days when paid.**

9 Q. Okay. Have you ever worked for a customer or
10 a client that you did work for and then they didn't pay
11 you?

12 **A. Yes.**

13 Q. Okay. Did you continue doing work for them?

14 **A. In some cases, yes.**

15 Q. And others no, right?

16 **A. In others no, yes.**

17 Q. Okay. And that's because they hadn't paid
18 you?

19 **A. Yeah. It depends on the circumstances. It**
20 **depends on who it is and what the circumstances are**
21 **relative to the ultimate customer.**

22 Q. You can understand why somebody wouldn't want
23 to do more work for you if you hadn't paid, right?

24 **A. I would think that would be reasonable.**

25 Q. Now, Mr. Penon, you, you sent him a series of

1 questions I guess or issues with the test data that you
2 observed; is that correct?

3 **A. Yes.**

4 Q. How did he respond to you?

5 **A. My recollection is that I sent that data to**
6 **him before the final report was issued. And he did, I**
7 **don't believe he responded to my questions, but then he**
8 **issued the final report just some days later. Maybe, I**
9 **don't know, maybe it was a week or two later. I don't**
10 **recall exact dates.**

11 Q. Do you recall him telling anyone at
12 Industrial Heat or yourself that he has been available
13 to Industrial Heat and the Leonardo Corporation to
14 answer questions throughout the course of the test and
15 at the end of the validation; in fact, he answered your
16 questions and that the final report had concluded his
17 work?

18 MR. LOMAX: Objection to the form of the
19 question.

20 **A. It sounds familiar, yes.**

21 Q. Okay. Do you know if he was engaged or
22 offered more money to answer additional questions that
23 you had?

24 **A. I have no idea.**

25 Q. Okay. Sir, I'm going to kind of jump a big

1 step back from where we've been at for a minute.

2 A. Okay.

3 Q. In the beginning of this deposition you
4 mentioned two publications that were part of your
5 masters program?

6 A. Yes.

7 Q. But you don't recall the names of those right
8 now?

9 A. No, I don't.

10 Q. Okay. Have you published anything else
11 within the last 15 years?

12 A. Yes. There were publications associated with
13 my PhD research. I have presented data which was
14 ultimately published to multiple NDIA, National Defense
15 Industry Association, conferences and proceedings on --
16 slow down?

17 Q. I'm sorry. You presented data to them, or
18 you formed a publication? I --

19 A. I --

20 Q. What I'm looking for is any document that's
21 going to list you as the author.

22 A. So I, I was requested to present to a
23 conference proceeding, and then subsequently they
24 produced those. So they were NDIA presentations and
25 numerous technical reports and final reports for

1 government purposes, which are published inside of the
2 government, but usually confidential information.

3 Q. Okay. What were those reports on?

4 A. Virtually every form of system or research
5 activity that we had completed.

6 Q. Can you give me the names of any of those
7 reports?

8 A. I could give you, yeah, many. I mean the
9 final reports for, boy, there are probably 50 --

10 Q. Okay.

11 A. -- that were published to the government.

12 Q. Are any of these available for me to see, or
13 do you have copies of them?

14 A. I think actually if you search the, the web
15 under my name as a principal investigator on SBIR final
16 reports, I think a lot of that data is actually
17 published.

18 Q. Do you maintain copies of those?

19 A. Usually, no. Usually, they're proprietary to
20 the company that I was working for, and so I do not
21 maintain copies of those.

22 Q. Now, you didn't provide us a list of all your
23 publications within the last ten years, have you?

24 A. I have not, no.

25 Q. Okay. Are any of those publications germane

1 to your opinions in this case?

2 A. I don't know. It's hard to, it's hard to
3 say. I'm, I would have to go back and review everything
4 to find out.

5 Q. Sitting here today you can't think of one
6 that is?

7 A. I can't think of anything that I would.

8 Q. Okay. What about any publications prior to
9 the last ten years? Would any of those be germane to
10 the work that you've done in this case?

11 A. Yes.

12 Q. Which ones?

13 A. When I, as I described, when, when I was at
14 General Motors working on the steam plant, that program
15 was actually a cost savings program. And what was
16 happening, briefly, was that the steam plant was
17 basically pouring open steam into the heat exchangers of
18 a large facility, about a million-square-foot factory.
19 So I prepared an analysis and came up with an automated
20 technique to modulate those, the steam plant to reduce
21 the, the energy consumption.

22 At the end of that project I turned that all
23 over to another engineer who actually jointly, with my
24 name on it, published it. And it, it was published. I
25 believe it was ASME. It's been a long time ago. And

1 actually ended up saving, the savings was millions of
2 dollars inside of the steam plant at that facility, and
3 it was, that engineer actually received an award for it
4 based on the work that I had done previously.

5 Q. Okay. So do you know the name of that
6 publication?

7 A. I do not. It's been --

8 Q. Do you have a copy of it?

9 A. No.

10 Q. Okay.

11 A. It's been many, many years.

12 Q. Have any of your documents or reports that
13 you've published been peer reviewed?

14 A. Yes.

15 Q. Which ones?

16 A. My masters and PhD work.

17 Q. Now, you didn't do a dissertation in your
18 PhD, did you?

19 A. No. My dissertation was about half complete,
20 and then I went to work.

21 Q. So tell me about the PhD publications that
22 were peer reviewed.

23 A. So I published an article in Physics of
24 Fluids, I don't remember if it was A or B, and it was a
25 peer-reviewed journal article on actually sub-grid scale

1 physics modeling. It was actually the basis of my PhD
2 dissertation.

3 Q. Okay. Who was it reviewed by?

4 A. The editorial board for either Physics A or
5 Physics B.

6 Q. Okay. So it was reviewed by an editorial
7 board, but I'm talking about peer review from other --

8 A. No, no. So when you submit an article for, a
9 technical article for review, it goes to the editorial
10 board, and the editorial board sends it out to peers for
11 independent review. And then they either approve or
12 require changes, and then it goes back to the editorial
13 board, and then comments or concerns come back to you.
14 So you submit it to the editorial board, and they get it
15 out for review, and then it comes back.

16 Q. Okay. Do you know who reviewed it --

17 A. No.

18 Q. -- who that -- okay. Were any of, was that
19 particular publication germane to the work you've done
20 in this case?

21 A. No.

22 Q. Have you retained any of the drafts of these
23 reports?

24 A. The, my publications?

25 Q. Yes.

1 A. No. They're available in the public. You
2 can find them online.

3 Q. Sir, anything in any of your publications
4 that you now want to change or revise?

5 A. Not that I'm aware of. It's been many, many
6 years.

7 THE VIDEOGRAPHER: Seven minutes.

8 Q. Do you know if your publications have ever
9 been cited?

10 A. You know, I had to prepare a CV for an Army
11 program just a few weeks ago, and I was going back
12 cataloging some of that, and I was surprised. There
13 were a number of citations on some of the early work
14 that I had done. Yes.

15 Q. Who cited it?

16 A. Other engineers in this space of fluid
17 mechanics and turbulence research.

18 Q. Who?

19 A. Oh, I don't know by name. There were
20 numerous citations. If you go to the citation index, it
21 will point you to all of the citations.

22 Q. What citation index?

23 A. If you go online, you can go to Google and
24 you can search for specific scholar articles. And then
25 when you go to the links, they will show you what the

1 cross-reference citations are, how many people cite the
2 documents, and then it links to those documents.

3 Q. Okay. I'm, I'm looking for documents that
4 cite to you. How am I going to find those?

5 A. You can go to, search for my publications,
6 and then in that you can, it will show you what the
7 citations are.

8 Q. Okay. But you don't maintain copies of
9 those?

10 A. No.

11 Q. All right.

12 A. No.

13 Q. Are you familiar with any publications
14 expressing contrary views to your publications?

15 A. Not that I'm aware of.

16 Q. Has anyone requested the right to reprint
17 your publication?

18 A. Not that I'm aware of.

19 Q. Did you ever receive any compensation for
20 your publications?

21 A. No.

22 Q. Except perhaps the work you did at GM?

23 A. Yeah -- no. I, I mean my, I was an engineer.
24 I was being paid for my work at General Motors. I was
25 being paid as a researcher at the universities. You

1 know, the publications are just a criteria that you need
2 to publish to be able to continue on in these spaces.

3 Q. Okay. Have you ever appeared as an expert in
4 any cases where you did not wind up testifying?

5 A. No.

6 Q. Have you ever offered expert opinions to, in
7 respect to any litigation before?

8 A. No. I don't know if the deposition that I
9 did back in the late '90s, I don't know if that would be
10 considered expert or not. I just simply don't know.
11 They were asking me about my opinions on these various
12 products.

13 Q. Okay.

14 A. So I don't, I don't know if that's expert or
15 not.

16 Q. Have you been retained as an expert in this
17 case?

18 A. Well, that's hard to say. I am, I was asked
19 to, to do this deposition and to support, and in my
20 severance package it indicates that I have to support
21 them at, at their request. So I would guess that that's
22 probably yes, but I don't really understand the
23 technical delineation of that. I am doing it. I'm
24 billing them for my time.

25 Q. Okay. Who contacted you to do this work?

1 A. You did.

2 Q. I asked you to do this work?

3 A. No, no, no. You sent me a subpoena.

4 Q. Yes. That's for your deposition.

5 A. Right.

6 Q. I'm talking about the work that you're doing
7 on the case.

8 A. Oh, the work that I'm doing on the case has
9 strictly been to review and kind of understand what's
10 happening and provide, I provided some simulation work
11 about nine months ago, and the file formats were
12 corrupt. They couldn't read the file formats, so I
13 reran those and recreated the files for them. So I
14 would say it's just that work, and I'm being paid by
15 Industrial Heat as a consultant on an hourly basis.

16 Q. When did you send them the non-corrupt files?

17 A. I sent them files, I don't know, a week ago,
18 but it turns out that those files were also corrupt.
19 And so yesterday I went through and tried to figure out
20 why the -- it was a video encoder problem. So yesterday
21 I went through and re-created the, the files and tested
22 them yet again and then made sure that they could test
23 them and they could see them, and in addition to that I
24 took screen captures of it.

25 Q. Is there any reason why we would not have

1 been produced those files to your knowledge?

2 **A. I'm sorry. Say that again.**

3 Q. Do you have any reason to your knowledge why
4 we would not have been produced those tests or files?

5 MR. LOMAX: Objection to the form of the
6 question on, on the basis of any conversations
7 you've had with counsel.

8 **A. I don't know who produces them. I just**
9 **provided them to the attorneys.**

10 Q. Okay. So they've had them for some time?

11 **A. 24 hours --**

12 Q. Well, but --

13 **A. Less than 24 hours.**

14 Q. But they had some version that was
15 corrupted --

16 **A. Yeah, they were --**

17 Q. -- before?

18 **A. Yeah, the file was corrupted, yeah. And when**
19 **they went to look at them and to produce them, I think**
20 **it was a problem, and then they got back to me and I**
21 **tried to --**

22 MR. LOMAX: That's --

23 **A. Anyway.**

24 Q. So --

25 **A. Okay.**

1 MR. ANNESSER: He can continue.

2 MR. LOMAX: Not if he's talking about
3 communications with counsel.

4 MR. ANNESSER: He did not speak of
5 communications with counsel.

6 MR. LOMAX: But if he is --

7 MR. ANNESSER: All right. So --

8 MR. LOMAX: -- I'm asking him not to.

9 **A. Okay.**

10 Q. Okay. Sir, did you ever show anyone at
11 Industrial Heat these tests or modules or simulations
12 that you've done?

13 **A. Yes.**

14 Q. When?

15 **A. The first time that I really had enough time**
16 **to kind of run them and look at them and kind of digest**
17 **them, probably August or September of 2016.**

18 Q. Okay. So Industrial Heat had them at that
19 point in time?

20 **A. They had, they had versions of them, yes.**

21 Q. Okay. Any reason why they would not have
22 produced them to us to your knowledge?

23 **A. I, I don't know.**

24 Q. Okay. What is your understanding of the
25 assignment that you have been given in this case? What,

1 what have they asked you to do?

2 A. To --

3 MR. LOMAX: Objection.

4 A. To be deposed.

5 MR. LOMAX: When, I'm sorry. When you say
6 they?

7 Q. Industrial Heat or its representatives or,
8 for that matter, counsel if they're the ones that have
9 tasked you in this case.

10 A. Yeah, so nobody's, interestingly enough after
11 I, after the company closed down and I left, I probably
12 had a few communications, maybe a very minimal number of
13 communications in November and December. In January I
14 think I was getting a few questions here and there. I
15 think a total number of hours was maybe on the order of
16 eight or ten hours. And then this month, to get all
17 this data ready to, for the deposition and to understand
18 the deposition and to actually sit in to listen on a
19 deposition, it's been more hours, but interestingly
20 enough nobody from Industrial Heat has really given me
21 any direction on that. It's just, hey --

22 Q. Has --

23 A. -- can you do it.

24 Q. Have they asked you to opine to any matters
25 in this case?

1 **A. No, they have not.**

2 Q. Okay. Have you formed any opinions in this
3 case?

4 **A. Yes. Yes.**

5 Q. But nobody asked you to do that?

6 MR. LOMAX: Objection. Again, this is,
7 you're asking him about some communications --

8 MR. ANNESSER: Mr. Lomax, no, no. If he's
9 been engaged as an expert to testify in this case,
10 I'm entitled to know what he's been asked to do.

11 MR. LOMAX: I understand. I'm simply trying
12 to prevent disclosures of privileged information.

13 MR. ANNESSER: Well, he's allowed to testify
14 to this. So this is not privileged information.

15 **A. Can, can you repeat the question?**

16 Q. Have you been asked to do any work in this
17 matter, prepare any opinions in this matter by anyone?

18 **A. Yes.**

19 Q. Who?

20 **A. Counsel.**

21 Q. Okay. And what opinions were you asked to
22 prepare? What was your task given to you by counsel?

23 **A. So I was asked to review the data from before**
24 **and to provide information on the flow meter analysis**
25 **that we had conducted at Industrial Heat, number one, on**

1 the simulations we had conducted at Industrial Heat in
2 August, September. And I don't know. Those are
3 probably the two major areas.

4 Q. When did you do a flow meter analysis?

5 A. When we came --

6 MR. LOMAX: Objection, again.

7 MR. ANNESSER: What's your objection?

8 MR. LOMAX: It's attorney-client
9 communications --

10 MR. ANNESSER: When he did --

11 MR. LOMAX: -- attorney work product.

12 MR. ANNESSER: -- a flow meter analysis?

13 MR. LOMAX: You're getting into issues that
14 involve his work with the attorneys in the case.

15 BY MR. ANNESSER:

16 Q. Okay. When --

17 A. We did that, we did the flow meter analysis
18 for counsel.

19 Q. When did you do that analysis?

20 A. We bought four of the identical flow meters
21 in 2016 I would say, just after the testing, but it took
22 forever to get them here because they were coming from
23 Poland. And then we did testing I would say through the
24 summer and into the fall.

25 Q. The Summer of 2000 --

1 **A. '16.**

2 Q. -- '16?

3 **A. And into the fall.**

4 MR. ANNESSER: All right.

5 THE VIDEOGRAPHER: We're off the record at
6 1:15 p.m.

7 (Recess taken 1:15 p.m. to 2:08 p.m.)

8 THE VIDEOGRAPHER: We are back on the record
9 at 2:08 p.m.

10 MR. ANNESSER: Sir, I remind you that you're
11 still under oath.

12 THE VIDEOGRAPHER: John, counsel, mic up for
13 me.

14 BY MR. ANNESSER:

15 Q. Helps if I put the mic on. I remind you
16 you're still under oath. During the lunch break did you
17 speak to anyone, speak with anyone regarding the subject
18 matter of your time today?

19 **A. Yes.**

20 Q. Who did you speak with?

21 **A. Counsel.**

22 Q. And give him a moment to respond, because he
23 is certainly going to object. What did you speak about?

24 MR. LOMAX: Objection. I instruct you not to
25 answer about any, the discussions with counsel.

1 Q. Are you going to follow his instruction?

2 A. I am going to follow his instruction.

3 Q. Okay. Now, before we left for lunch we were
4 discussing your testing of flow meters.

5 A. Yes.

6 Q. And you said it, it spanned in 2016 between
7 the spring and the fall?

8 A. Yeah. We ordered devices in the spring once
9 we got back. It took a long time to get them in, and
10 then we started testing I think in summer into the fall.

11 Q. How did you test them?

12 A. We emulated the slope and the reach of the
13 configuration that we saw in the plant. And we, we then
14 took the flow meter, put it into a system. We put a, a
15 viewing tube in it so we could see the flow. And, and
16 then flowed water at fixed rates through a pumping
17 system using another separate flow meter through the
18 system and collected data for one to two hours at a
19 time.

20 Q. How many tests did you do?

21 A. I would guess we did, I don't know, 12 or 14
22 tests.

23 Q. On each one of the flow meters?

24 A. No. We tested I believe two of the four that
25 we bought.

1 Q. What type of flow meter did you use to
2 measure the amount going into this test?

3 A. We bought a calibrated flow meter from a, a
4 company.

5 Q. What type?

6 A. I would have to look at the model number. I
7 don't have the data.

8 Q. Do you know the manufacturer?

9 A. I do not. Not off the top of my head.

10 Q. Did you have, before you began doing that
11 testing did you have any preconceived beliefs regarding
12 the propriety of Dr. Penon's report?

13 A. The, I'm sorry, could you explain? The
14 propriety?

15 Q. The propriety. Whether his report was
16 accurate, proper.

17 A. Yeah. I, I had reservations about the, the
18 use, the instrumentation that was used.

19 Q. You had reservations or you had formed an
20 opinion at that point in time?

21 A. I was, yeah, I had formed an opinion about
22 the flow meter based on the numbers that were presented
23 in the final report.

24 Q. At what time?

25 A. After I saw the final report. Probably even

1 before I saw the final report after the information came
2 here.

3 Q. Now, the reports you, you referred to
4 Exhibit --

5 A. Exhibit --

6 Q. -- Number 8?

7 A. Yes.

8 Q. Those reports had been provided to Industrial
9 Heat before. He was just sending them to you again?

10 A. May, may very well have been.

11 Q. Okay. Did you ever see them before that
12 time?

13 A. I don't know which of these. I've certainly
14 seen parts of these. Yeah, I don't know if I've seen
15 them all. I may have seen them all. I may have only
16 seen a subset of them.

17 Q. And I'm sorry, sir. The date of that e-mail
18 was?

19 A. The e-mail from Fabio Penon was
20 February 23rd.

21 Q. When did you formulate an opinion as to the
22 accuracy of the Penon reports?

23 A. I formulated an opinion about the accuracy of
24 the flow meter on the 16th or, I'm sorry, not the 16th.
25 The 17th of February, the second day of testing when we

1 were at the airport.

2 Q. You formed an opinion right there on the
3 spot?

4 A. Yeah. I looked, I, I was surprised by the
5 flow meter itself. And so we took pictures of the flow
6 meter and its certification label.

7 Q. Sure.

8 A. And when we went to the airport, I looked it
9 up and I downloaded the, the data sheet from the
10 manufacturer. And I looked at it, and it sure enough
11 said that the minimum flow rate was 1.6 meters cubed per
12 hour. And I was, did the math, and I was like, you
13 know, all these measurements are below the minimum
14 operating flow rate of the meter. So I was concerned at
15 that point and saying this is a problem.

16 Q. Well, there's a difference between being
17 concerned and forming an opinion that the entire test
18 was bogus. Would you agree?

19 A. Yeah, I didn't say the entire test was bogus.
20 I was specifically talking about the, the, the validity
21 of the flow meter.

22 Q. Do you believe the entire test was bogus?

23 A. How do you mean -- what does bogus mean?

24 Q. I don't know. Did you think the whole thing
25 was either fraudulent or so poorly done that it couldn't

1 possibly give an accurate result?

2 A. I think that the, the test, inclusive of
3 Industrial Heat and Leonardo Corporation, was so poorly
4 designed that you couldn't get an accurate result from
5 it, yes.

6 Q. Okay. Did you blame that on one side or
7 another?

8 A. At that time I was probably frustrated and
9 concerned about Leonardo Corporation's position. I was
10 very frustrated that we couldn't see the full system
11 when I was at the factory, but as I went through this, I
12 feel like all parties are complicit in this mess. And
13 I've said that, too.

14 Q. Because of the test plan?

15 A. Because of the overall construction of the
16 system and how it was put together and how it was
17 instrumented and how it was operated, and the lack of my
18 ability to actually get in there and see things.

19 Q. Okay. Now, so as of March 2016 you had not
20 done the water flow analysis yet to see if there would
21 actually be a higher error rate with a decreased water
22 flow?

23 A. Well, we did not do flow analysis to
24 determine a higher error rate or not. What we did was
25 we looked at the flow meter from what happens when you

1 operate it outside of a valid regime, right. If you're
2 operating outside of the defined operating parameters,
3 then we just wanted to find out what would be happening.
4 Why would, why did we see the corrosion line inside the
5 flow meter? Why did these things exist? I'm trying to
6 understand what the test was telling us.

7 Q. Okay. And we'll get into that in a little
8 bit more detail, but at that time you had already
9 determined that the report was, Penon's report was
10 completely bogus?

11 A. At which, which time?

12 Q. March 29, 2016, prior to undertaking the
13 water flow meter analysis?

14 A. Yeah. I, well, I had res, I would say I had
15 strong reservations about the validity of the flow meter
16 data.

17 Q. In fact, you called it bogus?

18 A. Yeah, possibly.

19 (Whereupon, Exhibit 9 was marked for
20 identification.)

21 Q. You did. I'm going to show you a document
22 we'll mark as Exhibit 9, bates stamped IH00087309. You
23 know what, this appears to be different than the one
24 that I've got here. Hold on. Let me take that back.

25 A. Oh, I'm sorry.

1 Q. I may have marked the wrong document. No,
2 strangely you've got the right one. Just have one
3 that's wrong. Heads will roll at the office.

4 Sir, looking at the e-mail chain here on the
5 first page, this is from Brian McLaughlin. Who is that?

6 A. I believe he was a PR company relationship
7 person.

8 Q. And he sends you an e-mail that you must have
9 been copied on. He says, "Thanks, Dewey. Do we
10 actually have the report?" Referring to the Penon final
11 report?

12 A. I, I don't know, down below. I presume -- do
13 we have the report, so that was from -- was I included
14 on this e-mail?

15 Q. Well, presumptively. You responded to it.

16 A. Yes. Yeah, maybe.

17 Q. And your response to his question, "Do we
18 actually have the report," you say, "Yes, and it is
19 completely bogus" --

20 A. Yes.

21 Q. -- "Joe."

22 A. Uh-huh.

23 Q. So at that point in time you had determined
24 it was bogus irrespective of any testing you had done or
25 not done at that point?

1 A. Yes. So at that time I felt very strongly
2 that the flow meter data was bogus.

3 Q. Now, don't you believe, sir, that when you're
4 doing testing, specifically in an expert capacity, that
5 you should remain impartial and rely solely on what the
6 tests show as opposed to your emotions?

7 A. Well, I was actually looking at the results
8 of the test. So I was given a set of results and looked
9 at that. And there were, there's really a major concern
10 in that the flow meter data was astoundingly
11 inconsistent. Over many, many days, had the same exact
12 value.

13 And when you read the instruction manual from
14 the manufacturer, there's actually a series of separate
15 gauges that can give you tenths, hundredths, and
16 thousandths of the volume. And so whoever was making
17 the flow meter measurements was just looking at the
18 primary odometer type reading, the tumbler. And they
19 were not looking at the other parts to provide a more
20 detailed and more accurate data input.

21 So my concern was it's bogus because there
22 was an incomplete -- if somebody had actually measured
23 and looked at that, we would have been able, you
24 probably would have seen differentiation day to day,
25 which wasn't done, but it was still invalid because it

1 was below the minimum operating threshold for the flow
2 meter.

3 Q. Let's, let's talk about that for a moment.
4 What unit of measurement did the flow meter register?

5 A. Meters cubed per hour. No, actually that's
6 not true. The flow meter was an odometer type meter, so
7 what you had to do was you had to look at the number of
8 meter cubed that it, it produced. And then if you
9 looked at the subdials, you could see the fractional
10 component of that.

11 So what you would do is you would take a
12 measurement on, let's say the beginning of the day at
13 the same time. I think the measurements that Penon
14 produced said that the measurements were made at like
15 10:30 p.m. I don't have the report in front of me, but
16 let's say nominally 10:30 p.m. So day over day somebody
17 went back and made a measurement. They looked at those
18 numbers, documented those numbers, and provided them to
19 Mr. Penon.

20 Q. Okay. Now, cubic meters, okay, that's a,
21 that's a volume, correct?

22 A. It is, yes.

23 Q. Okay. How many kilograms are there in a
24 cubic meter?

25 A. It depends on the density, the temperature of

1 the fluid, but in general people estimate that one
2 kilogram of water is one liter. So a cubic meter would
3 have 1,000 kilograms.

4 Q. Okay. How many decimal points did the meter
5 go to?

6 A. The, the actual meter itself went to 10 --

7 Q. On what you can read on the display on the
8 meter. Okay.

9 A. Well, the upper meter reads meters cubed, but
10 it also has three subdials where you look through the,
11 the hole and you rotate it when you read it, and it
12 gives you tenths, hundredths, and thousandths.

13 Q. Okay. But when you're looking at just the
14 dial?

15 A. Uh-huh. If you, as I said, it's meters cubed
16 on the primary, but if you're reading the instrument --

17 Q. Are there any decimal points though? I mean
18 when I look at the meters cubed, does it say 34 meters
19 cubed or does it say 34.2 meters cubed?

20 A. No. When you use this type of meter, what
21 you do is you look at the meters cubed. And if you're
22 not using the digital interface, then you can remove
23 the, the magnetic shield and actually see all three
24 dials, but if you are using it -- what you do is you
25 look at the meters cubed, and then you rotate that and

1 you see tenths, hundredths, and thousandths. So if it
2 took you one second to read the three, it would take you
3 five seconds to properly read it with tenths,
4 hundredths, and thousandths as well.

5 Q. Okay. Is it possible that he read it by the
6 number of cubic meters per day?

7 MR. LOMAX: Objection to the form of the
8 question.

9 Q. Mr. Penon?

10 A. Who? Who? I'm sorry.

11 Q. Mr. Penon.

12 A. Read the?

13 Q. Or, or that it was read on a number of cubic
14 meters per day?

15 A. I, I, my understanding is that Dr. Penon was
16 only there on a few occasions.

17 Q. Okay.

18 A. So I don't know who read it.

19 Q. So you don't know if Dr. Penon rounded down,
20 rounded up?

21 A. I would think if it was a, a robust test, you
22 would actually use the instrument as it's designed to be
23 used, so you would look at the primary meter and you
24 would look at the tenths, hundredths, and thousandths.

25 Q. That's how you would do it?

1 **A. Well, I think any competent engineer would do**
2 **that, yes.**

3 **Q. But it's -- strike that.**

4 Do you have any information that there was
5 not that much water flowing through? And I want to, I'm
6 going to ask you to differentiate between your opinion
7 and fact. Okay. Certainly, if the amount of water
8 reported by Dr. Penon did flow through, then it would
9 register that on, properly on the, the water flow sensor
10 or the meter?

11 **A. Okay.**

12 **Q. Okay. And I understand you have an opinion**
13 **that you could also achieve that reading with a lower**
14 **number, with a lower amount of water?**

15 **A. My opinion is that you could actually achieve**
16 **a wide variety of different readings depending upon the**
17 **slope and the reach of the pipe. So if I'm looking at**
18 **that, my opinion is that the manufacturer sets the limit**
19 **for the minimum allowable flow rate, and we were below**
20 **that. And so, therefore, the measurements are invalid.**

21 **Q. Okay. When you fall below that rate what,**
22 **what margin of error do you have?**

23 **A. There is no defined margin of error for when**
24 **you fall below that because the, the system, if,**
25 **depending upon the slope and the reach of the pipe, you**

1 can vary that reading. So depending upon how the system
2 is exactly set up, it would give you a different value.

3 Q. What was the slope at the Doral facility?

4 A. So when we went back to measure it, while we
5 were there in February of 2000 -- February 16th and 17th
6 of 2016 --

7 Q. I'm, I'm going to ask you to wait for a
8 second.

9 A. Okay.

10 Q. I just asked a simple question. What was the
11 slope at the E-Cat facility?

12 A. I would have to look in my report to find
13 out.

14 Q. Do you have your report with you?

15 A. I do not.

16 Q. Did you prepare a report?

17 A. Yeah. I think there were, there was a report
18 that said this is what the slope and the reach was.

19 Q. When did you prepare that?

20 A. I prepared one at the end of our testing in
21 probably October, and then I revised it to make it
22 clearer about two weeks ago for my counsel.

23 MR. ANNESSER: Is there a reason we haven't
24 been provided a copy of his report?

25 MR. LOMAX: You haven't?

1 MR. ANNESSER: No.

2 MR. LOMAX: You never received a report?

3 MR. ANNESSER: We, we received an expert
4 disclosure. We've never gotten a copy of his
5 report.

6 MR. LOMAX: Oh. We can discuss.

7 MR. ANNESSER: I want to know why we haven't
8 gotten a copy of his report and I'm taking his
9 deposition today.

10 MR. LOMAX: You want to talk to me about
11 that, or do you want to --

12 MR. ANNESSER: Yeah, I want an answer.

13 MR. LOMAX: Am I on the -- I'm not sure how
14 this is supposed to work procedurally. You want to
15 ask me questions about his report?

16 MR. ANNESSER: Well, I would like to know why
17 I am, why I am now deposing a witness who has
18 prepared a report that I have never seen.

19 MR. LOMAX: It wasn't prepared for you.
20 There, there are different things that have been
21 prepared, and I've tried to draw this line.

22 Q. Okay. So that was prepared solely for
23 counsel, not for --

24 **A. I prepared that for counsel on their request.**

25 MR. ANNESSER: So you're not planning on

1 using that report in this case?

2 MR. LOMAX: I'm, he --

3 MR. ANNESSER: Do you plan on using that
4 report in this case? Do you plan on showing it to a
5 jury?

6 MR. LOMAX: If we do, we will provide it to
7 you.

8 MR. ANNESSER: No, that's --

9 MR. LOMAX: At this point --

10 MR. ANNESSER: -- that's unacceptable.

11 MR. LOMAX: At this point I am not prepared
12 to talk about what report of his we're going to
13 provide and what version it's going to be in. If we
14 do, we'll provide it to you.

15 MR. ANNESSER: So --

16 MR. LOMAX: As of right now, what he's
17 talking about is things that he did in anticipation
18 of litigation at our request. And I will again make
19 my objection to you asking him more things about
20 that.

21 MR. ANNESSER: Well, if you plan on
22 introducing a report prepared by him without having
23 provided it to us before his deposition with plenty
24 of time, then we're going to have other issues
25 before the court.

1 BY MR. ANNESSER:

2 Q. Sir, sitting here today you don't know what
3 the slope was?

4 A. I do not.

5 Q. Okay.

6 A. I can't recall.

7 Q. Now, did you do any testing with a different
8 slope?

9 A. We did testing with multiple slopes, yes.

10 Q. What slopes did you test?

11 A. They're in the report that I prepared for
12 counsel.

13 Q. You can't tell me what they are today?

14 A. It was a few inches difference, just very
15 subtle difference. I don't know what the numbers are
16 off the top of my head.

17 Q. Okay. What was the margin of error when you
18 put the water flow as purported, as reported by
19 Mr. Penon through at the slope that you say was measured
20 at the Doral facility?

21 A. A flow rate of approximately five liters per
22 minute corresponded to the flow rate that Mr. Penon
23 reported in his report.

24 Q. Five meters per minute?

25 A. Five liters.

1 Q. Liters.

2 A. I'm sorry, liters, yes.

3 Q. Okay. But you don't know what that slope is
4 today?

5 A. I, I don't know off the top of my head.

6 Q. And you say approximately five. Do you know
7 exactly?

8 A. No, I don't. I don't have that report in
9 front of me.

10 Q. So at five liters per minute you're talking
11 generally .3 cubic meters per hour?

12 A. I would have to do the arithmetic. .3? No,
13 no, that's not, that seems too low.

14 Q. Well, five liters a minute would be 300
15 liters per hour, right?

16 A. Do the arithmetic for you.

17 Q. 5, 5 times 60, 300. That's 300 liters per
18 hour?

19 MR. LOMAX: This is an exhibit.

20 A. Oh, sorry about that. Okay.

21 Q. You need a scratch piece of paper?

22 A. I can just do it on this.

23 Q. There you go.

24 A. Okay. Okay. 300 liters per hour.

25 Q. Okay. So 300 liters per hour. And you say

1 it gets the same result as what Engineer Penon was
2 reading?

3 A. Yes, but I will say that my purpose of doing
4 this test was to understand how the flow meter operated
5 when the pipe was less than full. The manufacturer
6 states in their instructions do not use this meter with
7 the pipe less than full. So the valid, the valid point
8 is 1.6 meters cubed per hour, is the minimum that the
9 device works at. And the record or all of the data that
10 I have seen was, I think almost every single day was
11 below that number of 1.6.

12 Q. See, this doesn't make sense to me, and I'm,
13 I want you to explain it.

14 A. Okay.

15 Q. So how does this meter work? There's a
16 turbine inside, correct?

17 A. There are two static stators that are flow
18 conditioning. There's a turbine that turns, and that
19 turbine turns and it creates a pulse on a magnetic
20 interface, and it turns the little gear mechanism to run
21 the meter. And so you can see the number of meters
22 cubed by if the pipe is full and that you're above the
23 minimum threshold; it will give you an accurate
24 measurement to whatever the type certification is. If
25 the pipe is not full, it will still turn the meter. In

1 fact, you can blow in a meter with just your breath and
2 have it turn. And so, and that would be no flow. It
3 would just be air flowing across it.

4 Q. Does this turbine turn in two directions?

5 A. Yes.

6 Q. Okay. So it, it can, it can turn either
7 clockwise or counterclockwise?

8 A. Depending which direction the flow was going,
9 yeah, but it would be, in a, in a sloped pipe like that,
10 it should only flow in one direction.

11 Q. In a sloped pipe it should flow in one
12 direction. Is that --

13 A. That's correct.

14 Q. -- clockwise or counterclockwise if you're
15 looking at the --

16 A. I would have to see the exact configuration
17 to, to say which way and which angle the veins are
18 sloped.

19 Q. How did you test it? How did you test the
20 meter?

21 A. As I said, we put in a pipe system, it, the
22 best we could emulate just to understand how, how this
23 device would work. We put in a system. We had a clear
24 section of pipe. We flowed water through at known
25 rates, and we allowed it to run for a long period of

1 time. We measured the, the, the numeric number, the
2 primary numeric number. We also had an electrical
3 interface on it so we could read the number of pulses
4 electronically. And then we were able to, to look at
5 the comparison between the flow rate that we had from
6 our calibrated sensor and this device to see what the
7 difference was.

8 Q. Did you ever try running, was it I guess 1.6
9 cubic meters of water within an hour?

10 A. Oh, yeah. We tested a whole wide range,
11 because you could achieve a number much, much larger
12 with just a modest amount of water in the pipe. So if
13 the -- so there are two principal key parameters of the
14 system. The first one is the pipe has to be full, and
15 the second one is you need to be above the threshold.
16 So if the pipe is not full, then the, the numbers are
17 bogus. You can get a whole wide range of numbers.
18 If --

19 Q. Consistently?

20 A. Yeah. It, at a fixed slope and a fixed
21 reach. If the slope changes, you get a different set of
22 numbers because it's an undefined state. That's why in
23 the operator's manual and the instruction manual for
24 this device they say you have to make sure that the pipe
25 is full and you have to make sure that you're above the

1 minimum threshold. And then the type certification,
2 they actually define a region from 1.6 meters per,
3 meters cubed per hour to 2.5 meters cubed per hour where
4 the, where it's called transitional flow, where they
5 describe it as a higher error. This particular meter
6 was really designed to operate around 40 meters cubed
7 per hour, not at this very low flow rate.

8 Q. The very low flow rate being what?

9 A. Less than 1.6 meters cubed per hour.

10 Q. So this, this device should be operating at
11 no less than 40 meters --

12 A. No, no, no. What I said was the device is
13 designed to operate between 1.6 and I believe the upper
14 limit is 80 meters cubed per hour, but in the actual
15 instruction manual for the device they give you design
16 criteria. And what they say is use the jet flow value,
17 and they define that in the, in the design, in the
18 manual. And they recommend that the operational range
19 be 0.3 to 0.4 of this jet flow rate. That's the optimal
20 range for this device. And so in the instructions they,
21 they indicate to size the, the flow rate, the flow meter
22 based upon these values.

23 Q. So this particular meter, the one that was
24 used for the test --

25 A. Yes.

1 Q. -- what was the range in which it should
2 operate?

3 A. 1.6 meters cubed per hour to, I don't recall
4 if the upper limit was 80 or 60. It was, it was in that
5 range.

6 Q. So 1.6 is 38.4 cubic meters per day?

7 A. Yeah, could be. Yeah. That seems like the
8 arithmetic.

9 Q. And the reported flow rate was what?

10 A. Reported flow rates went from I believe about
11 24 to about 37. There may have even been a few days
12 that were up into 38.

13 Q. Okay. So it would have been accurate on
14 those days where it was up into 38?

15 A. Only if the pipe was full. So this, this is
16 the -- you know, there are multiple criteria on using
17 these types of devices. So the pipe has to be full, and
18 it has to be above the minimum threshold.

19 Can I get a water? Thanks.

20 Q. Yes, sir. You don't know what the slope was,
21 but the slope between the wall and where the meter was
22 located, how much distance was there; do you know?

23 A. I don't recall off the top of my head.

24 Q. Okay.

25 MR. NUÑEZ: Hi, this is Rudy Nuñez rejoining

1 the deposition. I'll go back on mute. Thank you.

2 Q. Okay. You don't know sitting here today?

3 A. I do not.

4 Q. Okay. Do you know if it was greater than ten
5 inches?

6 A. I believe it was less than ten inches. So we
7 had to, we had to go back to the facility. We did the
8 best we could in the time we had on February 16th and
9 17th. We measured what we could, but we didn't have the
10 right instrumentation or tools. So at some point later,
11 and I don't remember if it was in March, at some point
12 we went back and we wanted to measure the exact location
13 of these, the pipes and to get the reach of the pipes.

14 When we went back all the pipes had been
15 removed, so all we could do is estimate the location
16 based on the pictures we had taken, and we could measure
17 the entrance point into the container and the hole
18 through the wall and the reach to that. So we actually
19 measured all of that. I don't remember if it was March.
20 Maybe it was in April. I don't even remember.

21 Q. Okay. So you were able, you were able to get
22 that information, but mind you, the --

23 A. Well, estimates of it. Because we, the pipe
24 had been removed, so all we could do is work from the
25 holes and --

1 Q. Well --

2 A. -- the pictures that we had.

3 Q. The meter had been removed by Dr. Penon, had
4 it not?

5 A. The meter was removed, yeah, and, but the
6 pipes were left in position when we were there and the
7 fixturing that was holding the meter in place.

8 Q. Okay.

9 A. And it was removed between those two, the two
10 visits.

11 Q. Okay. Now, do you know if the, if the pipe
12 going into the plant after the flow meter, okay, if you
13 have --

14 A. Pipe going into the plant, okay.

15 Q. -- after the flow meter, was that higher or
16 lower than the flow meter?

17 A. I believe it was lower.

18 Q. You believe, okay.

19 A. I do.

20 Q. What gives you that belief?

21 A. My recollection of the configuration.

22 Q. Okay. The pipe was lower than the flow meter
23 itself?

24 A. Which one is the flow meter --

25 Q. Okay.

1 **A. -- in the visual? So --**

2 Q. You know what, we're going to draw it here.

3 **A. Yeah, good.**

4 Q. And I'm going to, I'm going to apologize for
5 my drawing because it is awful. So if we have a pipe
6 with a flow meter between -- I'll mark that FM. Sorry.
7 Again my, my drawing is awful. This is the pipe going
8 to JM. This is the pipe going to the plant.

9 **A. Okay.**

10 Q. Okay. Follow me so far?

11 **A. Yeah.**

12 Q. Okay. Was the flow meter higher or lower
13 than where the pipe going to the plant entered the plant
14 itself?

15 **A. I believe that the flow meter was almost at**
16 **the same level, slightly higher than this.**

17 Q. What --

18 **A. To the best of our ability.**

19 Q. What gives you that belief?

20 **A. The pictures that we had taken from, at the**
21 **plant on that day.**

22 Q. Okay. Do, did you rely upon those photos in
23 doing your report?

24 **A. We had to, we had to estimate because we**
25 **didn't have the measurements.**

1 Q. Could it have been lower?

2 A. Could the?

3 Q. The flow meter have been lower than --

4 A. Yeah.

5 Q. -- the pipe entrance?

6 A. Possibly, yeah.

7 Q. Okay. But you don't know one way or another?

8 You're speculating?

9 A. Yeah, just working from memory, yes. I don't
10 know.

11 Q. Okay.

12 A. Should also note that the flow meter did not
13 have valves on either side as the manufacturer
14 recommends.

15 Q. What's the purpose of the valves?

16 A. To allow you to control the, the flow into
17 the meter, to do repairs and cleaning as necessary as
18 well as to ensure that there is no air in the flow line.

19 Q. The lack of a valve isn't going to affect the
20 operation of the meter, is it, other than the fact --

21 A. According to --

22 Q. -- that you can't close it off?

23 A. According to the manufacturer, it is
24 recommended that they have valves on both side of the
25 flow meter.

1 Q. For maintenance?

2 A. No. To ensure that when you turn it on, you
3 don't get an air bubble stuck on the inside of the
4 meter, and also there's a risk of damaging the flow
5 meter if you have jet flow that comes in too quickly in
6 higher pressure, higher flow applications.

7 Q. Do you have any information that any of that
8 occurred --

9 A. No.

10 Q. -- at the Doral facility?

11 A. No.

12 Q. Okay. Did the flow meter have flanges?

13 A. Yes.

14 Q. Isn't it true, sir, that as of July 22, 2015,
15 you believe that Dr. Rossi and Leonardo Corporation were
16 muddying the waters with respect to being able to
17 replicate and reproduce the E-Cat devices?

18 A. What do you mean by muddying the waters?

19 Q. I'm using your word, sir.

20 A. Could you put it in context of what it --

21 Q. Sure. Why don't I put it in front of you --

22 A. Okay.

23 Q. -- and give you the e-mail in which you state
24 it?

25 A. Okay.

1 Q. I'll mark it as Exhibit 10.

2 (Whereupon, Exhibit 10 was marked for
3 identification.)

4 Q. And this document is IH-00088933. Take a
5 moment to review if you need.

6 A. Uh-huh. July 17th.

7 So what is your question?

8 Q. July 22, 2015, this is about a week or so
9 after Dr. Rossi indicated you could not come down to the
10 plant; is that correct, give or take --

11 A. Yes.

12 Q. -- a week?

13 A. Yeah, about that.

14 Q. And you say, "This is a very encouraging
15 note. Leonardo Corp does muddy waters. I hope that can
16 be brought into a viable path soon." What did you mean?

17 A. So if you look below, there is this
18 researcher in India, Srini Srinivasan, who has been a
19 researcher in low-energy nuclear reactions for a long
20 time. And in India the programs had been terminated. A
21 lot of the research had been terminated, although they
22 had claimed some success in some of their experiments.
23 And this, this person was planning on coming over to the
24 United States and have some meetings, and he was trying
25 to reinstitute a research program in India.

1 And specifically, the concern was that there
2 was a lot of discussion about, you know, what's working,
3 what's not working, who is trying to replicate what.
4 And so Mr., or Dr. Srinivasan said, hey, he was trying
5 to initiate a program and he wanted to be a research
6 partner of Industrial Heat. And so my comment was that,
7 hey, it was encouraging that the Indian government might
8 consider another research program, because we were all
9 very excited about the potential for low-energy nuclear
10 reactions if we could reproduce them.

11 However, the Leonardo Corporation with the,
12 all of the efforts that were going on there and the
13 replication efforts that were going on in, I think in
14 the Ukrain, and different efforts that were going on in
15 China, it just muddied the waters. There was a concern
16 on their part. And so our goal was to figure out how do
17 we make this viable, because ideally we would be
18 successful in making this work. So that was the context
19 of this.

20 Q. Okay. And then Mr. Weaver sends you an
21 e-mail July 22nd, says, "Agreed. There's a high
22 probability that R" -- is that Rossi?

23 A. I presume.

24 Q. -- "is going to screw up, screw up his deal."

25 A. Yeah, I don't know what Dewey was saying

1 **here, but.**

2 Q. Did you ask him what he was saying?

3 **A. No.**

4 Q. No, you didn't.

5 **A. No.**

6 Q. Okay.

7 **A. I get 100 e-mails a day, particularly from**
8 **Dewey, so.**

9 Q. Okay. Then it goes on to say "TD". Who
10 would that be?

11 **A. I believe that would be Tom Darden.**

12 Q. Okay. So, "Tom Darden may try and change the
13 status quo and lower the pressure on Rossi with a more
14 simplified, lower profile plan B."

15 **A. Yes.**

16 Q. So they're going to bring the, bring the
17 pressure down on Rossi --

18 **A. No, I don't think that was --**

19 Q. -- to change the status quo?

20 **A. That is not what the, I, my belief is at this**
21 **point -- again I'll go back. Tom and John both insisted**
22 **that if any possibility that this was working, they**
23 **wanted us to be able to validate it, verify it, and**
24 **reproduce it and, because that was the gateway to**
25 **follow-on development activities.**

1 So what Tom, my recollection was that Tom
2 said, well, why don't we just simplify this and do a
3 much smaller test, get together with Mr. Rossi, come up
4 with something that we can all simply test, and do that
5 test so we could take that back and move forward with
6 it, if we could produce it and validate it, verify it.

7 So I believe at this point, and I wasn't
8 directly involved, but what was, what was suggested to
9 me was that potentially we could agree to do a smaller
10 scale, simplified test. And, and I think that the
11 general conclusion from everybody was if we got any
12 level of reliable performance, there would be a path
13 forward without a doubt.

14 Q. Sir, before the lunch break I started asking
15 you about what you were asked to do in this case
16 specifically. What opinions were you asked to render?

17 A. As I described before, the, specifically
18 related to the validity of the sensor measurements, the
19 flow meters, pressure. I was asked to look at what
20 would happen, simulations of the facility, how hot would
21 it be in the facility. There were probably a couple
22 other things, but I don't recall off the top of my head
23 without that information in front of me.

24 Q. You don't know sitting here today what your
25 opinions were?

1 **A. No. I said I don't know what I was asked to**
2 **offer an opinion on.**

3 Q. Do you have any idea what you're expected to
4 testify to in this matter?

5 **A. Actually I, I have not engaged, other than**
6 **the very minor amount of work I've done in the last week**
7 **in preparation for this, I have not engaged much on this**
8 **at this point.**

9 Q. Okay. I'm going to show you a document that
10 we'll mark as Exhibit 11.

11 **A. Okay.**

12 (Whereupon, Exhibit 11 was marked for
13 identification.)

14 **A. Uh-huh.**

15 Q. Have you seen this before, sir?

16 **A. Yes, I have.**

17 Q. Did you prepare this document?

18 **A. I, I approved what was prepared in this**
19 **document.**

20 Q. There is a section on Page 1 that says
21 summary of opinions?

22 **A. Uh-huh.**

23 Q. Have you seen that before? Have you --

24 **A. I have, yes.**

25 Q. -- reviewed that? And are those your

1 opinions, sir?

2 A. Yes, yes.

3 Q. Are there --

4 A. I did a comparison of the Florida Power and
5 Light company data to the data provided by Mr. Fabiani
6 and Mr. Penon.

7 Q. Okay. Are there any other opinions other
8 than those set forth herein that you plan on opining to?

9 A. In this whole document?

10 Q. Or testifying to? Yes.

11 A. So let me just review. So Florida Power and
12 Light power compared to the data provided by Penon and
13 Fabiani, the relationship between power and coefficient
14 of performance, heat simulations, and water flow. Yeah,
15 those are the areas that I do plan on offering opinions.

16 Q. Okay. I didn't ask areas. I asked about the
17 opinions specifically.

18 A. Oh, I'm sorry.

19 Q. Are there any additional opinions that are
20 not set forth in here --

21 A. Not --

22 Q. -- that you plan on offering?

23 A. Not that I'm aware of at this time.

24 Q. Okay. Then we're going to go through these.

25 A. Okay.

1 Q. Who drafted this, sir?

2 A. Counsel.

3 Q. Counsel. Now, when you received it, had they
4 drafted it with your opinion section already completed,
5 or did they --

6 A. I --

7 Q. -- ask you to prepare that and then send it
8 to them?

9 MR. LOMAX: Objection.

10 Q. Okay. I'm not going to ask you what they
11 asked you. Did you prepare that and send it to them, or
12 was it drafted by counsel?

13 A. I provided input to them in the form of the
14 data that I provided to them.

15 THE VIDEOGRAPHER: Counsel, I hate to do
16 this, but I need to go off the record briefly,
17 change this out, and then we'll go back on.

18 MR. ANNESSER: Sure.

19 THE VIDEOGRAPHER: Apologize. We're off the
20 record at 2:48 p.m.

21 (Recess taken 2:48 p.m. to 2:50 p.m.)

22 THE VIDEOGRAPHER: We're back on the record
23 at 2:50 p.m.

24 BY MR. ANNESSER:

25 Q. Okay. Sir, with respect to your first

1 opinion you state, "Mr. Murray will describe" -- I'm
2 sorry. Your disclosure states, "Mr. Murray will
3 describe how the data generated by Fabio Penon and
4 Fulvio Fabiani pertaining to the power absorbed during
5 the testing of the E-Cat plant at the address of Doral
6 location, JMP" -- is that address of Doral location, was
7 that, why is that in all caps?

8 **A. I don't know.**

9 Q. Was that supposed to actually be the address
10 of the Doral location?

11 **A. Potentially.**

12 Q. Okay. But you didn't draft this. Okay.

13 -- "is at odds with the amount of power used
14 at the Doral location as demonstrated by Florida Power
15 and Light, FP&L records."

16 **A. Uh-huh.**

17 Q. What did you do to come to that conclusion?

18 **A. We received the daily power or energy records**
19 **from Florida Power and Light via subpoena for periods of**
20 **time before the plant was installed, the period of time**
21 **when the plant was operating, and periods of time after**
22 **the plant was installed. And what we did was we, we**
23 **compared that daily energy level to the daily energy**
24 **levels that were provided by Fabio Penon and Fulvio**
25 **Fabiani.**

1 Q. How did you compare it?

2 A. We used a analytic tool to look at the data
3 and to plot it to make a comparison between them.

4 Q. What analytic tool did you use?

5 A. We used a series of tools called Python,
6 which is a programming language, with iPython -- it's
7 now called Jupiter Notebook, but it used to be called
8 iPython Notebook. We used NumPy, which is a numerical
9 tool kit; SciPy, which is a scientific library; and
10 something called Pandas, which is a data analytics tool
11 to be able to compare data. And we plotted that --

12 Q. What --

13 A. -- using Matplotlib to make comparisons
14 between the various data sets.

15 Q. So, so what exactly do these program do?

16 A. Well, you read the data in. You formulate it
17 so you can get an exact --

18 Q. Hold on one second. How do you read the data
19 in?

20 A. So in that, there's a Pandas library that
21 allows you to read in a comma-separated file or an Excel
22 file, other types of files. We read that in and we then
23 com -- then we can directly compare date-matched times
24 and dates and plot the data.

25 Q. Okay. Let's talk about that for a moment.

1 It reads Excel files. How did you get the data from the
2 Penon report into that system?

3 A. We typed it in by hand.

4 Q. Who did?

5 A. I typed in some of it. There was -- oh, did
6 you say Penon?

7 Q. Penon.

8 A. Penon. I typed it in. I had some, some of
9 the younger engineers type it in, and then we had a
10 separate person cross-check it to make sure it all
11 matched.

12 Q. Who was the younger engineer and who
13 cross-checked it?

14 A. So Jason Kemp was the person who
15 cross-checked it, and James Hartanto was the young
16 person who actually typed it in.

17 Q. Is Mr. Hartanto an engineer?

18 A. He is, he has a degree in I believe chemistry
19 and applied math.

20 Q. So the answer is no?

21 A. No. Yes.

22 Q. Okay. And James Kemp, is he an engineer?

23 A. Jason Kemp?

24 Q. I'm sorry, Jason.

25 A. No, he's not.

1 Q. Okay.

2 A. They were doing just data transcription.

3 Q. Who do they work for?

4 A. At that time they worked for Industrial Heat.

5 Q. Who do they work for now?

6 A. I think Jason Kemp took a job with Pike
7 Electric, and I believe that James Hartanto is getting
8 ready to go to graduate school.

9 Q. Okay. Now, the FP&L data, how was that
10 in-put?

11 A. That data was received in a PDF file, and we
12 converted all of that data using an OCR reader to, to,
13 into a comma-separated file or Excel file. And then we
14 actually had Jason and James go back and cross-reference
15 and check it against the original documents.

16 Q. Do you know if there were any mistakes in
17 those? Typos?

18 A. I don't know. I mean they went through and
19 checked it and cross-checked it, and I went through and
20 sampled a check as well.

21 Q. How much sampling did you do?

22 A. I would say hundreds of points. I mean I
23 went through almost line by line to cross-check it, but
24 it becomes very bleary-eyed when you're doing that. So
25 then they did a every-single-line cross checking it to

1 the data that was provided under subpoena.

2 Q. So all of the input was done by Industrial
3 Heat employees?

4 A. Yes.

5 Q. So you've got both of those in, and how did
6 you compare them using these programs? Was there a
7 complex analysis, or was it just plotting these out into
8 a graph?

9 A. So first, well, there was also a third piece
10 of data. That was the data provided by Fabio Penon. He
11 provided that, that data in, again in March/April time
12 frame he gave us files. I kind of described that
13 earlier.

14 Q. Mr. Penon did?

15 A. I'm sorry. Fulvio Fabiani provided us files.
16 And so we, we looked at that, that data. Fulvio
17 Fabiani's data actually had two measurements for each
18 day. He had a measurement at, I believe the numbers
19 were 10:30 a.m. and 10:30 p.m. Mr. Penon's data -- I
20 have to be careful, make sure these names are right --
21 Mr. Penon's data was actually only once per day. It was
22 at I believe 10:30 p.m. each day. And the data from
23 Florida Power and Light was each day at midnight.

24 So what we did is we went back and we
25 cross-referenced it and made comparisons on a daily

1 basis and made, to make sure that we were comparing
2 apples to apples. And then we plotted the data and took
3 the differences between the various data sets and
4 checked the integrity between Penon and Fabiani's data
5 and then checked the comparisons against Florida Power
6 and Light.

7 Q. Okay. So let's look at Exhibit A of
8 Exhibit 11, which you should have in front of you.

9 A. Okay.

10 Q. Is that, sir, the comparison that you did?

11 A. This is part of the comparison, yes.

12 Q. Okay. I only see two lines here, one green
13 and one red.

14 A. Underneath it you can see a few points where
15 Mr. Fabiani -- I'm sorry. We gotta look at the colors
16 here. It's hard to see at this scale. Mr. Fabiani's
17 data diverges from Mr. Penon's data. You can see right
18 about here, and you can see down here. So there were
19 very little divergence between Mr. Fabiani and
20 Mr. Penon's data. In fact, I would, I would argue they
21 were the same exact data.

22 Q. Okay. The same exact?

23 A. Except for these points where they diverge.
24 Because Mr. Fabiani's data, as I said, had two data
25 points per day where Mr. Penon's data only had one.

1 Q. Okay.

2 A. And so they --

3 Q. So that would be consistent with the data
4 points or the data being measured being accurate,
5 correct?

6 A. It would certainly be consistent with the
7 data being measured coming from the same device.

8 Q. Any reason to believe that either one of them
9 have manipulated the results?

10 A. No.

11 Q. Okay. So the green line is FP&L?

12 A. Yes.

13 Q. All right.

14 A. Florida Power and Light, yes.

15 Q. And for the vast majority of this, the green
16 line is higher than the red line?

17 A. That's correct.

18 Q. So the amount of power supplied by FP&L
19 substantially exceeds the amount of power that was
20 recorded going into this device?

21 A. Yes, yeah.

22 Q. Is that odd to you?

23 A. No. You would imagine that a facility like
24 this, the actual reactor system would absorb some power,
25 but you would imagine that there are also some, some

1 lights and the fan in the bathroom. There were a few
2 air conditioners around there. There was an office in
3 the front that I imagine would have heat and air
4 conditioning. So you would expect that Florida Power
5 and Light numbers would be higher than the numbers that
6 Mr. Penon and Mr. Fabiani measured. That would be a
7 reasonable expectation.

8 Q. Florida Power and Light's measurements, how
9 were those taken?

10 A. They were taken with a smart meter located on
11 the, on the building.

12 Q. What type of smart meter?

13 A. The smart meter that's approved by the State
14 of Florida.

15 Q. You know it's approved by the State of
16 Florida?

17 A. Yes.

18 Q. How?

19 A. I looked at the Florida Public Works
20 Commission website to find out if these things were
21 approved and how they were approved. And they indicate
22 that for investor-owned utilities, that they have
23 approval and then they give you a link to Florida Power
24 and Light, and in Florida Power and Light's data they
25 give the full description of how they implemented these

1 programs and what the options are for the programs.

2 Q. When was the FP&L device last calibrated?

3 A. I have no idea.

4 Q. Do you know if it's been three years?

5 A. No idea.

6 Q. Four years?

7 A. I have, still have no idea.

8 Q. Okay. So you, you have absolutely no
9 information with respect to whether their data is
10 accurate or not?

11 A. What I know is that they provided it under
12 subpoena. They may or may not be accurate.

13 Q. Okay. So you don't have any reason to
14 believe that we should rely on those results as opposed
15 to the results of Mr. Penon or Mr. Fabiani; is that
16 correct?

17 A. I disagree with that. I, I would say that we
18 have to at least look at this and understand why, why
19 would it be this way. And so my view is that if, if a
20 company like Florida Power and Light provides data under
21 subpoena, there would be an expectation that they would
22 provide, would provide proper and accurate data, and
23 it's a reasonable way to check the facility. We did
24 this, I did this kind of anticipating that Florida Power
25 and Light would always be higher than the measurements

1 **that were made here.**

2 Q. Okay. And, and the vast majority of the time
3 here they are?

4 **A. Yes.**

5 Q. With very few exceptions, in fact. And one
6 exception is between November and December 2015?

7 **A. Yes.**

8 Q. And during that period it, it appears that
9 the power usage drops by the FP&L measurements, right?

10 **A. The FP&L measurement drops, yes, below the**
11 **measurements provided by Mr. Penon and Mr. Fabiani.**

12 Q. Do you know why that would be?

13 **A. I have no idea.**

14 Q. Do you know if it's accurate? Do you know
15 if, perhaps, there is a problem with the device, the
16 measuring device?

17 **A. I have no information other than the data**
18 **that was provided in the subpoena by Florida Power and**
19 **Light.**

20 Q. Okay. So you have no reason to believe that
21 that information is more accurate than the measurements
22 taken by Penon and/or Fabiani, correct?

23 **A. No, other than the fact that it's a Florida**
24 **utility, and they are regulated. I would think that --**

25 Q. Do regulated Florida utilities ever have

1 device malfunctions?

2 A. Oh, absolutely. Absolutely. In fact, I
3 believe in this facility they actually replaced a smart
4 meter at some point earlier in the year.

5 Q. Why do you believe that?

6 A. Because the registration number of the meter
7 in the subpoenaed data changed.

8 Q. When was that?

9 A. I don't recall. It was earlier in the year.
10 I would say sometime maybe in the May or June time
11 frame.

12 Q. Okay. Do you know if it was hooked up
13 correctly when it was replaced?

14 A. I do, I do not.

15 Q. Okay. So what you've got here is just a
16 comparison side by side of the two number sets. Is
17 there anything scientific about that other than looking
18 at it?

19 A. It's, it's very alarming to see a drop. I
20 mean in general when you see this, you see a very, very
21 consistent amount of power being absorbed by the reactor
22 system. And when the reactor system has a major drop
23 like here in the, let's say between July and August you
24 see a drop off, which I think corresponds to the data
25 that says, hey, we had some, some reactors go offline,

1 you see that drop. That makes sense. And then sometime
2 in October they brought all of the units back online and
3 the power goes up.

4 So all of the trends seem to be consistent
5 except for this period of time when, in about from
6 middle of November to the beginning of December where
7 you have a power level absorbed into the building lower
8 than the measured. So that would give -- to me, there
9 are three potential explanations. Number one, Florida
10 Power and Light could be wrong. Number two, the
11 measurements made by Fabiani and Penon could be wrong.
12 And number four or -- I'm sorry, number three, the data
13 could have been manipulated. On either part, on either
14 party.

15 Q. Do you have any evidence that the data has
16 been manipulated --

17 A. No, I don't.

18 Q. -- by either one?

19 A. Not by Florida Power and Light or by Fabiani
20 or Penon.

21 Q. Okay. So you have no evidence of
22 manipulation. So what are you opining to specifically
23 here?

24 A. Specifically, in this period it was, it was
25 determined by Mr. Penon that the measurements, the

1 absorption of power was accurate and reflected what was
2 happening in the reactors. But if, in fact, Florida
3 Power and Light indicates that their data is valid in
4 the data provided under subpoena, then it would be
5 impossible for them to absorb more power than Florida
6 Power and Light provided.

7 Q. Now, you keep saying data provided under
8 subpoena, as if that makes it more accurate. It's the
9 measuring equipment that makes it more accurate or not,
10 correct?

11 A. Sure.

12 Q. Not whether it was voluntarily provided or
13 under subpoena?

14 A. Uh-huh.

15 Q. Correct?

16 A. Yeah. My view is that if, if a, if a person
17 is providing data under subpoena, they're going to
18 probably provide the best possible data they have. We
19 also know that Florida Power and Light has hourly
20 measurements for this facility, and we have not received
21 that data.

22 Q. Okay. But you don't know whether it was
23 measured correctly or not at that point in time. All
24 you can tell based on this is that there is a
25 difference?

1 **A. Yeah. I don't know whether or not any of**
2 **these lines were measuring correctly at that time.**

3 Q. Okay. So what I'm, what I'm trying to
4 determine, because you're, you're giving an opinion as
5 to this, is I can see this as well as you can. I can
6 see this graph.

7 **A. Right.**

8 Q. I can see the, the lines where they drop
9 below the Penon number and, which would indicate that if
10 the FP&L measurements was right, it was supplying less
11 power than the power going into the unit. Okay. But
12 other than that, is there anything scientific that we
13 had to apply, any methodology to apply to, to create
14 this graph?

15 **A. This is just a summary graph. And I think**
16 **there's, might be another plot in this --**

17 Q. There is. And we'll --

18 **A. -- Exhibit B.**

19 Q. And we'll get to that one.

20 **A. Yeah, so there were a series of analyses that**
21 **I completed. And we looked at the baseline power of the**
22 **building, and that gets to, more to the opinion. This**
23 **is just the raw data comparison. And if the raw data**
24 **showed that there was no period, then I think we could**
25 **have said it's potentially a reasonable expectation.**

1 But this is a problem, and these areas down here are a
2 problem. What they're indicating is that nothing else
3 in the building is absorbing power, only the reactor,
4 and that's simply not realistic.

5 Q. And as you said, there's one of three
6 options. Either FP&L is wrong, Penon and Fabiani are
7 wrong, or there's manipulation on the data?

8 A. On, on the part of some party, yes.

9 Q. Okay. So basically one or the other is
10 incorrect, and then the third option is that it was
11 intentionally incorrect?

12 A. Right, by somebody.

13 Q. By somebody?

14 A. That's right.

15 Q. Okay. But you don't know which one is which?

16 A. No.

17 Q. Okay. So your opinion is simply that this is
18 an area of concern where it drops below and the other
19 areas where it drops below slightly are --

20 A. In the context of this one plot, yes.

21 Q. Okay. Now, the measurements taken by FP&L
22 were taken at what time?

23 A. Midnight.

24 Q. Midnight. The measurements taken by Engineer
25 Penon were what time?

1 **A.** Well, he was only in the facility I believe
2 four times. So I would imagine he only collected the
3 data. He didn't actually take the measurements. So
4 that's why I believe that Fabiani actually collected the
5 data in the logs and provided that to Mr. Penon.

6 **Q.** That's your belief?

7 **A.** It is my belief, yes.

8 **Q.** Okay. Do you know what data Mr. Penon
9 received directly?

10 **A.** How would Mr. Penon receive data directly?

11 **Q.** It's called the internet.

12 **A.** Really? No, I have no idea what data. I
13 would be interested to see. So he --

14 **Q.** Do you know if he did?

15 **A.** I do not.

16 **Q.** Do you know if he had a computer on site?

17 **A.** I believe that there were computers on site
18 that were collecting data from, from the instruments,
19 yes.

20 **Q.** Okay. Do you know if one of those was
21 Mr. Penon's, or Dr. Penon's I should say?

22 **A.** I do not.

23 **Q.** Okay. Now, now you said that FP&L's data was
24 recorded at midnight?

25 **A.** Yes.

1 Q. Let me show you a copy of the documents
2 provided to us and ask you if this is the FP&L data
3 you've seen. It's going to be marked as Exhibit 12.
4 And it is bates stamped Industrial Heat_FP&L or, I'm
5 sorry, FPL-000004.

6 (Whereupon, Exhibit 12 was marked for
7 identification.)

8 Q. Is that the data that you're referring to,
9 sir?

10 MR. LOMAX: Thanks.

11 Q. Let's see. Did I hand you mine? No.

12 You know what I think I did here, if I can,
13 let me take a look at that for a second. I may have
14 given you more documents than I needed.

15 A. Sure.

16 Q. No, that is correct. Sir, at the same time
17 I'm going to give you another document, which we'll mark
18 as Exhibit 13, which bears the bates number Industrial
19 Heat_FPL-000054.

20 (Whereupon, Exhibit 13 was marked for
21 identification.)

22 Q. Oh, you know what, I marked mine again.

23 A. This doesn't look like -- hold on a second.
24 Excuse me. It doesn't look like it's the complete set
25 of data, but it's certainly a subset of it.

1 Q. Was there more other than this that was
2 provided that you understand?

3 A. I believe so, yes. I think there was a
4 second submission that included more data before and
5 after, but. 3/1. I believe so, yes, but I'm, I could
6 be wrong.

7 Q. Okay. Now, turning, sir, to document page,
8 bates number Industrial Heat_FPL-000044.

9 A. 44, uh-huh.

10 Q. Okay. You got that?

11 A. Yeah.

12 Q. Okay. Looking at the top of the page, it
13 purports to be the reading for January 1, 2015?

14 A. Yes.

15 Q. Meter Number L0556058707?

16 A. Uh-huh.

17 Q. Okay. I'd like to now ask you to flip to the
18 last page, which is Industrial Heat_FPL-000053. And
19 this purports to be the meter reading on March 1, 2016?

20 A. Yes.

21 Q. And it's got Meter Number L0556058707?

22 A. Yes.

23 Q. Okay. You told me, sir, that the meter
24 number had changed?

25 A. Yeah. I believe that I had seen that in the

1 data, but I don't know that this is all of the data. I,
2 and I could be wrong.

3 Q. Okay. But, sir, this, you would agree, even
4 if it's not all the data, this is the data between
5 January 1, 2015 --

6 A. Yes.

7 Q. -- and March 1, 2016?

8 A. Uh-huh.

9 Q. Which encompasses the entire --

10 A. The date.

11 Q. -- test period?

12 A. Test period, yes.

13 Q. So the entire test period, at least according
14 to this document, the same meter was used?

15 A. Yes. It appears, yes.

16 Q. Okay. So what information did you look at to
17 indicate the meter had changed?

18 A. I don't know if it was the data before this
19 or after, or maybe I was just mistaken.

20 Q. Okay. And you, you're not testifying at all
21 as to the propriety of that information, whether it was
22 done properly, properly recorded or otherwise?

23 A. No, I am not.

24 Q. Okay. Now, the other thing that somewhat
25 concerned me with your graph here is there were certain

1 periods, were there not, that no data was collected by
2 FP&L --

3 A. That's right.

4 Q. -- but yet I don't see gaps in your FP&L
5 line.

6 A. Yeah. It's, it's hard to see on a graph of
7 this scale. Hold on a second. Where is that document?
8 Oh, it's, it's the one. Yeah, it's very difficult to
9 see because this is a line plot rather than just the
10 point data. I have produced a wide range of different
11 plots and looked at the data in a lot of different ways,
12 and this was just representative samples that
13 highlighted the key points.

14 Q. So the --

15 A. In fact, also did smoothing of the data to,
16 if there was any kind of a shift over time, just to kind
17 of give the benefit of the doubt to the, the underlying
18 measurements.

19 Q. Okay. So where they had null reads, you
20 assigned, what, an average for that time period where --

21 A. No.

22 Q. -- there was no --

23 A. Not, not in this data.

24 Q. Okay.

25 A. There was just a gap.

1 Q. Well, let's, let's look specifically at,
2 let's see, May 20, 2015.

3 A. Okay.

4 Q. Okay. So between May 20, 2015, and June 20,
5 2015.

6 A. Uh-huh.

7 Q. Okay. There are at least one, two, three,
8 four, five, six, seven, eight days out of a 30-day
9 month, 31-day month? What is it? 31-day month. So
10 almost a third of the days there was no read during that
11 month, yet I don't see a single gap on your --

12 A. Yeah, this, this --

13 Q. -- line graph.

14 A. -- plot is actually connecting the points
15 rather than showing the, the data points. So as I said,
16 there were numerous different plots that I did to look
17 at the data, both from a joint probability density
18 function analysis techniques. I also looked at a wide
19 range of other techniques, so --

20 Q. I'm sorry.

21 A. -- this one --

22 Q. What was that technique?

23 A. That's a joint probability density function
24 analysis.

25 Q. What is that?

1 A. So what you do is you create a distribution
2 of the two data sources so you can look at how those
3 measurements correlate, so you can look at the
4 distribution shape to find out if there's anomalous
5 structure in the distribution.

6 Q. Anomalous structure in the distribution?

7 A. Yes.

8 Q. We're, we're comparing presumptively two data
9 points on the same date to each other?

10 A. No. In a joint probability density function
11 what you're doing is you're actually creating a
12 distribution of all the days at the various power levels
13 and corresponding the power levels measured by, in this
14 case, Penon to the power levels measured by Florida
15 Power and Light. So we could look to see how these
16 distributions vary over time to see if there's
17 structural changes in it.

18 Q. I guess I'm not understanding. Structural
19 changes in the distributions of what?

20 A. Of the, the behavior between the two power
21 sources. So you do a, you're creating a, a distribution
22 of these power measurements.

23 Q. What, what do you mean by distribution of
24 these power measurements?

25 A. So a, if you take, if you create a histogram,

1 so you look at all of the days that you had a particular
2 power level and you bend them and you contrast that
3 jointly with the two series, the two time series, then
4 you can create a, a distribution, a joint distribution
5 between two independent data sources. And then you can
6 create a probability density. So how probable is this?
7 What is the relationship between this? And two highly
8 correlated signals will have a very defined structure.
9 And when you contrast that with signals that are
10 unrelated, then they will have a completely different
11 structure.

12 So it's very difficult to see in a scale like
13 this where there are probably, I don't know, 300 and, I
14 don't know, however many days, 350 days or 360 days
15 worth of data. It's very difficult to see when you just
16 are connecting the points and you don't show the data
17 line. So this plot is, is just one example of the
18 analysis.

19 Q. Okay. Now, the, the plot below that says
20 cumulative energy absorption. What did that tell you?

21 A. Nothing. I mean it just shows the flat
22 points in the distribution. It was one of the things
23 that we analyzed along the way to see if there were
24 points where the cumulative energy were, were not
25 related, but it was just not --

1 Q. Do they seem related to you here?

2 A. There are a couple of strange points where
3 one signal is steadily going up and the other signal is
4 flat, but it's very difficult to see in this. It would
5 be far better suited if it was plotted on a log scale so
6 you could exaggerate that and see that.

7 Q. Did you plot it on a log scale?

8 A. In other plots, yes.

9 Q. Is there a reason that this graph was
10 included in your expert disclosure then if it --

11 A. It was just --

12 Q. -- tells you nothing?

13 A. -- an, it was an example. So actually this
14 was plotted together in one function call, and so it was
15 just together when we saved the file or saved the image
16 out of the, the analysis.

17 Q. So you would agree with me, sir, that if
18 FP&L's data was incorrect and there had been an error in
19 the reading, your report would not accurately reflect
20 the relationship between the amount of energy supplied
21 by FP&L and that recorded by Engineer Penon and
22 Mr. Fabiani?

23 A. Could you repeat that?

24 Q. Sure. You would, you would agree with me
25 that if the FP&L data was incorrect, that would render

1 this graph and any opinion with relation to any time
2 that it dipped down below to be invalid?

3 **A. For this specific graph, yes.**

4 Q. Okay.

5 **A. But there's more data.**

6 Q. What's the more data?

7 **A. If we look at --**

8 Q. Hold on. Okay. More, more within this
9 report or --

10 **A. Yeah.**

11 Q. -- more --

12 **A. More in the analysis. I'm sorry.**

13 Q. Okay. We'll go through the analysis.

14 **A. Okay.**

15 Q. Okay. Now you said, and I want you to look
16 at that again, you said that the readings were taken at
17 midnight every night?

18 **A. I believe, yes.**

19 Q. Sir, I'm looking at the readings, and it says
20 12:00.

21 **A. Uh-huh. Yes.**

22 Q. Okay. You take that as midnight?

23 **A. Yes.**

24 Q. Sure it's not noon?

25 **A. No. In fact, we looked at that. We looked**

1 at the data both ways, assuming it was noon and assuming
2 it was midnight. I asked the question, and I was told
3 that it was noon. So I just -- I'm sorry. I was told
4 that it was midnight, and so I --

5 Q. Who told you that?

6 A. Counsel. Based on --

7 Q. Counsel did?

8 A. Yes.

9 Q. Okay. Other than counsel, do you have any
10 independent source?

11 A. No.

12 Q. Do you know where counsel got that
13 information?

14 A. I do not.

15 Q. So you were relying on counsel for that
16 opinion?

17 A. Yeah, they were the ones that got the
18 subpoena --

19 Q. Okay.

20 A. -- and provided the data.

21 Q. Does this data change or the correlations
22 change at all if the measurement were taken at noon as
23 opposed to midnight?

24 A. No. That's why we did the analysis with the
25 rolling 2-day average versus, versus just the single

1 data point averages, because, or the single data points,
2 because we wanted to make sure that if there was an
3 offset, that we weren't artificially penalizing one set
4 of data versus the other.

5 Q. Okay. And, in fact, when you did that,
6 that's what's reflected in Exhibit B, correct?

7 A. Take a look. Yeah. This is a 3-day rolling
8 average. Actually, it has both data. It's kind of
9 difficult to see with the, the line underneath. The,
10 the FPL minus Penon data is the blue line. It's just
11 the raw values. And then there is a, I would call that
12 almost a gray line. Man, these colors are horrible, but
13 the greenish line is the FP&L data minus a Penon 3-day
14 rolling average.

15 So we took the, the FPL data because, or I
16 took the FPL data because I was concerned about whether
17 it was noon or midnight. And we did a rolling average
18 to, over the 3-day period to end up with that value, and
19 then plotted it.

20 Q. All right.

21 A. Plotted it, so we took the 3-day average of
22 the FPL minus the Penon data, because the Penon data
23 was --

24 Q. So this --

25 A. -- very smooth.

1 Q. This is the difference between the two,
2 correct?

3 A. Yes. Yeah. That's, that's why it's on a
4 different scale. And we show a zero value. So, so the
5 axes are completely different. Do you, do you see that?

6 Q. Uh-huh.

7 A. So the zero value, this would be the
8 difference between the two. So any days that you had a
9 value below zero would obviously be an area that we
10 would have to look at and understand is the FP&L data
11 bad or is potentially the Penon data bad.

12 Q. And so, I'm sorry. Any areas where what?

13 A. Where the value went below zero.

14 Q. Okay. And, in fact, there are fewer times
15 where that occurs I believe --

16 A. Actually there are more.

17 Q. There are more?

18 A. There are 17 days in this, and I believe in
19 the other one there are 14 days.

20 Q. Well, if it's a 3-day average, that shouldn't
21 be, right?

22 A. No. The data from Florida Power and Light,
23 it had big, big spikes. So what we were doing is we
24 were taking the difference between the smooth Florida
25 Power and Light data and the Penon-provided data,

1 because the Penon data looked very smooth. So we took
2 the difference, or I took the difference. I say we, me
3 and several of my other personalities, took the
4 difference and plotted it. And my recollection is that
5 this was about 17 days.

6 And then in addition to that, we put a
7 baseline power number on there, which was -- and
8 unfortunately I don't know why this doesn't have the
9 other days, but we requested additional days. And those
10 additional days kind of give us an average before and
11 after the test so we could see how much is the building
12 itself consuming, you know, with the office and the fan
13 and lights and, you know, the fan in the bathroom and
14 the lights and the air conditioner and the, you know,
15 whatever, the different parts.

16 We wanted to know, you know, what's the
17 baseline power. Because clearly the difference, what
18 you would expect in the previous plot is that the
19 building is absorbing more power in general than what
20 the reactor is using because the reactor is only a
21 subset of the power absorption in the building, right,
22 which I think makes sense.

23 Q. But that's not reflected here, is it?

24 A. I'm sorry?

25 Q. The additional days outside the testing

1 period?

2 A. In this, actually the data sets that I used,
3 yes, included those other points so I could actually get
4 a baseline number. In this plot. You're looking at the
5 other one. I'm sorry. I'm looking at Exhibit B. So
6 you see that red line on Exhibit B?

7 Q. Yeah.

8 A. Man, I apologize. This is very difficult to
9 see these, but that red line is the nominal power that
10 the building absorbed when the reactor was not running.
11 And so --

12 Q. What do you mean nominal power that the
13 building absorbed when the reactor was not running?

14 A. So if, if we looked at the previous plot and
15 you look at a period -- let's look at Exhibit A again so
16 I can try to, I'll try to explain it. If you look at
17 Exhibit A, throughout the entire test, in general the
18 building, the total amount of power absorbed from
19 Florida Power and Light was higher than what the
20 reactor.

21 Q. That's --

22 A. Which is what you would expect. We kind of
23 expect that because there's an office and there's some
24 lights. Those things are not being measured by the, the
25 power analyzer of Penon. Then if you go outside of this

1 period when we were sure that the reactor was not
2 running, or at least we had confidence that the reactor
3 wasn't running. Like for example, the few days after we
4 turned the system off and nothing was going on, the
5 building was locked up. We could get an average of how
6 much power is absorbed into the building without the
7 reactor running.

8 So we wanted to know how much is the, kind of
9 the baseline power of the building. You know, you've
10 got some air conditioners. You've got some lights. You
11 have some different equipment. Maybe JM Products was
12 running some equipment, whatever they might be doing.
13 And so then what we did was we said, okay, well, this is
14 the baseline power. And then --

15 Q. Wait, wait. Baseline power is the average
16 power for the year?

17 A. No. It's the average amount of power
18 absorbed in the absence of the reactor system.

19 Q. Now, you say power absorbed. Power supplied
20 by FP&L --

21 A. Yes.

22 Q. -- in the absence?

23 A. Absorbed by the building. The total amount
24 absorbed by the building. And by power, Florida Power
25 and Light has hourly data. We only have daily data

1 **here --**

2 Q. Now --

3 **A. -- but it's the energy.**

4 Q. Okay. So you would agree with me that you
5 can't take an average and apply it all the way across a
6 year, can you?

7 **A. No. No. Because the reactor was running and**
8 **we know --**

9 Q. Well --

10 **A. -- that the reactor was, different parts of**
11 **the reactor were coming on and off, so.**

12 Q. Even without a reactor, are you, are you
13 representing to me that what, I don't know what this
14 number is. Somewhere less than 50 kilowatt hours?

15 **A. I'm sorry. Which one are you -- you're**
16 **looking at Exhibit B?**

17 Q. I'm looking at B, yeah.

18 **A. Yeah.**

19 Q. Less than 50 kilowatt hours was the energy
20 used throughout the year without the reactor?

21 **A. Yeah. We're saying that that is a, a**
22 **representative baseline for the building.**

23 Q. Okay. And that, and you got that off of what
24 sample size?

25 **A. For the samples before and after, which --**

1 Q. How long?

2 A. Oh, I don't remember. There were, I don't
3 know. There was quite a bit of time that they provided
4 data for.

5 Q. I don't, I don't have that either.

6 A. Yeah.

7 Q. Wouldn't you agree with me that during the
8 summer in Florida power usage is going to be
9 substantially higher than the winter time?

10 A. Could be, yeah, but that would only make this
11 worse. We try to draw a very conservative estimate. So
12 if more and more power was going to more and more things
13 outside of that, that would only make it worse because
14 that line would draw up. Because let's say you had an
15 air conditioner in the office space up front. If you
16 were, had the air conditioner running, let's say 12
17 hours a day to keep the office space cool, then that
18 would actually increase the amount of power that was
19 going to --

20 Q. Well, sir, sir, you've attributed, and I, you
21 know, for the most part the line of FP&L minus Penon or
22 FP&L minus Penon 3-day rolling average is above that
23 line with the exception of a few points of your average
24 power.

25 A. Right.

1 Q. Or your baseline power as you defined it.
2 During the month of November to December 2015, what were
3 the temperatures outside?

4 A. Oh, I don't know. Florida, I'd guess
5 probably in the 70s or 80s maybe.

6 Q. Did you look?

7 A. Actually, in the simulation data we used the
8 NOAA published average temperatures to figure that out.

9 Q. Simulation data, what simulation data?

10 A. I'm sorry. That 's a different part of
11 the --

12 Q. We'll --

13 A. -- what we'll talk about later.

14 Q. Okay. We'll get to that, but so you don't
15 know what the energy usage would have been at that time
16 for the building? In any year for that matter?

17 A. No. What we would do is just to look at the
18 average of how much the building absorbed, but what we
19 should say is that anytime that the number is below
20 zero, it would indicate that there's an error somewhere
21 either with Florida Power and Light or with Mr. Penon's
22 data.

23 Q. Based on your average, but your average --

24 A. No, no, no. Oh, I'm sorry, the 3-day
25 average, yes.

1 Q. But your average applies -- I'm sorry. I'm
2 looking at your baseline --

3 A. Yeah.

4 Q. -- power.

5 A. So there are, I need to be careful. There
6 are two things -- it's, it's actually energy per day.
7 There are two things being shown here. There is a line,
8 a dotted line shown at zero, right, meaning that
9 anything below zero is, is indicative of the power
10 absorbed by the reactor being higher than the power
11 available from Florida Power and Light, and that's a
12 problem. And why, and as I said, whether it's a problem
13 with Florida Power and Light or with Penon's
14 measurements or something else, we don't know at this
15 point.

16 Then the other line is, if you consider that
17 the building, which is the explanation in this previous
18 plot, the explanation for the difference between what
19 Penon and Fulvio Fabiani measured and what Florida Power
20 and Light said they delivered, that difference would be
21 the amount of power used outside of the reactors for
22 whatever purpose.

23 Q. Okay.

24 A. Office, whatever. So that difference right
25 there is reflective of the nominal power absorbed in, in

1 the building. But what we did was instead of using
2 that, because that's really difficult to say because we
3 don't know if, what was going on over in JM Products.
4 What we did is we just looked at the windows outside of
5 those periods of time to establish a very conservative
6 number and drew that very conservative number on this.
7 And so that's indicative of that number that I just
8 described. Does that make sense?

9 Q. To be honest, not really.

10 A. Okay.

11 Q. But I, I'm not going to ask you to do it
12 again.

13 A. Okay.

14 Q. The cumulative energy absorption, FP&L minus
15 Penon, what does that tell you?

16 A. So what we're doing is for each one of these
17 data points --

18 Q. I'm going to back you up for a second. What
19 conclusion were you able to draw from --

20 A. Again --

21 Q. -- that graph?

22 A. -- this was included in here. The, the only
23 area of concern is actually right here where the
24 cumulative energy is actually decreasing in that period
25 of time. So there's a slight decrease in the cumulative

1 energy when you compare Florida Power and Light to
2 Penon, which indicates that one of those measurements is
3 clearly in error because you can't give energy back.

4 Q. But you don't know which one?

5 A. No, we don't.

6 Q. So what does this, what does this tell you
7 other than there's an error in one of the measurements?

8 A. What this tells us is anywhere that the value
9 is below zero is a, is an impossibility in the case
10 where the measurements are correct. If the measurements
11 are incorrect, then that may be described by an error in
12 the data.

13 Q. Okay. So it says that there is an error in
14 the data, whether manipulated or --

15 (Conference call interruption.)

16 Q. So sir, that just tells you that there's an
17 error, there's an error or inaccuracy in one of the data
18 sets, correct?

19 A. Yes.

20 Q. Okay.

21 A. I think that's fair to say, yes.

22 Q. So you've got two data sets that report one
23 thing consistently, fairly equivalent to each other, and
24 one data set that is different. And of those three data
25 sets, at least one of them is incorrect?

1 A. I would agree with that, yes.

2 Q. Okay. But you don't know which one?

3 A. No, not at this point.

4 Q. And the investigation you've done doesn't
5 tell you whether it was Penon's or FP&L's or Fabiani's?

6 A. Penon, FPL -- yes.

7 Q. Okay. How did you decide on what data to
8 review?

9 A. In what context? What are you --

10 Q. In, in doing this analysis.

11 A. Oh, in this?

12 Q. Yes.

13 A. I took the, the data from the final report.
14 I took the data that Fulvio Fabiani had provided us, and
15 then I took the data from the, the Florida Power and
16 Light subpoena. That data were the only sources that I
17 was aware of for power absorption data.

18 Q. Okay. Who provided you that data?

19 A. These three sources of data? Well, I
20 received a copy of the final report from I, I believe I
21 may have even been on the distribution from Mr. Penon.
22 The data from Fulvio Fabiani was what he provided when
23 he met with us in Jones Day office. And the Florida
24 Power and Light data was provided to me by counsel.

25 Q. So ultimately based on the graphs that you

1 did here, you came to the conclusion that the results
2 were at odds with the amount of power reported between
3 the three measuring entities, we'll call them?

4 **A. Yes.**

5 Q. But you make no opinion as to why they're at
6 odds?

7 **A. Not at this point.**

8 Q. Okay. Your next opinion stated, sir, is
9 that, "Mr. Murray compared these numbers to the actual
10 power provided by FP&L to the Doral location and found
11 numerous inaccuracies" -- I'm sorry. That's part of the
12 same one.

13 **A. Which, which, what's the --**

14 Q. Okay.

15 **A. -- document number on that one?**

16 Q. That is 11.

17 **A. Oh, it's this one. I'm sorry.**

18 Q. Yes, your report. I'm sorry. The second
19 part was, "Mr. Murray also compared Penon and Fabiani's
20 data to the historical average amount of power data."
21 Is that what we were discussing?

22 **A. Yes.**

23 Q. That red line?

24 **A. Yes.**

25 Q. And what did that tell you?

1 A. That just said if we, if we had a
2 conservative estimate for the, the amount of absorption
3 into the building for other purposes besides the
4 reactor, that, in fact, there were many more days where
5 the measurements were below, but again it's the same
6 problem. If Florida Power and Light's data was
7 inaccurate, then it's, it's, there are equal probability
8 of which source of data was incorrect.

9 Q. Okay. So it doesn't tell you one way or
10 another whether there's been manipulation or, or
11 otherwise with respect to any set of data?

12 A. No.

13 Q. Your next opinion states that you "compared
14 the reported power input to the E-Cat plant reported by
15 Penon against the reported coefficient of power, COP,
16 reported by Penon as reflected in Exhibit C." Let's
17 look at Exhibit C for a moment. And in doing so,
18 "Mr. Murray will testify that there is no logical reason
19 why the COP should be changing inversely to the amount
20 of power inputted given the same E-Cat plant was used
21 throughout the guaranteed performance test." I'm sorry,
22 what was the, the formula for COP calculation?

23 A. It was I believe based on our reproduction of
24 the final report data, it was the energy out over the
25 energy in, or power out over power in on a per day

1 **basis.**

2 Q. Okay. So the energy out is the numerator,
3 correct?

4 **A. Yes.**

5 Q. The energy in is the denominator?

6 **A. Yes.**

7 Q. Okay. So logically speaking, COP would
8 increase one of two ways, by the energy out increasing
9 relative to the energy in, correct?

10 **A. Uh-huh.**

11 Q. Or by the energy in decreasing, correct?

12 **A. Uh-huh. If the energy out stayed constant.**

13 Q. What if the energy out increased?

14 **A. Well, then it would even increase more.**

15 Q. Okay. So let's look at your graph. Your
16 concern over this is that, and you say there is no
17 logical reason why COP would increase when energy in
18 decreases?

19 **A. Uh-huh.**

20 Q. How do you come to that conclusion?

21 **A. So what I was referring to is throughout the**
22 **entire test period there were numerous points that were**
23 **documented in various reports and along the way of**
24 **reactors going offline. Mr. Fulvio Fabiani provided us**
25 **with a log, actually in Italian that had to be**

1 translated to English, that showed this reactor went
2 offline and that reactor went offline, this Big Frankie
3 went offline, it was brought back on. It gives us
4 intervals of time.

5 And the thing that we saw was that when a
6 reactor went offline, the COP went up and the output
7 energy stayed the same, but we know from the physical
8 configuration that the pump system on the front end that
9 provides water to these systems is feeding the
10 individual reactors. So if you turned off a reactor --
11 and you would expect a COP to be constant, but let's say
12 he had a COP of 100. When you turned off a reactor, you
13 would expect the COP to be constant, but the power
14 output would go down.

15 And this, and instead, what we saw was that
16 when a reactor was taken offline, the COP went up and
17 the output power stayed exactly the same, which in my
18 opinion is consistent with measurement error and
19 particularly the measurement error associated with the
20 flow meter. Because if the flow meter was flowing water
21 through it and it was inaccurately measuring just
22 because it was incorrectly sized or wasn't properly
23 implemented in this system, it may read the same exact
24 invalid number below the minimum.

25 And so it was indicative of, hey, this is an

1 obvious problem. I, it is my opinion that any competent
2 engineers would have seen this and said wait a minute,
3 we have to understand this.

4 Q. Okay. Let me ask you a question. If you
5 have two devices, let's say we have two reactors.

6 A. Sure.

7 Q. Each operating at 50 percent capacity.

8 A. Okay.

9 Q. Okay. And they're each capable of producing
10 50, what, kilowatts? Does that make sense? Kilowatts?

11 A. 250, but okay.

12 Q. Okay. Let's say it's 250.

13 A. Okay.

14 Q. Each, right?

15 A. Uh-huh.

16 Q. Okay. So that means when they're operating
17 together at 50 percent capacity each, they're putting
18 out a total of 250 kilowatts, correct?

19 A. Okay. I buy that.

20 Q. Now, and they're receiving energy in to
21 operate?

22 A. So input.

23 Q. Yeah.

24 A. Yeah, the heating energy, yes.

25 Q. Okay. The heating energy to those two units.

1 A. Uh-huh.

2 Q. If one of those goes offline and you increase
3 the energy to the remaining unit, okay, that means not
4 necessarily an excess of what -- I mean you could double
5 the energy to that second unit and still at the same be
6 at the same energy input, correct?

7 A. Last week when I was sitting in on
8 Mr. Rossi's deposition, he specifically stated that they
9 did not have the means to control the energy input when
10 reactors went offline, which is consistent with what I
11 understood. So the scenario you're describing is
12 inconsistent with the testimony that I, I listened to
13 last week.

14 Q. I'm sorry. You believe he said that he could
15 not, he could not control the energy input to the units?

16 A. Yeah. He could not, he could not control the
17 COP by increasing the energy to a unit. That's what I,
18 that's what I believe I heard last week. And
19 furthermore, that when we looked at this, the question
20 was how would you control the heating elements in each
21 one of the individual units? Because as was evident and
22 when we visited the plant, numerous of the actual
23 elements were pulled out and taken offline. They were
24 covered up with hose, little hose covers like garden
25 hose covers.

1 Q. Off the Big Frankies?

2 A. Yes, yes. Many of the actual reactors were
3 completely disabled when we were there on February 16th
4 and 17th. I, I took pictures of it. I was kind of
5 surprised to see that all of them were not functional.
6 And so what we saw was a lot of failures. And so what
7 would happen is if, if you were in a condition when at
8 several points during the test -- in fact, in the
9 October time frame I think Mr. Penon came back to the
10 site and he identified all of the reactors that were
11 turned off and disabled. He indicated that by a zero
12 amperage input to them when he was measuring the system.

13 And so when you look at that, what you would
14 be doing is you would be overdriving certain heater
15 elements, but you didn't have the ability to increase
16 the water flow because some of those pumps were routed
17 to Big Frankie 1, some were routed to Big Frankie 2,
18 some to 3 and some to 4. So it would have required a
19 complete reconfiguration of the water flow system. So
20 in my opinion --

21 Q. How were the pumps controlled?

22 A. How were the pumps controlled? They looked,
23 looked to be manually controlled on the front panel.

24 Q. Okay. So, so if you have one system go down,
25 somebody could go and manually --

1 A. So we looked at that --

2 Q. -- turn off the pumps, right?

3 A. So we looked at that and we took pictures of
4 the pump configuration when the plant was still
5 operational on the 16th, and what we saw was that the
6 pumps were in a fixed, almost maximal rate. And, in
7 fact, we also saw that some of the pumps had sediment
8 and, and biofouling in some of the lines, indicating
9 that there's no flow in those. So those pumps were
10 disabled.

11 And so it's, it's very unusual. You would
12 expect a system like this to maintain a constant
13 coefficient of performance nominally, in particular
14 considering that the system was originally supposed to
15 operate I believe it was 64 reactors in the Big Frankie
16 coupled with 51 of the smaller reactors. And at the
17 onset of the test all 51 of the other reactors were
18 disabled, and by the time we got there many of the Big
19 Frankie reactors were disabled. And furthermore, we
20 know from the data that Mr. Penon provided, numerous of
21 the Big Frankie reactors were disabled in that October
22 time period when he was there.

23 Q. Okay. Now, taking this one at a time. If
24 all of the reactors within the E-Cat unit were
25 operational at their maximum capacity, how much energy

1 would be put out by that machine?

2 A. I have no idea.

3 Q. Okay. So you really can't testify that any
4 particular reduction makes it impossible that the amount
5 of energy reported by Dr. Penon could not have been
6 achieved?

7 A. What I can say as, as an engineer is that
8 taken, taking all of these factors together, the flow
9 rate, the pressure measurements, the, the adding of
10 water, the inability to see what's on the other side of
11 the plant, the lack of defining the state for the output
12 steam as well as the input steam, taking them on the
13 whole, it seems highly unlikely. In fact, in my opinion
14 I would say it cannot happen.

15 Q. What cannot happen? The amount of power --

16 A. Yeah.

17 Q. -- the input?

18 A. The amount of power going up proportionally
19 when they turn off more and more reactors cannot happen.

20 Q. The amount of power went up or the COP?

21 A. Well --

22 Q. Please --

23 A. Let's be careful. Let's be careful. So if
24 you look at the formula for the COP, and let's say in
25 terms of energy. We'll take it on a, energy on a daily

1 average. What happened was the amount of output energy
2 was effectively not, I shouldn't say constant, it varied
3 some, but the input energy to the system actually went
4 down. So we actually see a reduction in the input
5 energy. So this disproportion means the output energy
6 was constant and the input went down and, therefore, the
7 COP went up. So if I put in less power, how could that
8 happen? It's just completely illogical.

9 Q. Okay. How long, this reaction that's used on
10 the device -- first of all, do you have any background,
11 education, or work experience with LENR technologies?

12 A. Not before I went to Industrial Heat.

13 Q. Okay. And any experience with nuclear
14 reactors prior to that?

15 A. No.

16 Q. Okay. So are you familiar with nuclear
17 reactors?

18 A. Yes, I am.

19 Q. Do you feel competent to testify as to them?

20 A. No, no.

21 Q. Okay.

22 A. I'm not into the full operation of a nuclear
23 reactor, no.

24 Q. Now, when the reaction is started in the
25 E-Cat and you remove the power source, the input power,

1 does the reaction, does the reaction stop dead?

2 A. No. That was part of the, all of the early
3 data analysis, was the information that was provided to
4 me when I was reviewing in June of 2015 was there was a
5 description of pulsing the power and having a reaction
6 sustained for some period of time and the, having
7 exactly the right frequency for those associated powers.
8 And, in fact, that's something when we did replication
9 experiments, we attempted to, to incorporate those, that
10 functionality to the system.

11 Q. Okay. But the question was when you remove
12 the input power, turn it off, does the reaction stop
13 automatically?

14 A. If the --

15 Q. Just right there on the spot?

16 A. If the, if this is a true functional
17 technology as it has been described, then the answer
18 would be no.

19 Q. Okay. So if we take, in that case when, when
20 they're going offline, if we take an output power of 100
21 with an input power of let's say 2 for example.

22 A. Okay.

23 Q. That would be a COP of 50, right? 100 --

24 A. Okay.

25 Q. -- divided by 2?

1 **A. Sure.**

2 Q. So that would be 50. So if we have that same
3 setup and we have an input or, I'm sorry, an output
4 power of any number, let's say it's 50, but we've
5 removed the input power completely, so it's a 50 percent
6 reduction of output power, but removed any input power.
7 The COP is infinite, is it not?

8 **A. I never observed in any of Penon's report any**
9 **point where they had removed the input power completely.**
10 **Neither --**

11 Q. Well, removing input power from one or more
12 units, not, not from the whole device. But there are
13 points where there is a reduction of input power into
14 these devices, right?

15 A. Well, their devices were taken offline so
16 they could be worked on. In fact, if you look at the,
17 if you inspect the plant, you will see that the original
18 power inputs, the, the heater elements were replaced
19 through the tests. Heater elements were failing, and so
20 they kept bringing people in to replace them. And, in
21 fact, Fulvio Fabiani told me that he, he, in fact,
22 helped to replace some of those. And when they did
23 that, they replaced them with different heater elements.

24 So in that context there were lots of
25 reactions offline for a long period of time. And if you

1 were in there removing elements while there was a
2 nuclear reaction ongoing, I think you would have to be
3 very concerned about the health and wellbeing of the
4 people working on it.

5 Q. Why?

6 A. Because it's a nuclear reaction that's
7 unknown in physics.

8 Q. Okay.

9 A. So you would have to be concerned about any
10 forms of radiation that may be occurring.

11 Q. Have you ever done a radiation test on these?
12 Do you know if they put off radiation?

13 A. Oh, we, yes, we did numerous radiation tests.
14 We used Geiger counters and other tech, techniques to
15 measure. There was no radiation that we were aware of.

16 Q. Okay. So --

17 A. And, and I believe that Dr. Rossi, or
18 Mr. Rossi had done the same thing.

19 Q. Okay. So there was no radiation. Why would
20 you be concerned of the health --

21 A. If it's a nuclear reaction. Ionizing
22 radiation is a, is a major concern. So you would do,
23 have a --

24 Q. It's a concern?

25 A. Yeah, you would do preventive. So it would

1 just be a concern.

2 Q. Wasn't, wasn't one of the big selling points
3 for Industrial Heat that you could have this reaction
4 without the radiation?

5 A. I don't know what their selling points were,
6 so.

7 Q. The, the big thing behind this energy seems
8 to be that there would be no radioactive by-product.
9 Sounds great, doesn't it?

10 A. Sure.

11 Q. That's what was sold to investors, but now
12 the complaint is, is that you can't have people working
13 there --

14 A. No. It's a --

15 Q. -- because --

16 A. It's a measure of safety. If you were in
17 working and let's say -- and I'll expand on that, if I
18 may. Barry West indicated to me when I spoke to him
19 that there are -- and there were documents that showed a
20 bunch of the boards being blown up. So there was
21 leakage current into the system. And so I would have
22 concerns about safety whenever somebody is working on a
23 system like that if you didn't carefully manage it. In
24 fact, Barry indicated, he said this to me, that you had
25 to be very careful about what you touched in the system

1 because you could get an electrical shock. So yeah,
2 safety I think is an important measure in any system
3 analysis.

4 THE VIDEOGRAPHER: Five minutes.

5 Q. Five minutes. So you'll agree with me
6 though, sir, that if you remove the power source and a
7 reaction continues, that the COP would go up because of
8 a decrease in the amount of energy being supplied,
9 correct?

10 A. For some, yeah, for whatever the theoretical
11 period of that, that reaction, yes.

12 Q. Okay. So there may, in fact, be a logical
13 reason as to why the COP would be changing inversely?

14 A. Not for these extraordinary periods of time.
15 I mean I presume what you're suggesting is that for
16 weeks and months, when you took a reaction -- or one of
17 these reactors offline that you would, you would see
18 this reaction continue to sustain itself inside the
19 system. And I don't believe that there was any evidence
20 or any discussion in anything that I have seen to
21 indicate that this would happen on a nearly continuous
22 basis while they repaired the reactors and brought them
23 back online.

24 Q. Now --

25 A. So I would disagree with that comment.

1 Q. Now, if the reactor becomes more efficient,
2 that means COP is increasing, right?

3 A. If the reactor became more efficient, can
4 you --

5 Q. All right.

6 A. What do you mean by --

7 Q. Okay. At different temperatures, this
8 catalyst that's being used, did it react the same at all
9 temperatures?

10 A. I have no idea.

11 Q. Okay.

12 A. I was not privy to the information on the
13 catalyst.

14 Q. So if, if the catalyst or if this reaction
15 was -- is it possible that it is more efficient at
16 higher temperatures?

17 A. It is possible. There's another really
18 nagging issue in this space. Imagine the scenario that
19 you describe where you took half of the reactors offline
20 and you increased the reaction power or the, the other
21 reactors stayed steady, but the ones that were turned
22 off continued to produce heat for some extended period
23 of time. And I believe earlier you suggested that
24 turning up the power, the amount of heat in some of the
25 reactors would also be the alternative to sustain the

1 reaction.

2 If that's the case, the real issue becomes
3 how much power can you dissipate in one localized
4 portion of a reactor. The Big Frankie boxes were
5 approximately let's say four feet by four feet and let's
6 say nominally maybe 18 inches thick. And if you
7 disabled more and more reactors and you increased the
8 power in the individual reactors, then you would be
9 concentrating more and more power into that area. And
10 then what you have is a situation where the plywood box
11 that these reactors are made out of would become very
12 hot and very -- you would have localized heating from a
13 heat transfer for, heat transfer perspective.

14 So from that perspective it presents a whole
15 series of other problems. You know, if you, if you said
16 that these reactions can be turned off and let run for
17 months and months or, I shouldn't say months and months.
18 Let's say --

19 Q. What --

20 A. -- a period of time of two months.

21 Q. Sir, I'm sorry. I'm going to stop you
22 because I have limited time here.

23 A. Okay. Yeah, I'm sorry.

24 Q. With respect to your opinion regarding the
25 inverse relationship of the input power to COP, did you

1 rely upon any written documents or theories or
2 otherwise?

3 **A. I relied upon the information that I was**
4 **provided about this system.**

5 Q. Are there any publications that would support
6 your views that you know of?

7 **A. Not that I am aware of.**

8 Q. Okay. So you didn't rely upon any literature
9 or textbooks or anything to that effect?

10 **A. Yeah, there's very little literature --**

11 Q. Well --

12 **A. -- regarding this. There's the patent**
13 **application, which I have read, and there are other**
14 **aspects --**

15 Q. What specific --

16 **A. -- on (inaudible).**

17 Q. What specific methodology, methodology did
18 you apply to form your opinion that there's no logical
19 reason why the COP should be changing inversely to the
20 amount of power input?

21 **A. The logic that I used was that --**

22 Q. I didn't ask the logic.

23 **A. I'm sorry.**

24 Q. Is there a theory or methodology or --

25 **A. The methodology was to review the data**

1 provided, analyze it, and to look at the, the time
2 history of the energy absorption provided by Mr. Penon
3 and Mr. Fabiani.

4 Q. And if I take the time, could I, could I go
5 through and make those comparisons and come to the same
6 conclusion?

7 A. I don't know if you could. That's me
8 projecting onto you. I'm not sure. You told me before
9 you only, you slept through math -- all your science
10 classes, so I would have to say no.

11 Q. I said I slept through one of them.

12 A. Oh, all right. For the record, it was one.

13 MR. ANNESSER: Okay. We need to change the
14 tape.

15 THE WITNESS: Okay. I need to run to the
16 restroom.

17 THE VIDEOGRAPHER: We're off the record at
18 3:55 p.m.

19 (Recess taken 3:55 p.m. to 4:03 p.m.)

20 THE VIDEOGRAPHER: We are back on the record
21 at 4:03 p.m.

22 BY MR. ANNESSER:

23 Q. Sir, I think previously you had testified
24 with respect to Mr. Dewey Weaver that you had hundreds
25 of e-mails with him.

1 **A. From him.**

2 Q. Or from him. Okay. Were they hundreds of
3 e-mails regarding the E-Cat for the most part?

4 **A. No. No, he, as I described earlier, Dewey**
5 **was kind of like a business development outreach guy**
6 **looking for people that were doing research and**
7 **technology development in this area, trying to build**
8 **relationships for the, you know, what they described as**
9 **the portfolio. And so he was always sharing lots and**
10 **lots of information about different people that he had**
11 **met and what they were doing and what people were**
12 **interested in and things of that sort.**

13 Q. Okay. Now, getting to the next opinion that
14 you have in your report regarding heat simulations. You
15 say, "Mr. Murray's simulation demonstrates how the heat
16 would typically build over time to achieve a steady
17 state temperature. See thermal simulations." What,
18 what is thermal simulations? Is that a publication?

19 **A. No. It's the results of thermal simulations**
20 **that I have run. And so I, I did a series of OpenFOAM**
21 **3D simulations of buoyancy-driven flow inside of the**
22 **building. So when we were there, one of the, on, on**
23 **February 16th and 17th, 2016, one of the things I**
24 **noticed was it was not as hot in the facility as I was**
25 **kind of expecting. When we got there, and I checked**

1 back in the record of the final report, it looked like
2 the days leading up to the end when they turned off the
3 system, it was, it was operating at near full capacity.

4 And so from that standpoint I also observed
5 that there was a skylight and then there was a vent, but
6 when we were there that day or those days the vent was
7 never running. And so I was a little perplexed and
8 tried to figure out how hot should it be in that. So we
9 put together some buoyancy-driven flow simulations of
10 the building based on the estimates for where the wall
11 was and how big was the, the, the box on the other side.
12 And we made the assumption that some amount of heat,
13 various levels of heat had to be dissipated through that
14 box.

15 And so we did a 3D simulation using OpenFOAM,
16 a steady-state buoyancy-driven flow simulation so that
17 we could try to assess, you know, how hot should it have
18 been, just to kind of do a sanity check, make sure
19 things made sense.

20 Q. And your opinion was that the room would have
21 been heated to a temperature unsuited for a human
22 working environment?

23 A. Yes.

24 Q. What temperature?

25 A. We did it for 100-kilowatt dissipation. We

1 did it for 500-kilowatt dissipation, 750, 250, and 800.
2 The 100-kilowatt dissipation reached a steady-state
3 temperature in the building -- I drew a --

4 Q. Okay.

5 A. I'm sorry.

6 Q. I'm going to stop you for a moment.

7 A. Okay.

8 Q. Let's just go to the 800.

9 A. Yeah. I don't have the data. I, I haven't
10 looked at the 800 data since last August, because it was
11 extraordinarily hot. I, the data I focussed on was the
12 100-kilowatt dissipation in the building.

13 Q. Is that the data that you had provided to
14 Industrial Heat back when you made it?

15 A. The 100? Yeah. I provided 100, 250, 500,
16 750, and 800, various different simulations.

17 Q. Do you know why that has never been provided
18 to us?

19 A. Well, those, those simulations, they, for
20 some reason, I don't know why, but when I converted the
21 video simulations, they were corrupted.

22 Q. But I think you testified that that was when
23 you sent it to counsel, but --

24 A. Yeah.

25 Q. -- that Industrial Heat had it previously?

1 A. Yeah. I, I don't know if anybody at
2 Industrial Heat, I'm, I'm sure that they, people have
3 reviewed it. I did take some screen shots as well. In
4 fact, I'm pretty confident that in the data set that we,
5 that we --

6 Q. Here's, here's my problem, sir.

7 A. Okay.

8 Q. We're, we're here today deposing you, but
9 I've never seen these before.

10 A. Okay.

11 Q. So can you describe to me specifically the
12 assumptions that you've made in creating these? For,
13 for example, I do want to ask you about something you
14 said though. You said the vent was not on.

15 A. Yes.

16 Q. What do you mean by that?

17 A. The fan was not turning in the ceiling vent
18 that, when we were there on the 16th and 17th.

19 Q. Was there a fan in the ceiling vent?

20 A. There was some type of device, but there was
21 no movement in there. So we looked up there, and I took
22 pictures of it, and we couldn't see it. So my
23 assumption was that there was no fan moving. Maybe
24 there was a fan, maybe there wasn't, couldn't quite see,
25 but couldn't see any blades moving. So I assumed that

1 it was open and available as a vent to the outside
2 world.

3 Q. Okay. Did you make that assumption in your
4 simulation?

5 A. I did, yes.

6 Q. And how large was that vent?

7 A. I think we modeled it at about three feet in
8 diameter approximately.

9 Q. And how big is it actually?

10 A. We have no idea. I'm not on the roof.

11 Q. Okay. That was --

12 A. I did a best estimate from the pictures that
13 I took.

14 Q. What about the size of the room?

15 A. We measured that when we went back in, I
16 don't remember if it was March or April we measured
17 that.

18 Q. Was that before or after you did your
19 simulations?

20 A. That was before.

21 Q. Any other ventilation?

22 A. There was a, a, a light in the front. I'm
23 sorry. A, like a skylight more towards the other end.
24 There were three doors, but while we were there they
25 were closed, and the main door was closed as well.

1 Q. Do you know if the skylight was actually a
2 vent, the second one?

3 A. The pictures that I took, it did not indicate
4 that it was a vent. It was just a skylight.

5 Q. You don't know though?

6 A. Not -- based on the pictures, what I
7 observed, it was a skylight.

8 Q. Okay. So if that was a vent, that would
9 change your calculations, right?

10 A. Slightly, yes.

11 Q. Okay. And if the bay doors were open for a
12 majority of the time that the plant was running, that
13 would change your calculations too, wouldn't it?

14 A. Yeah. It would actually make the
15 calculations worse in some regards.

16 Q. So more heat would be inside the building
17 than if --

18 A. No. It would be the flow of the heat,
19 because it was a buoyancy-driven flow. So what happens
20 is we assumed that the heat that was dissipated inside
21 the, the box on the other side of the wall, so the steam
22 went over. Something happened in there. We don't, you
23 know, I wasn't privy to see what was going on over
24 there, but we know that the, that the steam was
25 condensed back into water. So it dissipated heat inside

1 of that space.

2 And so what we assumed was some percentage of
3 the heat that was dissipated in that space was actually
4 buoyancy. It was heated through the walls, uniformly
5 heated through the walls of that enclosure, and it
6 caused a buoyancy-driven flow. So buoyancy-driven flow
7 causes huge heating. And the hot air rises, the cool
8 air falls, and it actually creates a large wind when you
9 have very high temperatures and a lot of power.

10 Q. Okay. So the hot air would go up to the area
11 where the vent is, right?

12 A. Uh-huh.

13 Q. Okay. Wouldn't that vent out?

14 A. Some of it does, yeah.

15 Q. Okay. And so as it's going out, it creates
16 actually by, by venting out that way, in essence, a
17 vacuum into the --

18 A. Yeah, but pressure differential.

19 Q. Pressure difference?

20 A. And it wouldn't be a vacuum.

21 Q. Okay.

22 A. But it would be a pressure differential, yes.

23 Q. Okay. So by opening those doors, cooler air
24 would be brought in?

25 A. Could, yeah, but the --

1 Q. Which --

2 A. -- the flow is actually pretty amazing how
3 much flow there was in the room. So because there was a
4 wall, there was a half wall, I don't know if you recall,
5 but there was a half wall. And so you heat, you cause
6 this flow. The flow comes up and collapses, and it
7 rolls back over. So that was the basis of our
8 assumptions for our simulation, was that the vent was
9 open. So air could go out the top, but the doors were
10 closed, like when we were there on that day in February.

11 Q. So you didn't run a simulation with the doors
12 open?

13 A. The doors weren't open when we were there.

14 Q. But you do realize they open and did --

15 A. Yeah.

16 Q. Did you ask anyone there whether they were
17 open the majority of the time that it was running?

18 A. No. Because --

19 Q. It was just --

20 A. -- we were just looking at it, why,
21 specifically I was looking at why wasn't it hotter and
22 more uncomfortable in the building when we were there
23 when it was dissipating all this out.

24 Q. Were there ventilation fans?

25 A. I'm sorry?

1 Q. Ventilation or, I'm sorry. Were there, were
2 there fans --

3 A. Yeah.

4 Q. -- to move air?

5 A. There were two fans located kind of at the
6 aft end of the building, kind of the, the rollup door
7 side of the building.

8 Q. Yeah.

9 A. They were not operational when we were there
10 either.

11 Q. Okay. But did you work those into the
12 simulation?

13 A. No, because they weren't in operation when we
14 were there.

15 Q. Just for that short period while you were,
16 did you ask anyone whether those were normally in
17 operation --

18 A. Yeah, actually we did.

19 Q. -- during the --

20 A. We asked Fulvio Fabiani if they were.

21 Q. What did he say?

22 A. He said from time to time they were on, yes.

23 Q. Okay. But how often is from time to time?

24 A. You would have to ask Fulvio Fabiani.

25 Q. What was the air transfer rate in that

1 building?

2 A. Meaning, what do you mean?

3 Q. Like how often did the air circulate through?

4 A. You mean vented outside and fresh air coming
5 in or?

6 Q. Yeah, absolutely.

7 A. We, I made an assumption about the building,
8 and so I have no idea.

9 Q. What was the assumption you made?

10 A. The assumption was that there was a vent at
11 the top and --

12 Q. Just one?

13 A. The, yes. The, where the vent hole was
14 above, and that it was just heating of that room.

15 Q. Okay. If there was a second vent, would
16 that, would that change your calculations?

17 A. Yeah. It would change the heating, yes.

18 Q. And if the doors were open, that would change
19 the calculations as well --

20 A. Yes.

21 Q. -- for your simulation?

22 A. Yeah. But they weren't there when I was
23 there.

24 Q. What about if the fans were on? Would that
25 change your calculations?

1 A. For some of the convection, yeah. It would
2 actually change the calculation somewhat, yes.

3 Q. How large were the bay doors?

4 A. I would have to look in the simulation. I
5 believe that they were approximately 10 feet wide and
6 about 14 feet high, but that was an approximation.

7 Q. Okay. What was the construction of the
8 building?

9 A. Cement. So there were concrete walls, and
10 there were concrete ceiling modules with a kind of beam
11 structure.

12 Q. Do all types of concrete absorb the same
13 amount of energy, same amount of heat?

14 MR. LOMAX: Objection to the form of the
15 question.

16 A. No. All concrete is not identical.

17 Q. Okay. So did you make any specific notation
18 as to the type of concrete?

19 A. Yeah. We used the average for concrete for
20 the material, and we also used the average temperature
21 for that region from NOAA, and we used the average wind
22 flow velocity on the outside of the building.

23 Q. Were there any windows in the building?

24 A. There were no windows in the back section
25 that I had access to.

1 Q. Okay. What about the front section?

2 A. There appeared to be some windows in the
3 office area.

4 Q. In the office area, so downstairs?

5 A. Well, there were some windows in the front,
6 and there may have been some windows up above as well.
7 I was never in the office area.

8 Q. Do you know what was up on the second floor?

9 A. Huh-uh.

10 Q. Okay. What about a heat exchanger? Did you
11 see the heat exchanger?

12 A. We were not given access to anything on the
13 other side of the wall.

14 Q. Okay. Now, if there was a heat exchanger
15 there, would that affect your calculations or
16 simulation?

17 A. That's why we actually did a 10 percent waste
18 heat calculation, the 100-kilowatt calculation. Because
19 if we just gave the benefit of the doubt that maybe
20 there was some mechanism that we were not privy to
21 dissipating most of that heat, you would still have
22 losses in the system and you would still have to get
23 that heat out. So what we assumed, which actually was a
24 very generous assumption, was that in the case of the
25 100 kilowatt, that the, a 10 percent waste heat was

1 actually a very modest number compared to the 1,000
2 kilowatt plant waste heat.

3 Q. What temperature was the, the room at 100
4 kilowatts?

5 A. So what I did was I drew section lines along
6 two locations. I drew a line directly down the path
7 through the door that went from the front to the back,
8 and then I drew a line up above. And on those lines I
9 showed the temperature at each one of the fine element
10 points. And the temperature ranged from about 55
11 degrees Celsius up to about 68 degrees Celsius along
12 those two lines and in the section line.

13 There were other places where it was all the
14 way up at 100 degrees C, but I felt like, you know, that
15 was the area where most people were operating and
16 working, so that would be the area to be concerned with.

17 Q. Do you know what the specifications of the
18 heat exchanger were?

19 A. I was -- which heat exchanger?

20 Q. The heat exchanger used at the facility.

21 MR. LOMAX: Objection to the form of the
22 question.

23 A. I don't, I don't have any information about a
24 heat exchanger in the facility.

25 Q. Okay. And so you didn't use any of that

1 information in preparing your simulation?

2 A. Well, it wasn't provided, yeah, so I don't
3 have that information.

4 Q. Okay. So you, you only performed a
5 simulation assuming one vent, closed doors --

6 A. Uh-huh.

7 Q. -- no heat exchanger?

8 A. Well, I mean so here's the, we have to be
9 careful when we say no heat exchanger. I assumed that
10 there must have been some mechanism to dissipate a good
11 amount of the heat because there was no, clearly there
12 was no work being done in the system because there was
13 no pressure, right. The pressure was reported at zero
14 continuously throughout the test. So there was no work
15 being completed.

16 So if you consider that, I said, well, let's
17 just give them the benefit of the doubt and say 90
18 percent of the heat they were able to get rid of in some
19 way. Maybe that was your heat exchanger. Maybe that
20 was something else, but there were still losses in the
21 system. So the rest of that heat I said was, well,
22 let's try 10 percent, and then let's try 25 percent, and
23 let's try 50 percent, different levels of efficacy of a
24 heat exchanger, and then do the simulations and look at
25 it and see what the temperature was.

1 So I was surprised to see that the
2 temperature in the simulation would reach as high as it
3 did even at 100 kilowatts, but then I reflected back on
4 the fact that it's Florida. It's pretty darn hot.
5 There was no air conditioning in the building other than
6 the air conditioner for the small ISO container lab.
7 And furthermore, the -- sorry there -- the, so, I lost
8 my train of thought with that.

9 Q. What exterior or, exterior air temperature
10 did you presume if you were --

11 A. 25 degrees Celsius.

12 Q. Which is what Fahrenheit?

13 A. I don't know. You would have to do the
14 calculation. Say about 80. Approximately.

15 Q. You don't know what the losses were on the
16 heat exchanger, do you? You're just --

17 MR. LOMAX: Objection.

18 A. I've --

19 Q. -- making an assumption?

20 A. I, I've, I don't know.

21 Q. Okay.

22 A. I didn't know about any heat exchanger.

23 Q. Okay.

24 A. So for the fourth time, I'm not aware of any
25 heat exchanger.

1 Q. Okay. So you made assumptions based on
2 guesses, based on --

3 A. I made what I --

4 Q. -- very limited information?

5 MR. LOMAX: Objection to the form of the
6 question.

7 A. I made what I believed in my engineering
8 judgment were reasonable assumptions about modeling the
9 building in a way that reflected a very conservative
10 estimate of what the conditions would be.

11 Q. Well, your conservative estimate and mine
12 might differ because my conservative estimate probably
13 would have had bay doors open at least part of the time.

14 A. But when I was in the building the doors were
15 not open.

16 Q. And you were there for how many hours, sir?

17 A. We were there all day on the 16th and all,
18 and about half the day on the 17th. And you were there
19 with us.

20 Q. And was the plant running the entire time on
21 both days?

22 A. The plant was running for up to 10, up until
23 10:30 on the first day when they shut it down, but as
24 you said before, even if you turn off the, the heaters,
25 the reaction will run for apparently months as you

1 showed in or as you discussed in your COP arguments. So
2 turning it off doesn't mean that it immediately turns
3 off.

4 Q. Now, sir, in these steam systems, the
5 pressure is only necessary if you're dealing with
6 mechanical work, right, not, not simply where heat is
7 used; is that correct?

8 A. That's right. If you want to heat something
9 to let's say 103 or 104 degrees C, you would need
10 pressure. You have to be able to have enough pressure
11 so that the steam will flow through the pipes and have
12 the loss, overcome the losses in the pipes. Remember
13 how I described all the elbows and the 90s in the length
14 of the run? There are natural losses in the piping
15 system that you have to overcome that pressure drop.

16 So in a case where you're, where you would
17 have very low, very low pressure, for example, like
18 maybe a, a, a laundry service, they may do something
19 like that. When you do that, you can't do work. So
20 there, it wasn't like there was pressure turning a
21 turbine or pressure turning some other device. All that
22 was happening was that steam was being used to heat
23 something. And so what you're doing is you're
24 converting the, the, converting this higher temperature
25 area, transferring that heat to some other lower

1 temperature area, and condensing the steam back into
2 water, and recirculating it back to the other side.

3 Q. And what amount of pressure or vacuum would
4 have been needed to move that amount of steam?

5 A. My recollection, based on the information I
6 had, was about 10 PSI pressure drop, but it is
7 impossible to say without knowing what was on the other
8 side of the wall. I mean if there was a bunch of
9 additional plumbing or turns or corners or ups or downs,
10 then that number goes up because there are more losses
11 in the system.

12 Q. 10 PSI?

13 A. Approximately. And I know I'm mixing units
14 on you there, so I'm --

15 Q. You are.

16 A. -- sorry about that.

17 Q. So your thermal simulations, do they set
18 forth, the simulations that you've done, do they set
19 forth all the presumptions and data that you put into
20 them?

21 A. Yes. It's all in the simulation files, all
22 of the assumptions and all of the data.

23 Q. Okay. Do you know whether those have been
24 provided?

25 A. I believe that those were conducted for our

1 **attorneys, so I, I don't know what was provided.**

2 Q. You don't, you don't plan on presenting those
3 to a jury, do you?

4 MR. LOMAX: Objection --

5 **A. I do, yes.**

6 MR. LOMAX: -- to the form of the question.

7 Q. You do?

8 **A. Yes.**

9 Q. So you, you plan on using those simulations
10 in front of a jury, yet somehow they haven't been
11 provided to us prior to your deposition?

12 **A. I don't know what's been provided.**

13 MR. LOMAX: Objection to the form of the
14 question.

15 **A. So I don't know what has been provided. I**
16 **provided those to counsel, and I provided them as a**
17 **basis for understanding what was going on in the**
18 **building.**

19 Q. As well as a report?

20 MR. LOMAX: Objection to the form of the
21 question.

22 **A. Yes. I think I, I believe I did write a, a**
23 **report.**

24 Q. Okay.

25 THE VIDEOGRAPHER: 20 minutes.

1 MR. ANNESSER: 20 minutes to?

2 THE VIDEOGRAPHER: Your cut off.

3 MR. ANNESSER: To my cut off, okay.

4 Q. Going to the next opinion that you give as to
5 water flow. We've talked about this to some degree.

6 A. Yes.

7 Q. I'd like to ask you about the methodology,
8 specifically what you measured and the angles at which
9 you tested them at.

10 A. I don't have the report in front of me, but
11 the, we measured the flow rate as the, we measured the
12 flow rate at, at the, the PoWoGaz adaptor (sic) flow
13 meter using its NC connector interface, the electrical
14 interface. We measured the tumbler odometer device on
15 the top of it as was done in the plant, as, as we
16 understand was done in the plant. And we measured the
17 actual flow rate using a calibrated flow meter when we
18 pump the data from a 1-meter cubed lower chamber up to
19 the inlet of the pipe and let it flow down the, the
20 system.

21 Q. One thing I want to go back to here. I want
22 to mark this as Exhibit 14. Show you this document.

23 (Whereupon, Exhibit 14 was marked for
24 identification.)

25 A. Okay.

1 Q. This document has bates number IH00120283,
2 which appears to be an e-mail from you to Tom Darden,
3 Dewey Weaver with copy to Christopher Pace -- I'm sorry,
4 copy to Dewey Weaver, copy to Christopher Pace, JT
5 Vaughn, April Knight, Brian McLaughlin, and Ms. Watkins.
6 And Mr. Lomax.

7 A. Uh-huh.

8 Q. And this is regarding flow meter testing?

9 A. Yes.

10 Q. Okay. On the second page of this document,
11 there's a small part that's not redacted. It says, "And
12 we are lucky he did not burn down the whole building.
13 In my opinion, there is no possible way even in theory
14 that the BF systems as they were built could support a
15 large amount of heat."

16 A. Yes.

17 Q. Was this part of your opinion?

18 A. I don't know what it was. It's redacted.

19 Q. Was --

20 A. And I, to be honest --

21 Q. Was that --

22 A. -- I don't know what was in there.

23 Q. Was that a report of the flow meter testing,
24 as it says regarding --

25 A. I --

1 Q. -- flow meter testing?

2 A. I have no idea because it was redacted. I, I
3 don't know. I indicate in the first e-mail, "The flow
4 meter testing is ongoing." And then I go on, "Attached
5 are three 500-kilowatt simulation videos. I have other
6 simulations complete that I need to make videos out of.
7 It should be very hot in the building."

8 Q. Okay. Are those, are those the simulations
9 you're talking about today?

10 A. Yes.

11 Q. Okay. So they had those as of May 7, 2016?

12 A. Yeah. These are the ones that I don't know
13 if they could actually see them.

14 Q. You don't know one way or another?

15 A. I don't. Because after I sent follow-on
16 videos, I mean they may have been able to read these,
17 but I know recently when I started sending videos to
18 them they were all, they, they were static. I don't
19 know why, but it was a conversion error.

20 Q. But, but at the very least you had attempted
21 to send it to them, and presumptively if they didn't go
22 through, they would have told you on or before May 7,
23 2016?

24 A. Yeah. That's about the time line.

25 Q. Okay. So they've had this stuff for a while.

1 A. Well, let me, hold on one second. Let me see
2 here. May 7th, yes, I think that's fair.

3 Q. Okay. Now, with respect to the heat
4 simulations, are there, are there specific formulas that
5 you used to calculate the, what the room temperature
6 would have been?

7 A. Yeah. That's, that's the purpose of the, the
8 OpenFOAM simulation software. It allows you to do a
9 wide variety of turbulent flow, buoyancy-driven flow,
10 heat transfer analyses. It's an entire decomposition of
11 the diffusive heat transfer equations.

12 Q. So what's the formulas? What are the
13 equations?

14 A. It's the heat transfer equations. It's the,
15 it's the finite element version of the heat transfer
16 equations as it's coded in OpenFOAM. It's a
17 buoyancy-driven foam -- flow simulation.

18 Q. Okay. So this, this software provides the
19 equation?

20 A. Well, the software is an implementation of a
21 finite element solver for these equations. So what you
22 do is you create a model of the, what you're going to
23 simulate. And then you create boundary conditions, and
24 then you set up a set of simulations. So in this case
25 it was a buoyancy-driven flow.

1 Q. Okay. But what are those equations
2 specifically? Do you know?

3 A. I can't recite them off the top of my head.

4 Q. Okay. Do you know what they are?

5 A. Yeah, they're the --

6 Q. If --

7 A. -- well, heat transfer, the --

8 Q. Okay.

9 A. Yeah.

10 Q. This simulator, if I were to go to open, open
11 flow --

12 A. OpenFOAM.

13 Q. -- OpenFOAM, sorry, and put in all of the
14 requested data for this, could I run a simulation?

15 A. I don't think you have the competency to do
16 that.

17 Q. I would not --

18 A. And nothing personal.

19 Q. -- be insulted.

20 A. Right. So not, nothing personal. I don't
21 believe that -- I mean you have to have some
22 expertise --

23 Q. Why?

24 A. -- and that's why --

25 Q. What, what does it take that I don't have?

1 A. A lot of understanding of the heat transfer
2 and the fluid mechanics and --

3 Q. What about? What about? I mean give me
4 specifics, not just about the heat transfer.

5 A. You have to have an understanding of all the
6 boundary conditions that you would define, the materials
7 that you would define, how you would -- a major part of
8 this is how you decompose the system into a series of
9 grids so that you can solve it. And you would have to
10 have an understanding of how the tools work. You would
11 have to have a computing system that was adequately
12 large to run the simulations.

13 For example, the 100-kilowatt simulation that
14 I've been running, that actually has taken almost three
15 weeks on a pretty powerful computer. So there's,
16 there's a lot that goes into it, and that's why I
17 actually, I have been doing simulations of this sort for
18 many, many years. And, and actually we have outsourced
19 when, in my previous company we outsourced it to other
20 companies that did this. And when I left my company, I
21 was very interested in looking at OpenFOAM because of
22 the power of this tool. And it's open source. So I
23 actually went and had training on open -- on using this
24 tool in contrast to other tools that we have used in the
25 past.

1 Q. And so it, it applies these equations that
2 you can't tell me today what they are?

3 A. Yeah. They're the, they're the diffusive
4 heat transfer equations. Do you, you want me to write
5 out the calculus?

6 Q. Do, do you know it?

7 A. No, not off the top of my head.

8 Q. Okay.

9 A. And so.

10 Q. Did you rely, in preparing the data to put
11 into this simulator, did you rely upon any written
12 literature, publications, or otherwise?

13 A. Yeah. I, I relied on all of my training
14 throughout my masters and PhD programs in convective
15 heat transfer, fluid mechanics, turbulence simulations.
16 Most of my graduate work was actually in those areas,
17 and then I used and then I employed this tool. As I
18 said before, my, my research in my PhD program was on
19 large eddy simulations, which is a family of simulations
20 that can be done in this tool. And so, and
21 that's actually how --

22 Q. Large eddy deals with fluid, correct, not
23 air?

24 A. -- it's -- what's that?

25 Q. Large eddies refer to fluid?

1 A. No. A large eddy simulation --

2 Q. Sure.

3 A. -- is a, it's a course grid scale full
4 simulation of the Navier-Stokes equations, and it can
5 incorporate the heat transfer equations for, on a course
6 grid. And what you do in large eddy is you solve at a
7 large grid, and you model at a smaller grid. So that
8 was my research. You said we were going to get back to
9 it, but that was my research in my PhD program.

10 And so a large eddy simulation is not, it, it
11 can be used for lots of different things. You can use
12 it for fluids. You can use this for gas. You can use
13 it for plasmas. You can do lots of different things.
14 In this case, we were doing it for air, the most simple
15 case.

16 Q. With respect to the flow meters, sir --

17 A. Yes.

18 Q. -- did you test what the reading on the flow
19 meter would be if the amount of water passed through it
20 and the amount being, the amount that Penon reported
21 went through?

22 A. Uh-huh.

23 Q. You did?

24 A. I'm sorry. Say that again. I'm sorry.

25 Q. Did at any time you test these flow meters

1 that you had -- and how many of them did you test?

2 A. We tested two of them. We bought four of
3 them.

4 Q. Is there a reason you didn't test all four?

5 A. One of them we bought was a much smaller unit
6 that would have been more appropriately sized for this
7 application, and we just never got to it.

8 Q. Okay. What about the two that you tested?
9 Were they the exact same unit?

10 A. They were the exact same unit, yes.

11 Q. Okay. And did you test them by putting
12 through, I believe it's 1.6 cubic meters of water per
13 hour?

14 A. 1.6 is the limit, right? That's the minimum.

15 Q. Okay. And, and what was the plant producing?

16 A. The plant was producing between 1 and 1.5.
17 So it was below the minimum operational point for the,
18 for the, for the unit.

19 Q. 1 and 1.5? Now --

20 A. Yeah, that's what I recall. So if we take --
21 yeah, 1.5 was 36,000. And I believe there was a number
22 like 24,000, and that would have been 1. Assuming that
23 the density of water --

24 Q. What was the average?

25 A. Across the whole test? I don't know. I

1 **don't think I ever --**

2 Q. Majority of it was done at 36,000, correct?

3 A. **Yeah. Most, most of the numbers were around**
4 **36,000 or exactly 36,000.**

5 Q. Okay. So at 36,000 you would be talking
6 about --

7 A. **1.5.**

8 Q. -- 1.5.

9 A. **And --**

10 Q. Did you --

11 A. **-- at 24 it was about 1. It is 1.**

12 Q. Did you test the flow meters by putting
13 through 1.5 cubic meters per hour?

14 A. **No, we did not.**

15 Q. Okay. So you don't know what the error rate
16 would have been putting that amount through?

17 A. **Well, it's not --**

18 Q. Your test was simply to determine whether you
19 could achieve some lower amount of water flow to fool
20 the device?

21 A. **No. I was not suggesting fooling the device.**
22 **What I was saying is that the manufacturer has a very**
23 **clear set of instructions, and in the set of**
24 **instructions they indicate what, how to properly size a**
25 **system. And they indicate that the, the device has to**

1 be full, and they indicate that any measurement below
2 1.6 is invalid. So from that standpoint, we wanted to
3 know what would happen if you were below. Because
4 they're invalid measurements if you can't meet the
5 minimum. They just don't work.

6 Q. Do you know, sir, the specific device that
7 was used, the flow meter, was it certified prior to its
8 use?

9 A. In the reports they indicate that there was a
10 test report.

11 Q. Yeah.

12 A. I never saw that test report before the test,
13 but what I did have is the PoWoGaz adapter -- I think
14 that's the correct name -- PoWoGaz adapter type
15 certification from their website and their manuals. And
16 they, of course, sent that information when we bought
17 the units too.

18 Q. Okay. Do you have any reason to dispute the
19 certifications of any of the equipment that were
20 performed prior to the test?

21 A. I have, I, I don't think I've ever seen the
22 certifications before the test.

23 Q. Okay. The...

24 THE VIDEOGRAPHER: Got eight minutes.

25 Q. Okay. So you've never seen the

1 certification, sir. Do you have any reason to doubt
2 them?

3 A. Well, I haven't seen them, so I wouldn't know
4 what to comment on doubting them.

5 Q. Well, I'm asking you sitting here today
6 whether you have some information that any certification
7 would be inaccurate.

8 A. It would depend on what the test was and how
9 it was done and who did it and if the, if there was
10 control over the devices before and after and, I mean it
11 depends on a lot of things.

12 Q. All right. Let me ask it this way. Have you
13 formulated any opinion that the devices have been
14 tampered with?

15 A. No, I have not.

16 Q. Have you formulated any opinion that the
17 device or devices in this case have been inaccurately
18 measuring?

19 A. Inaccurately measuring, so I have --

20 Q. Are they, are they flawed measurements?

21 A. I have formulated an opinion that the flow
22 meter was improperly sized and it was operated below its
23 minimum operating point, which is the data that was
24 provided by Penon and also supported by the information
25 provided by the manufacturer including the type

1 **certificate.**

2 Q. If the flow meter were, was certified and
3 tested at the reported flow rate, would you have any
4 reason to challenge that report?

5 **A. It wholly depends on what testing was done**
6 **and how it was done and by whom and what their**
7 **qualifications to do the testing would be.**

8 Q. Let me show you, sir, what we will mark as
9 Exhibit 15.

10 (Whereupon, Exhibit 15 was marked for
11 identification.)

12 Q. It's a composite exhibit, all there. I
13 believe it's 15.

14 **A. It's 15. This one is 14.**

15 Q. Is a composite exhibit, and I'm going to ask
16 you to turn to the document bates stamped as Penon
17 00000156, which purports to be a certification performed
18 on the flow meter, the one used on this test, not a
19 similar one or different model, but the same one, same
20 serial number. And it was purportedly performed on
21 March 11, 2016.

22 **A. 156?**

23 Q. Yes, sir, 156.

24 **A. Okay.**

25 Q. Okay. And it purports that where there was

1 1.52, which is what we decided was the average when
2 it's --

3 A. I don't remember.

4 Q. -- at 36?

5 A. Yeah, you --

6 Q. Okay.

7 A. -- you suggested that. I don't know the
8 averages.

9 Q. Well, at 36, at 36,000 --

10 A. Is 1.5.

11 Q. -- liters, it's 1.5. So this tested at 1.52,
12 resulted in a error rate of 1.31 percent.

13 A. I don't --

14 MR. LOMAX: Objection.

15 A. -- speak or read Italian, and I haven't had
16 an opportunity to review this. And so from that
17 standpoint, I would have to understand what the full
18 test was. I don't know who LMV Rapporto Di Taratura is.
19 I don't know if they're qualified. And furthermore,
20 they are, they are calibrating a device outside of the
21 operational range that it was manufactured and designed
22 for. It's inconsistent with all of the instructions
23 from the manufacturer. Do you have this same
24 calibration in English by chance?

25 Q. I do not believe we have one in English.

1 They --

2 A. Okay.

3 Q. -- happen to be an Italian company.

4 A. Okay. So we probably need to have this
5 interpreted and find out who these people are.

6 Q. Likewise, if you turn to Penon 0000158.

7 A. Uh-huh.

8 Q. Okay. It is a second measurement of this
9 device.

10 A. Uh-huh.

11 Q. Okay. And it measured between .7 cubic
12 meters per hour and 2.5 cubic meters per hour?

13 MR. LOMAX: Objection.

14 A. Yeah, again I --

15 Q. Purportedly.

16 A. I don't know. Is this maybe Italian? Maybe
17 this is even a different language. I don't know what
18 this is in. Is it --

19 Q. Do you know what M3/H means?

20 A. Yeah. What does portata mean?

21 Q. Flow.

22 A. That's flow?

23 Q. I believe that's flow.

24 A. Okay. So --

25 Q. That's the best Italian I know.

1 **A.** **Okay. So why, maybe you could go through and**
2 **interpret all of this language for me.**

3 Q. That I cannot do for you because I don't
4 speak Italian.

5 **A.** **Okay.**

6 Q. Sir --

7 **A.** **Is that maximum flow, minimum flow, average**
8 **flow?**

9 Q. I believe that's the tested rate.

10 **A.** **Okay.**

11 Q. But let's make that assumption for now.
12 Okay?

13 **A.** **Okay.**

14 Q. We'll, we'll call it an assumption. We can
15 have you check that. But at 1.5, errore, which I'm
16 pretty sure we both can guess is error percentage --

17 **A.** **Uh-huh.**

18 Q. -- at 1.5 appears to be .3 and .4 --

19 MR. LOMAX: Objection.

20 Q. -- percent.

21 **A.** **This, again I'll go back to the original**
22 **discussion. Where is the test plan? Where are the test**
23 **procedures? Where is the data to support this? These**
24 **are numbers in Italian on a sheet of paper.**

25 Q. That is a great question. Where is your test

1 plan, sir, for the test you ran?

2 **A. It's in our, in our archival, and it was**
3 **provided to our attorneys under attorney-client**
4 **privilege.**

5 Q. It has not been provided to me --

6 **A. I don't, I don't know.**

7 Q. -- so I can't evaluate your test either, but.

8 MR. LOMAX: Objection to this as argumentive.

9 You're just making conversation instead of
10 questions.

11 Q. Can I properly evaluate your test, sir,
12 without knowing the test plan?

13 **A. I don't believe you can.**

14 Q. Okay. Can I properly assess your test, your
15 testing without being provided the test data?

16 **A. I don't believe you could.**

17 THE VIDEOGRAPHER: One and a half minutes.

18 Q. Can I adequately evaluate your test data
19 without seeing any information --

20 MR. LOMAX: Objection.

21 Q. -- regarding how it was performed, how it was
22 run, the test data, the assumptions made, the slope, the
23 flow rate of the water?

24 **A. Only to the equivalent extent as I can read**
25 **Italian and interpret this.**

1 Q. Okay. So your answer is --

2 A. So the answer would be no.

3 Q. No.

4 A. Yeah.

5 Q. Okay. So, so you, you understand that I'm
6 sitting here today and I'm, my hands are tied. I can't
7 really evaluate whether what you did was proper or not?

8 A. Uh-huh.

9 Q. Sir, do you --

10 A. Is there, is there, do you have the, these
11 same calibrations before the test?

12 Q. Yes, sir.

13 THE WITNESS: Can we get copy -- do we, have
14 we, do we have copies of that?

15 MR. LOMAX: Were they provided in discovery?

16 MR. ANNESSER: I believe they had been.

17 MR. LOMAX: Okay. If you know the, the
18 bates.

19 THE VIDEOGRAPHER: 20 seconds until the time.

20 Q. Sir --

21 A. Yeah, so we'll take an action to look those
22 up. We would, we would definitely want to see those.

23 Q. Absolutely.

24 A. See the same calibrations before.

25 Q. Now, sir, just so we can move on, other than

1 the opinions you've set forth here, do you plan on
2 offering any other opinion testimony?

3 **A. Not as far as I'm aware at this point.**

4 Q. Are you planning on opining that there was
5 some sort of manipulation or nefarious activities taken
6 by Dr. Rossi or any of the other third-party Defendants
7 in this case?

8 **A. Not that I, not that I would imagine at this**
9 **point, no.**

10 Q. Have you seen any evidence of nefarious
11 activities?

12 **A. Not at this point.**

13 Q. Okay. Is it your understanding then, sir,
14 that in all likelihood or is it your opinion that the
15 problems with the data are the result of a either poor
16 test plan, well, a poor test plan?

17 **A. My opinion would be that the, the results are**
18 **a combination of poor test plan, poor documentation, and**
19 **a completely inadequate selection of the sensors used**
20 **for this system.**

21 Q. Okay. Are you planning on opining that the
22 test plan was not followed?

23 **A. Mr. Penon provided me with a test plan on the**
24 **day, on February 16, 2016, trying to remember that day**
25 **is correct.**

1 Q. Yes, sir.

2 A. He provided me with the test plan regarding
3 what they were going to do that day. That was different
4 than the information that was provided in these other
5 test documents. So when we were there, I asked him if
6 he could provide me a test plan, test procedure, the
7 things that you would normally do to kind of close down
8 a system. And he provided me a different document, so
9 I'm not sure if the document he provided me on that day
10 was the correct document or which document, because
11 there were --

12 Q. Well --

13 A. -- a wide variety of them.

14 Q. -- there's a different plan for the
15 close-down procedures than there is for the start-up
16 procedure, right?

17 A. Well, it was different than what was
18 presented here, so yes.

19 Q. How was it --

20 A. In fact I, in fact I didn't even see that you
21 guys had a copy of one.

22 Q. How was it different?

23 A. He had modified it while we were standing
24 there outside the container waiting for them. He and
25 Mr. Fabiani were creating it. And they said that they

1 had e-mailed it to Mr. Darden a week or so before the
2 test. And we called Mr. Darden to find out if he had a
3 copy of it. Nobody could find it. They went through
4 the e-mails. And so we asked them if they could just
5 forward the e-mail, and they weren't able to do that,
6 but what they were able to do was to produce another
7 document, and that document was different.

8 Q. What, what was different about it?

9 A. Several of the details when I contrasted it
10 with some of these documents that I had --

11 Q. You can't tell me what they are today?

12 A. Off the top of my head I cannot.

13 Q. Okay. Is that from the two documents?

14 There's nothing that requires an expert opinion to tell
15 the differences between the two documents, is there?

16 A. I would say that when I went through and
17 described and looked at it, I would say there were lots
18 of nuanced differences that it would require somebody
19 with some expertise.

20 Q. Such as?

21 A. I don't recall off the top of my head. I, I
22 wrote a summary, in fact, in that of a lot, one of the
23 documents that you've provided today that was redacted,
24 I wrote a summary of a lot of the issues that I had seen
25 with the test plan.

1 Q. Okay. That has --

2 A. And that he provided us on that day.

3 Q. Okay. That hasn't been provided to us
4 either. Now, on that day, on the 16th or 17th you took
5 a lot of notes and measurements, did you not?

6 A. I did, yes.

7 Q. Yeah. Did you ever give those to counsel to
8 produce to us?

9 A. I gave those to counsel --

10 MR. LOMAX: Objection. Again to the extent
11 that there's any communications with counsel.

12 A. I gave those to counsel under attorney-client
13 privilege.

14 Q. Really?

15 A. I did, yes.

16 Q. And, and the attorney-client privilege, do
17 they represent you?

18 MR. LOMAX: Objection.

19 A. I was an employee of Industrial Heat at that
20 point.

21 Q. Were you retained as an expert?

22 MR. LOMAX: Objection.

23 A. I'm sorry. When?

24 Q. Prior to the end of the test?

25 A. Was I retained as an expert prior to the end

1 of the test? No, I was --

2 Q. For Industrial Heat.

3 A. -- an employee of Industrial Heat.

4 Q. Okay.

5 A. Prior to the end of the test I was an
6 employee of Industrial Heat.

7 Q. And your work there was as an employee of
8 Industrial Heat, was it not?

9 A. Uh-huh.

10 Q. Your measurements?

11 A. Uh-huh.

12 Q. Okay. That, that was in the ordinary course
13 of your job functions?

14 A. No. I was provide -- I was doing this
15 specifically because I was requested to do it when we
16 went down to the plant closing after Industrial Heat had
17 engaged.

18 MR. LOMAX: And once, once again --

19 MR. ANNESSER: No, no. Hold on.

20 MR. LOMAX: -- I object.

21 MR. ANNESSER: I'm entitled to timing here.

22 Q. Were you asked to come down to the plant on
23 the 16th and 17th by counsel or as part of your job?

24 A. I was asked to come down --

25 MR. LOMAX: Objection.

1 **A. I was asked to come down by Industrial Heat**
2 **under the guidance of counsel.**

3 Q. Okay. So at that point in time, without
4 seeing any of the things that you observed on that date,
5 was it your understanding that they were planning on
6 litigating with Dr. Rossi?

7 MR. LOMAX: Objection. Do not respond to
8 this based on your --

9 MR. ANNESSER: I asked his understanding.

10 MR. LOMAX: No --

11 MR. ANNESSER: I'm entitled to understand
12 that. Yeah, absolutely.

13 MR. LOMAX: That would be based on his
14 communication with counsel.

15 MR. ANNESSER: Was it --

16 MR. LOMAX: Objection.

17 MR. ANNESSER: His understanding is his
18 understanding.

19 MR. LOMAX: Based on --

20 MR. ANNESSER: I'm not asking about
21 communications. His understanding is not
22 privileged. Communications are.

23 MR. LOMAX: I'm going to instruct you, if you
24 can provide anything outside of what you know from
25 your communications with counsel, then you should do

1 so. Otherwise --

2 MR. ANNESSER: Just because he communicates
3 with counsel doesn't mean he doesn't have to testify
4 to anything that he communicated about. I'm asking
5 his understanding. I'm not asking what was
6 discussed.

7 Q. And I don't want you to tell me what was
8 discussed. I want you to tell me was it your
9 understanding at that point in time that they were
10 preparing for litigation with Dr. Rossi?

11 MR. LOMAX: Objection. If you can answer
12 without divulging what you knew from --

13 MR. ANNESSER: Stop, Mr., Mr. Lomax. You are
14 guiding the witness. Okay. I'm not asking for any
15 communications.

16 BY MR. ANNESSER:

17 Q. You can answer with a yes or no. Was it your
18 understanding, sir, that at that time, as of the end of
19 the test, February 16th and 17th, 2016, that Industrial
20 Heat was preparing for litigation with counsel -- or I'm
21 sorry, litigation with Dr. Rossi?

22 A. All of my communications were with counsel at
23 that time.

24 Q. All right. That was not the question, sir.
25 Was it your understanding that, that Industrial Heat was

1 preparing litigation with Dr. Rossi?

2 **A. My understanding was that the Industrial Heat**
3 **group anticipated that Dr. Rossi would sue them.**

4 Q. Because they did not plan to pay?

5 MR. LOMAX: Objection. I object to this
6 entire line of questioning.

7 **A. I don't, I don't have any idea about why.**

8 Q. Why would Dr. Rossi sue them?

9 **A. I have no idea. He's a litigious person? I**
10 **don't know.**

11 Q. Is he? How many lawsuits has he filed?

12 MR. LOMAX: Objection. I'm...

13 **A. I have no idea.**

14 Q. Well, you just called him a litigious person?

15 **A. Uh-huh.**

16 Q. Based on what?

17 **A. Based on comments made to me by Tom Darden.**

18 Q. What comments?

19 **A. That he's a litigious person and we need to**
20 **drive this to find out if anything is real here.**

21 Q. And when were those comments made?

22 **A. June of 2015.**

23 Q. So your participation in the, in coming down
24 on the 16th and 17th of February 2016, was that in
25 anticipation of litigation or was that in your role as

1 the Vice President of Engineering for Industrial Heat?

2 MR. LOMAX: Objection.

3 A. So my role as, as Vice President of
4 Industrial -- Vice President of Industrial Heat was to
5 go and look at this test closeout. In fact, I don't
6 even believe that I knew the test closeout was going to
7 happen until only a few days before that.

8 Q. Okay.

9 A. Maybe a week before it.

10 Q. What specifically were you asked to do?

11 A. To observe and find out what was going on in
12 the plant, figure out what, what was done, and observe
13 what was happening.

14 Q. Now, at that time -- when did you first learn
15 what, if anything, was on the other side of the wall at
16 JM?

17 A. When was the first time that I learned? I
18 don't know that I actually know what was on the other
19 side of the wall. I know there was the container, but
20 other than a steam contraption to receive steam and send
21 condensate back, I don't know. And, and the noise that
22 it was producing while we were there. So I think I saw
23 some pictures maybe in the last two weeks, three weeks.

24 Q. What noise was it producing?

25 A. Oh, it was just an irritating noise when the,

1 **when we were in the lab. It sounded like an air**
2 **compressor running continuously.**

3 Q. Do you know what that was?

4 **A. No. It was very irritating.**

5 MR. ANNESSER: Okay. If we can go off the
6 record for just a moment.

7 THE VIDEOGRAPHER: We're off the record at
8 4:52 p.m.

9 (Recess taken 4:52 p.m. to 4:53 p.m.)

10 THE VIDEOGRAPHER: We are back on the record
11 at 4:53 p.m.

12 BY MR. ANNESSER:

13 Q. Okay. Sir, I have concluded my questioning
14 with one last question. Other than what we have
15 discussed here today, are there any other opinions that
16 you plan on offering in this case?

17 **A. Not that I'm aware of at this time.**

18 MR. ANNESSER: Okay. Thank you. Gentlemen,
19 it's yours.

20 MR. LEÓN: Thank you, John.

21 EXAMINATION

22 BY MR. LEÓN:

23 Q. Good afternoon, Mr. Murray. My name is
24 Francisco León. I'm not sure if you remember. We met
25 back at the deposition of Dr. Rossi. I represent JM

1 Products, Inc., Henry Johnson, and James Bass. I only
2 have a couple of questions for you. To start, did you
3 ever meet Mr. Henry Johnson?

4 **A. I have not.**

5 Q. You have not. Great. Have you ever spoken
6 with him on the phone or via e-mail?

7 **A. I have not.**

8 Q. Okay. Have you ever met Mr. James Bass?

9 **A. I have not.**

10 Q. You have not. Have you ever spoken with him
11 via telephone or e-mail?

12 **A. I have not.**

13 **MR. LEÓN: Okay. That's all the questions I**
14 **have. Go ahead, Rudy.**

15 **THE WITNESS: That was easy. I like that.**

16 **MR. NUÑEZ: All right.**

17 **EXAMINATION**

18 **BY MR. NUÑEZ:**

19 Q. Good afternoon, Mr. Murray. My name is Rudy
20 Nuñez. We also met the other day at Dr. Rossi's
21 deposition. Can you hear me clearly through the
22 speakerphone?

23 **A. Yes.**

24 Q. All right. You let me know if you have any
25 problems or trouble hearing. Okay?

1 **A. Okay.**

2 Q. All right. As you testified, you know,
3 several times today, you brought up Mr. Fabiani. I
4 represent Fulvio Fabiani and his company, an LLC by the
5 name of United States Quantum Leap. I certainly don't
6 have the time to go back through all that you've done
7 that I would want to, but I did want to, you know, touch
8 on a few points to kind of maybe clear up some questions
9 I had.

10 Let me ask you. When, when you first came on
11 board with Industrial Heat with regards to Dr. Rossi's
12 technology, E-Cat, and the plant, what were you told at
13 the start about Mr. Fabiani?

14 **A. I was told that Fulvio Fabiani was a close**
15 **family friend of Mr. Rossi's wife. I, I believe her**
16 **name is Maddalena, and that she was, you know, a close,**
17 **almost like a mentor of his, and that Fulvio had worked**
18 **with, with Mr. Rossi in Italy and on other activities.**
19 **I also learned that he was a, an avid pinball machine**
20 **both repairman and developer.**

21 Q. Anything else?

22 **A. Other than he had developed some hardware**
23 **devices for the, the reactor system. And I don't, I**
24 **don't remember the exact nature of that. And that he**
25 **had spent a lot of time in, in Raleigh.**

1 Q. What were you told about his work
2 performance, if anything?

3 A. That he, you know, he showed up, but you
4 know, he was just kind of a participant in the data
5 collection and, at the plant. He was kind of like
6 Dr. -- or Mr. Rossi's kind of assistant, if you will, or
7 technical assistant, kind of helping him out in the
8 facility.

9 Q. Did anyone make any comments to you or talk
10 to you about any concerns they had with him?

11 A. I think there was, there was a, a modest
12 level of concern with how close he was with Mr. Rossi
13 relative to just, you know, the close relationship and
14 whether or not he would be fully -- fully disclose
15 everything to us, but I think the only thing that he
16 hasn't disclosed as far as I'm aware is the actual final
17 report and, and I think maybe he has produced some data.
18 I haven't looked at it though. So it was only a
19 question of if he would release all of the data.

20 Q. So to your understanding, the only thing he
21 didn't do was turn over that final report?

22 A. I believe that's, that's correct, yes.

23 Q. And I think the raw data too. I don't want
24 to, you know, I'm not trying to trip you up or anything.

25 A. Right, no, no, no. Yeah, I think the raw

1 data, he indicated that there was raw data stored on a
2 server in Russia that was encrypted and he had to, he
3 put it there for safekeeping, and I believe that that
4 data has been released only maybe in the last few days.
5 I, I have not looked at it. I haven't seen it. I
6 haven't inspected it, but I believe that it has been
7 released in the last few days. But I have not seen a
8 final report, and I don't know anything about, you know,
9 if a final report was actually produced.

10 Q. All right. Now, getting back to, I was
11 asking you about conversations and concerns. And again
12 I don't want to put words in your mouth, but correct me
13 if I'm wrong that it seemed like you had heard that
14 there may be concerns about what he was, how honest he
15 was being with Industrial Heat. Is that a fair way to
16 phrase it?

17 A. I would say that the concern was about his
18 allegiance and his close relationship with Mr. Rossi
19 rather than -- that's how I would characterize it.

20 Q. Okay. And do you think, was that something
21 that was knew over time or would they knew that from the
22 beginning?

23 A. I --

24 Q. I should say -- let me strike that.

25 Was that a new concern or a concern that they

1 may have had all the way going back to the beginning?

2 A. I really couldn't say. I only know kind of
3 from when I kind of started to work on this aspect in
4 June of 2015.

5 Q. And so we've been talking about conversations
6 and what you were learning from Industrial Heat. And
7 who were you talking to about Fulvio Fabiani? Who were
8 the conversations with?

9 A. JT Vaughn, T. Barker Dameron, maybe Tom
10 Darden to some extent. I don't really recall, but those
11 general people.

12 Q. Do you recall ever being told that there was
13 a suspicion that Mr. Fabiani was overheating some of the
14 equipment, maybe the reactors -- I'm not really
15 technically savvy -- but was he maybe doing something on
16 purpose to frustrate the test in North Carolina at any
17 time?

18 A. I have never heard anything about that.

19 Q. Now, tell me, how many times did you meet
20 Mr. Fabiani?

21 A. I think I have met him on two occasions. I
22 believe, well, I'm, I'm certain I met him on the 16th
23 and 17th of February 2016. And then I met him again
24 maybe in March, I don't remember the exact time line, at
25 the offices of Jones Day, in the March or April time

1 frame. I don't remember the exact date. And I don't
2 believe other than that, you know, he sent text messages
3 to me.

4 He was, he wanted to arrange to deliver the
5 data and to get his check, and I offered to hand carry
6 the check to him if he would give us the final report
7 and the data. I think I, on at least two or three
8 occasions by text message, we had exchanged text
9 messages and, and maybe it was e-mail or text messages.
10 I don't recall.

11 Q. Okay. So, so some, some written
12 communication, either text message or e-mail, and
13 potentially two times that you met him in person; is
14 that right?

15 A. Yes.

16 Q. All right. The first time you were telling
17 me, February 15th, I think it was February 15th or 16th?

18 A. No. I think it's February 16th and 17th.

19 Q. Okay. And that was down at the Doral
20 facility?

21 A. Yes, it was.

22 Q. And did you have any occasion to discuss
23 anything with him or have a conversation with him at
24 that time?

25 A. Yeah. He indicated that, you know, he was

1 familiar with my background working with the Department
2 of Defense. And he, he indicated that he had worked in,
3 on some Israeli imaging video surveillance programs.
4 And, you know, we had just what I would describe as
5 chitchat, perfectly pleasant discussions. I think that
6 was on, probably on the 16th. And then I think the 17th
7 was a little bit more chaotic because a lot of stuff was
8 being pulled out and, and I think they had to race to
9 get Mr. Penon to the, to the airport. I don't remember
10 the exact sequence of events, but I would say I
11 chitchatted with him.

12 And I came to find out, well, it might have
13 been later in March when, you know, he told me about
14 his, kind of this side business where he was I think
15 building and maybe collecting pinball machines and
16 things of that sort.

17 THE VIDEOGRAPHER: Mr. Nuñez, you have 10
18 minutes left on seven hours.

19 MR. NUÑEZ: I'm sorry. What was that?

20 THE VIDEOGRAPHER: You have 10 minutes left
21 on the 7-hour time limit.

22 MR. NUÑEZ: Wow, I thought I still had, I
23 clocked in 30 minutes when Francisco started. I, I
24 still got, by my clock, another 20 minutes.

25 THE VIDEOGRAPHER: I'm sorry, but

1 Mr. Annesser went over by about 9 minutes, 8 or 9
2 minutes.

3 BY MR. NUÑEZ:

4 Q. Okay. Going back to that February meeting,
5 those two dates, did you have any discussions with him
6 about the plant or his work with Dr. Rossi?

7 A. I think between the two meetings, and I don't
8 know which meeting, I'm sure that we did talk about
9 working in the plant and with, with Mr. Rossi, yes. But
10 I don't know --

11 Q. All right.

12 A. -- if it was on the 15th or, I don't know if
13 it was on the 16th and 17th or if it was at the
14 March/April meeting. I, I don't recall which.

15 Q. And do you have any specific recollections
16 about your conversation?

17 A. You know, just that the -- and actually I'm,
18 I'm pretty confident that this was at the March meeting,
19 was that he, he felt like, you know, he was under a lot
20 of scrutiny and, and, you know, that working for
21 Mr. Rossi was a pretty tough environment, you know.
22 There were a lot of monitoring and, you know, keeping an
23 eye on him and things of that sort.

24 Q. You made a comment earlier between a hammer
25 and an anvil?

1 A. Yes, yes.

2 Q. That was a phrase that you used?

3 A. I, I think that that was, I think that was
4 the one that he put in an e-mail back to me when we were
5 talking about how to get the data and get me down to
6 just deliver a check to him.

7 Q. Oh, I gotcha. I think you may have made a
8 comment that Barry West told you that Mr. Fabiani
9 threatened Barry?

10 A. Yeah. That's what, that's what Mr. West said
11 at the Swansboro meeting. I was kind of taken aback by
12 that, and so I actually carefully annotated that and put
13 that into my notes. Because I really felt like if there
14 was a, if there was any kind of a threat like that, then
15 we just need to get people out of there. And so I did
16 report that up through Industrial Heat.

17 Q. And can you tell me about the threat? How
18 was that, what was it that Mr. West told you
19 specifically?

20 A. He just said that, you know, he, the
21 comment -- and this again, this is almost, you know, it
22 was a year and a half, maybe approaching two years ago.
23 The comment was something to the effect that Barry told
24 me -- or, I'm sorry. Fulvio told me that if I screwed
25 up anything related to the plant, he'd kill me. You

1 know, and I don't know if that's a, an in-passing
2 comment or if it's a -- you know, you just never know
3 because of the context. It's just you don't want to
4 have a, a physical altercation or some kind of an issue
5 come up. And my view was just get people out of there
6 if that's the situation. Maybe it was a highly
7 stressful environment. I don't, I don't really know.

8 Q. Had there been a language barrier issue?

9 MR. LOMAX: Objection.

10 A. I wouldn't, I wouldn't know.

11 Q. Did Barry ever make any comments to you that
12 he had a problem communicating with Mr. Fabiani due to
13 Italian being his primary language?

14 A. He didn't, he didn't indicate that. In fact,
15 he indicated that they were kind of, you know, buds and
16 they would go out to the bar and go drinking and go to
17 different things. Get, maybe go, I think he even
18 described going fishing at some point. So I don't know.
19 It was just kind of one of those weird comments that
20 Barry made that, you know, I just felt a responsibility
21 to note it and put it on the record, you know, in case
22 there was anything that was, you know, that happened. I
23 wanted to make sure that people were just aware that
24 that comment was made.

25 Q. Did Barry make any more comments? Did he,

1 for instance, did he say that he was scared of Fulvio?

2 A. The, he certainly suggested that he was
3 intimidated by him, yes.

4 Q. And when you say suggested, what, what do you
5 mean by that?

6 A. You know, the tone of how he made the comment
7 and was looking at us. You know, we were literally
8 sitting at a table having some lunch, and he kind of
9 gave that, that suggestion that, yeah, he's kind of
10 intimidating. You know, like kind of when you look at
11 people, like he was, when he made that comment to me, he
12 was a little bit taken aback when, you know, kind of in
13 those situations. That, that's how I would characterize
14 it.

15 Q. Okay. All right. Let's move on. I'm
16 running out of time. Let me ask you. Your work
17 assisting Industrial Heat in this litigation, have you
18 spoken to people over at Industrial Heat about
19 Mr. Fabiani's contract?

20 A. You mean recently or?

21 Q. Well, let me, let me strike that.

22 Are you familiar that, whether or not
23 Mr. Fabiani had a contract with Industrial Heat?

24 A. I was, I was not familiar with the details of
25 a contract, but I do know that at some point there, a

1 contract had expired and JT Vaughn just kind of
2 continued to pay him on a, what I would describe as kind
3 of month-by-month basis rather than renewing a contract.
4 I don't know the specific dates, but I remember that was
5 a discussion topic.

6 Q. And I think you, you testified that you, in
7 your testimony with regard to his role and, and what his
8 duties were. Would you agree that Mr. Fabiani's primary
9 role and duties was to assist Dr. Rossi in his work?

10 A. I would agree with that, yes. I think he was
11 kind of like arms and legs, or I may have called him
12 like a, kind of a technician type of a person, helping
13 him and, you know, helping fix stuff and repair stuff
14 and working with Mr. Rossi throughout the test period.

15 Q. All right. Let's, let's move to that meeting
16 in March. And I take it that's the meeting that you had
17 and others with Mr. Fabiani at the offices at Jones Day?

18 A. Yes. I don't know if it was March or April,
19 but it was thereabouts in that kind of time frame.

20 Q. Okay. Who was there at that meeting?

21 A. I was there, JT Vaughn was there, and Chris
22 Pace was there.

23 Q. And that's it? The three of you and
24 Mr. Fabiani?

25 A. I believe so.

1 THE WITNESS: Chris, you weren't there, were
2 you?

3 A. No. I think it was --

4 MR. LOMAX: I guess I, I can't answer, but.

5 A. Yeah, I'm sorry. I'm sorry. Yeah, I
6 believe, to the best of my recollection it was just the
7 three of us.

8 Q. Were, were any, was anything offered to
9 Mr. Fabiani for him to turn over the remaining report
10 and data that he ended up claiming was due?

11 A. Well, Mr. Fabiani actually offered up, he
12 said, look, I'm writing this final report and I have all
13 this data. And I don't mean the specific details, but
14 he said we sampled data for specific things, I don't
15 know if it was every 10 seconds or 5 seconds, throughout
16 the entire test period using his system.

17 And he said he was completing a final report
18 for Industrial Heat. And we said, great. And I believe
19 that there was even a discussion of potentially trying
20 to have him help with other aspects, but I don't recall
21 the, the details of that. My, really I was interested
22 in the data and interested in the final report to find
23 out what was going on, because I had hadn't seen any
24 details of how all this stuff was collected and pulled
25 together.

1 Q. Was there any offer made to Mr. Fabiani for
2 an extension of continuing to do work for Industrial
3 Heat?

4 A. I think --

5 MR. LOMAX: Objection.

6 A. Okay. I, I think there was, but I can't
7 recall specifically.

8 MR. ANNESSER: One and a half minutes, Rudy.

9 Q. And what were you told about the purpose of
10 that meeting with Mr. Fabiani?

11 MR. LOMAX: Objection to the extent it's
12 about communications with counsel. Otherwise you
13 can answer.

14 A. Okay. I was --

15 Q. What was that?

16 A. I'm sorry.

17 MR. LOMAX: Could you hear me Rudy?

18 MR. NUÑEZ: Yeah.

19 Q. I was going to say I don't want to hear what
20 the attorneys told you. I want to hear what Mr. Vaughn
21 or Mr. Darden told you or Mr. Dameron, whoever else was
22 there.

23 A. Yeah, well, it was just JT and I. What was
24 your question? The purpose of the meeting?

25 Q. Well, yeah. Let me clear that up. You know,

1 what were you told either before or, you know, at the
2 meeting by the Industrial Heat people of the purpose of
3 that meeting with Mr. Fabiani?

4 A. This is my recollection going back to that
5 time, but my recollection was that Fulvio had this data.
6 We had requested data. And so we were going to meet
7 with him to find out how we get a copy of the data and
8 then pay him the final payment that was offer -- you
9 know, that was due him. And so we actually went down
10 there with the intention of, of doing that.

11 And so, and I, I don't recall if on the first
12 day he didn't have the data and then he went and he got
13 the data, some of the data, the spreadsheets on the next
14 day. And then he said he would deliver the final report
15 and some of the other, the, the final report and the raw
16 data, you know, within the next few days. And we said,
17 great, and then we'll just pay you for the final, you
18 know, payment due.

19 Q. And who set up that meeting? Who, who
20 scheduled it or, do you know?

21 A. I suspect JT Vaughn, but I, I don't, I don't
22 recall.

23 Q. And I think your testimony was at that
24 meeting that Mr. Fabiani came with spreadsheets and
25 documents to turn over?

1 **A. Well, the, the next day. He came back with**
2 **just spreadsheets. Sorry.**

3 MR. LOMAX: Rudy, do you have one more
4 question? The time is up, but I, you know --

5 MR. NUÑEZ: Well, here's the thing, guys. I
6 mean I'm not there, but I marked my watch when the
7 court reporter said 31 minutes. I think John had
8 one question. Francisco made two questions. I
9 still have, I mean by my calculation, I've got like
10 7 minutes left. You know, time does not work
11 differently down here, and I marked it when the
12 court reporter said 31 minutes. So I'm not sure how
13 I've lost these 8 minutes because John did not take
14 up 8 minutes asking questions.

15 MR. LOMAX: Well, the court reporter --

16 MR. NUÑEZ: We can go back to the video or we
17 can go back to something. I got a couple more
18 questions left. I don't think I have 10 minutes,
19 but I marked my watch when the court reporter said
20 31 minutes.

21 MR. LOMAX: Well, you know, Rudy, this is
22 Chris. I would, I would be willing to extend 5, 5
23 more minutes. The court reporter is telling us that
24 the time is up.

25 **THE WITNESS: So let's go. If you have a**

1 couple more questions, go ahead, Rudy, quickly.

2 MR. NUÑEZ: Yeah. I don't have that much, so
3 I appreciate it, Mr. Murray.

4 BY MR. NUÑEZ:

5 Q. And I'll move on from the meeting at Jones
6 Day. Let's go to the -- and I think it's in your expert
7 report. You've been asked a lot about it. I'm not
8 trying to retread all this stuff, but I do want to
9 confirm a couple things just to clear up with my
10 questions.

11 There were -- and correct me if I'm wrong.
12 Mr. Fabiani provided what I would call, and you correct
13 me, electric power consumption numbers; is that correct?

14 A. He provided us with, I think it was a
15 spreadsheet for each month or maybe it was one
16 spreadsheet that had numerous tabs. I don't recall
17 which. And it had the time stamp for twice a day,
18 cumulative energy in those 12-hour periods. And he
19 provided us with a, a log that kind of showed dates and
20 events when things were turned on and the power went off
21 and this and that and different events, so what I would
22 describe as a log of events.

23 And I think those were the two major items
24 that he had provided to us on the second day, and then
25 he was going to wait and provide us with the final

1 report and the other data a few days later. He also
2 said that he had taken data from the flow meter from
3 time to time, and he had logged it into a spreadsheet on
4 the desktop of his computer, but his computer was locked
5 up and he couldn't get to it, and he was going to
6 provide that data to us as well, but he didn't produce
7 that data either.

8 Q. Okay. And now my question relates -- I think
9 you made an analysis that his power consumption numbers
10 for the plant don't match the readings from Florida
11 Power and Light; is that correct?

12 A. No, which just incidentally we would not
13 anticipate that they match. We would anticipate that
14 the building would absorb more power than just the
15 reactor because there was other, there were other
16 electrical devices in the building. The primary concern
17 is where the value goes negative, where the building is
18 actually absorbing less, less energy per day than the,
19 than reported by Mr. Fabiani and Mr. Penon.

20 Q. Okay. And how many times did that happen?

21 A. How many times? There was a 14-day period.
22 I think cumulative number of days where it was below
23 zero was 14 days, and that's just pure absolute
24 negative. And, you know, and that's just assuming that
25 nothing else in the building absorbed power.

1 Q. Okay. So that was 14 out of, I think it was
2 350 or almost a year, correct?

3 A. I believe the number in the final report was
4 total of 357 days, and then Mr. Penon deducted 5 or 6
5 days. I don't remember the exact number. And so there
6 was a cumulative number of maybe 352 days of, of
7 operational days.

8 Q. And for lack of a better word, I think there
9 were discrepancies between Fabiani's numbers versus the
10 FP&L's numbers. Do you have any reason to believe that
11 that is a result of Mr. Fabiani manipulating the data
12 that he was putting into his spreadsheets?

13 A. At this point, I have no evidence of that
14 whatsoever.

15 Q. And do you anticipate any kind of work in the
16 future between now and trial where you would come to a
17 different conclusion?

18 A. I can't say at this point because I think
19 that there's a lot of data that's just becoming
20 available. For example, I think the raw data from
21 Mr. Fabiani just became available, and I have not looked
22 at that at all.

23 Q. Okay. Let me ask you, and this will --

24 MR. LOMAX: And Rudy --

25 Q. I'm close to the end here.

1 MR. LOMAX: This is Chris and --

2 Q. Do you have any evidence --

3 MR. LOMAX: -- time is up.

4 Q. -- in your investigation and your work for
5 Industrial Heat that Mr. Fabiani manipulated improperly
6 any data?

7 **A. At this point, no, I do not.**

8 MR. LOMAX: And, Rudy, this is Chris. That's
9 the time.

10 MR. NUÑEZ: All right. And, yep, that's
11 going to match up with my time. And I will say
12 thank you, Mr. Murray. Thank you, everyone. Have a
13 good weekend.

14 **THE WITNESS: Okay. No problem. Thank you,**
15 **guys.**

16 THE VIDEOGRAPHER: This concludes the
17 videotaped deposition of Joseph Murray. We are off
18 the record at 5:20 p.m.

19 (Stenotype record continued off the video record.)

20 MR. ANNESSER: Just as a formality, sir, you
21 have the right to read or waive, which means you can
22 read the deposition before it's finalized, or you
23 can waive that right.

24 **THE WITNESS: I would like to read it.**

25 MR. ANNESSER: Okay.

1 MR. LOMAX: And Defendants are going to
2 designate Mr. Murray's testimony at this time as
3 highly confidential due to a lot of the information
4 that was provided here today.

5 (DEPOSITION CONCLUDED AT 5:20 P.M.)

6 (SIGNATURE RESERVED)
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1 STATE OF NORTH CAROLINA
2 COUNTY OF WAKE:

3 REPORTER'S CERTIFICATE

4 I, LAUREN McINTEE, RPR, a Notary Public in
5 and for the State of North Carolina, do hereby certify
6 that there came before me on Friday, the 17th day of
7 February, 2017, the person hereinbefore named, who was
8 by me duly sworn to testify to the truth and nothing but
9 the truth of his knowledge concerning the matters in
10 controversy in this cause; that the witness was
11 thereupon examined under oath, the examination reduced
12 to typewriting under my direction, and the deposition is
13 a true record of the testimony given by the witness.

14 I further certify that I am neither attorney
15 or counsel for, nor related to or employed by, any
16 attorney or counsel employed by the parties hereto or
17 financially interested in the action.

18 IN WITNESS WHEREOF, I have hereto set my
19 hand, this the 20th day of February, 2017.

20
21 

22
23

LAUREN McINTEE, RPR, Notary Public
24 Notary Number: 201616600044
25

WITNESS'S CERTIFICATE

I, JOSEPH ALAN MURRAY, do hereby certify that I have read and understand the foregoing transcript and believe it to be a true, accurate, and complete transcript of my testimony, subject to the attached list of changes, if any.

JOSEPH ALAN MURRAY

This deposition was signed in my presence by

_____, on the _____ day of

_____, 2017.

Notary Public

My commission expires:

CaseWorks, Inc.
811 Ninth Street, Suite 260 (Page 1 of 2)
Durham, North Carolina 27705

E R R A T A S H E E T

Re: Andrea Rossi, et al. vs. Thomas Darden, et al.

Deposition of: JOSEPH ALAN MURRAY

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