Exhibit 606

IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF NORTH CAROLINA

****

IN RE: Case No. 7:23-cv-00897

CAMP LEJEUNE WATER LITIGATION

This Document Relates To:
ALL CASES

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Videotaped Deposition of DEAN W. FELSHER, MD, PHD, held at the Hyatt Regency San Francisco Airport, 1333 Bayshore Highway, Burlingame, California, commencing at 8:57 a.m., on the 10th of July, 2025, before Maureen O'Connor Pollard, Registered Diplomate Reporter, Realtime Systems Administrator, Certified Shorthand Reporter, California CSR 14449.

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None.

P R O C E E D I N G S

THE VIDEOGRAPHER: Good morning. We are on the record. My name is Douglas Stock. I am the legal videographer for Golkow, a Veritext division.

Today's date is July 10th, 2025, and the time is 8:57 a.m.

This video deposition is being held at 1333 Old Bayshore Highway in Burlingame, California in the matter of Diane L. Rothschild versus United States of America. This case is being heard in the United States District Court, Eastern District of North Carolina.

The deponent today is Dean Felsher, MD, Ph.D.

And, Counsel, if you would please identify yourselves for the record and state whom you represent, beginning --

MR. LEE: Before you move forward, the plaintiff -- that may have been Monday's deposition.

THE VIDEOGRAPHER: Okay. My apologies.

MR. LEE: Or Tuesday, whenever it was.

MR. RYAN: The parties are Bruce Hill and Scott Keller.

THE VIDEOGRAPHER: Okay. Thank you for noting that amendment. My apologies.

And, Counsel, if you would please identify yourselves for the record and state whom you represent.

MR. LEE: Certainly. Randy Lee and Pat Telan for the plaintiffs.

THE VIDEOGRAPHER: Thank you.

MR. RYAN: Patrick Ryan.

MR. KLOTZBUCHER: And William Klotzbucher for the defense.

THE VIDEOGRAPHER: Thank you, all.

And the court reporter today is Maureen Pollard, CSR number 14449. And if you would please now swear in the witness.

And then, Counsel, you may proceed.

* * *

Whereupon,

DEAN W. FELSHER, MD, PHD,

being first duly sworn to testify to the truth, the whole truth, and nothing but the truth, was

examined and testified as follows:

EXAMINATION

BY MR. RYAN:

Q. Good morning, Dr. Felsher. Would you please state your name for the record.

A. My name is Dean Walton Felsher.

Q. Wonderful.

I'm an attorney with the Department of Justice. My name is Patrick Ryan. I'm not going to recite all the rules, I know you've been deposed before especially in this matter, just a couple highlights.

If you don't understand any question of mine, just please state so. I'll do my best to rephrase. If you answer a question, I'm going to assume that you understood it.

Is that fair?

A. Yes.

Q. Thank you.

And is there nothing preventing you today from testifying truthfully?

A. There's nothing.

Q. And of course if you wish to take a break at any point, just let me know. I'd just ask that if there's a question pending that we

just finish that up and then we can break.
Fair?
A. That's fair. Thank you, Mr. Ryan.
Q. Absolutely.
I know in this deposition, I'm sure you're aware, we're going to discuss certain chemicals. If I refer to trichloroethylene as TCE or tetrachloroethylene as PCE, will you understand me?
A. Yes.
Q. Okay. And did you bring any materials with you today?
A. No.
Q. I have a couple exhibits I just want to get out of the way at the start. I'm going to hand you what has been marked as Felsher Exhibit Number 1.
(Whereupon, Exhibit Felsher 1 was marked for identification.)
BY MR. RYAN:
Q. I'm going to hand a copy to your counsel first. This document is entitled Notice of Deposition and Request For Production of Documents to Dean Felsher.
Do you recognize this?

A. I believe so. I didn't see a physical version of the document, and as I imagine you would understand it looks a little different, but I believe that this is similar to a document that I saw in electronic version, if not the same, as much as I can tell.

Q. Okay. And you understand this asks for certain documents and communications to be produced?

A. I believe that's what this document is related to, as best as I can tell.

Q. Did you look to see if you had any responsive documents?

A. I believe I did with whatever caveats I believe in the communications that you had with the attorneys involved in this matter.

Q. What steps did you take to determine if you had any responsive documents?

A. I looked through this document as best as I could understand regarding materials that appear to be requested as much as I could know based on my ability to recall.

I took efforts as guided by the attorneys in terms of looking to see whether or not there were documents that were responsive

that were considered to be appropriate to provide.

Q. Okay. And have you reviewed any new materials or documents since February 7th, 2025?

A. Well, I apologize, but sitting here today it would be hard for me to say that I can remember chronologically exactly when I received or reviewed documents exactly since February 7th. It's possible that there are documents that I was provided that I reviewed.

Certainly to answer your question truthfully, I'm continuously, or more accurately continually looking at the medical literature as part of my everyday activity, and I believe that activity would be encompassed by what we would consider documents, certainly looking for both published scientific papers and government documents and other materials.

The only thing I can recall is that I believe -- and there could be other materials. I believe I received some more recent correspondence regarding some of the medical records for some of -- for the -- at least I recall for one of the plaintiffs.

Q. Do you remember which plaintiff,

Mr. Keller or Mr. Hill?

A. I know I received some additional medical records regarding Mr. Hill.

Q. How recently was that?

A. I apologize, I can't remember the exact timing. It may have been probably in the last couple of weeks. It might have been sometime in the last month.

Q. And how often would you say in Mr. Hill and Mr. Keller's case do you do a search for medical research or publications?

A. Oh, Mr. Ryan, I didn't mean to mislead you. Normally part of my activities anyway I'm engaging in reviewing medical science and literature continually. It can be challenging to discriminate that it's something specific to a particular case versus my everyday activities.

As an editor of multiple journals, I get asked to review papers regarding carcinogenesis. As a world leader in science, everyday I'm asked my scientific opinion or asked to give presentations. I meet with scientists, I discuss science at Stanford, at other institutions. I'm publishing papers or

working on manuscripts.

So I would say it's -- almost every day there's some aspect of where I'm looking, thinking, or reviewing.

So I'm trying to -- you asked me a broad question so I'm making sure I answer it, you know, as -- with as much thoughtfulness as possible.

Q. I appreciate that. Thank you.

A. You're welcome.

Q. We're in the specific causation phase of this litigation, and I understand you authored two reports, one for Mr. Scott Keller and one for Mr. Bruce Hill, is that correct?

A. I'm assuming you're saying I authored two specific causality reports. If that's the question, yes, I believe those are the two specific causality records. Of course I also authored a general causality report which my understanding was not the subject of today.

Q. Your understanding is correct. You gave a deposition on that I believe in April for your general causation opinion, right?

A. I can't remember the date, but if you remember the date, I believe you remembered

it accurately.

Q. Okay. We'll go with that, then.

A. Thank you, Mr. Ryan, for your patience.

Q. I'm showing you what's been marked for identification as Felsher Exhibit 2. This is a document entitled Specific Causation Report of Dean Wilton Felsher for Plaintiff Bruce Hill.

MR. RYAN: And I'll give this to counsel first.

(Whereupon, Exhibit Felsher 2 was marked for identification.)

A. Well, I believe also to be accurate, and I'm not a lawyer so I'm not sure how to describe it, but I know that I had a supplemental report for one of the plaintiffs. So I don't know if that's considered an additional report or it's considered part of the two reports.

BY MR. RYAN:

Q. Okay. Understood.

And was that supplemental report for Mr. Bruce Hill?

A. That's my recollection.

Q. Okay. We're going to get to that

just in a second.

For Exhibit Number 2, do you recognize this as a copy of your initial report in the Hill case dated February 7, 2025? By all means take all the time you need to review it.

(Witness reviewing document.)

A. As much as I can tell, it's a black and white version of the document that I had produced.

Thank you for the chance for me to review it.

Q. Absolutely.

And you prepared this report, correct?

A. I believe that I'd generally say that I prepared the report. There were aspects of the document that I had assistance. Certainly to be accurate I didn't prepare the cover page, you know, I didn't prepare the table of contents. I believe there may be aspects of the report in which I had assistance, but I believe the substance of the report I think of in terms of opinions I believe are prepared by me.

Q. When you say you had assistance with

aspects of the report, who provided that assistance?

A. Well, to be accurate, I don't know the individual who prepared actual title and the table of contents necessarily, but I believe it would have been part of the staff of the lawyers that are here today for the plaintiff counsel.

Q. Understood.

You signed this report, right, Exhibit 2?

A. I'm just looking if this is the version of the report I signed. I can't tell. I believe -- I mean, this particular document I can't see where I signed it, but I believe, as best as I can tell looking at this, that this is a document that I at some point would have signed.

Q. And this was the report that you subsequently amended, correct?

A. I believe that's the case.

Q. I'm showing you what has been marked for identification as Felsher Exhibit Number 3.

MR. RYAN: And for the record, this is a document entitled Amended Specific Causation Expert Report of Dean W.

Felsher.

And I'll hand this to Randy first.

MR. LEE: Thank you.

THE WITNESS: Thank you.

(Whereupon, Exhibit Felsher 3 was marked for identification.)

BY MR. RYAN:

Q. Do you recognize this as a copy of your amended Hill report?

A. It seems shorter, so I believe it's the report. It looks like there's something not included. I can't tell just looking at it, but, I mean, just knowing that the documents -- maybe you know what it is that you gave me that's different.

Q. Well, from what I can tell, Dr. Felsher, your initial Hill report, Exhibit 2, attached a copy of your CV, and your materials considered, and I believe your fee schedule. I believe the supplemental Hill report, Exhibit Number 3, those weren't attached.

A. It looks like, as much as I can tell, that's the case. I can see that this amended specific causation report does not

appear to have my CV or a fee schedule. It just simply has this additional piece of paper that appears to be describing, it says amended report at the end, and this document appears to have my signature.

Q. Understood.

So for Exhibit Number 2, your initial Hill report, the CV, the materials considered, your fee schedule, does that remain accurate?

A. Well, in point of fact, the CV I've listed is, it looks like, in 2024. We're now in 2025, and there are likely to be additional publications and presentations, but I'm not -- there's not any intention not to provide you.

And I didn't look to see whether or not -- I don't see the fee schedule so I don't know whether or not that's changed. I didn't actually see a fee schedule in this document.

Q. I think it's towards the last page.

A. I see my prior testimony.

Oh, my fee schedule, this is from two years ago. My fee schedule is that I would charge $2,000 an hour for trial and deposition and patient interview. I believe I was asked

that in the last deposition.

Q. Understood.

A. And then I think you asked me one other thing, had it changed. I don't recall. If there's some other aspect I didn't answer, it was unintentional.

Q. Not a problem at all.

Can you tell me why the Hill report was supplemented?

A. Well, what I recall, and I may not recall the details, that there was a slight change in some of the information that had been provided to me that -- regarding aspects of the timing of Mr. Hill's exposure at Camp Lejeune. There were some modest changes that were reflected in my amended report that I was informed of, and because of that change I was asked to consider that.

And generally it would not change opinions that I have, but because there was a change that was of note enough that it would change something in the report, as my understanding, an effort was made for me to see that and then to be able to have a chance to amend my report.

Q. Okay. For Exhibit 2, in your initial Hill report, if you could turn to page 24. There's going to be a section called Exposure History.

A. Tell me the page again, Mr. Ryan.

Q. Page 24.

A. Oh, okay. Oh, there must be two page -- I'm confused. Oh, I see --

(Cross-talking.)

Q. Yeah --

A. -- there are two page 24s, because my CV.

Yeah. Okay, I'm at page 24, please.

Q. Okay. The first paragraph in the Exposure History section --

A. Yes.

Q. -- I'm going to read this first paragraph. It states, "Mr. Hill testified in his April 9, 2024 deposition that he first arrived at Camp Lejeune in May 1983, and remained there until his departure in June 1985; a total of approximately 24 months. In addition to this time, Mr. Hill further reported he was at Camp Lejeune at least twice more for Marine Corps training, outside of the 24 months

previously referenced.

"While living in Officers' Housing in Paradise Point on Camp Lejeune between December 1983 to June 1985, Mr. Hill reportedly was exposed to water in his activities of daily living."

Dr. Felsher, if I read that right?

A. As best as I can tell, you've read it.

Q. The reason why I highlight this section, it appears that this paragraph was changed in the supplemental Hill report in Exhibit 3.

Does that match your recollection of what you supplemented?

A. Well, since I have it, I should look. Do you know what page it is? I don't remember.

Q. Yeah. It will be page 24 in Exhibit Number 3 under the Exposure History section.

(Witness reviewing document.)

A. Right.

Q. Okay. So just for clarity I'll read that first paragraph in Exhibit 3. It states, "Mr. Hill testified in his April 9, 2024,

deposition that he first arrived at Camp Lejeune in 1983 and remained there until his departure in 1985. An exposure analysis by Dr. Kelly Reynolds reflects that Mr. Hill was exposed to the water at Camp Lejeune between July 11, 1983, through May 24, 1985.

"Per her report, Mr. Hill lived off base between July 1983 to December 1983. During this time period he was exposed to water at Camp Lejeune while working on base.

"Mr. Hill reportedly moved into Officers' Housing in Paradise Point on Camp Lejeune on December 22, 1983, and remained there until May 24, 1985. During this time, he was exposed to the water in his activities of daily living, both at work and at home.

"While stationed and living at Camp Lejeune, Mr. Hill was reportedly either on leave or deployed for a total of approximately"
41 days.

Did I read that right from Exhibit --

A. Well, I thought you said "41," and it says "45."

Q. Okay. Yeah, that's correct.

Apologies.

A. Not very important, but you're asking me if it's correct and if it's incorrect.

Q. I asked if I read it right. Okay.

A. Yeah. And I guess that was a test for me. I am listening to you.

Q. All right. Wonderful. That was intentional.

A. There you go. I love it when lawyers tell you that they've tried to trick you and they didn't succeed.

Q. No, that was just me working on my reading skills.

A. You have great reading skills.

Q. Thank you.

Yeah, so other than that, does that paragraph look right, Exhibit 3?

A. I believe to the best of my understanding the material is right. And other than the minor misreading, you read it correctly.

Q. Okay. So to me this paragraph looked like it was changed between your initial Hill report, Exhibit 2, and your supplemental Hill report, Exhibit 3, right?

A. Yes.

Q. Okay. And it was based on Dr. Kelly Reynolds' listing of what Mr. Hill's exposure history was at Camp Lejeune, is that right?

A. I believe generally it has to do with the exposure analysis of Dr. Reynolds. I think that's generally the major substance of the changes between the paragraphs in the two different reports.

Q. Okay. And in this supplement, did you rely on Dr. Reynolds' report to determine Mr. Hill's exposure period at Camp Lejeune?

A. Well, yes and no. I am relying on Dr. Reynolds, and that's certainly in part what I'm relying.

I also am aware of Mr. Hill's testimony.

And I'm also aware of in general that people who lived in Camp Lejeune were more likely than not exposed and had exposure to dangerous chemicals based on government documents and based on scientific published literature.

I think in this particular case the change is to incorporate facts that took into

account some changes in the dates, and to also take into account the fact that when somebody is working as a military person on a base that there will be times they're not on the base, and they're providing some more accuracy to the quantitative numbers of when they were on leave or when they were deployed.

Q. So the amendment to Mr. Hill's exposure history, I understand you to say you relied on Mr. Hill's deposition testimony and Dr. Kelly Reynolds' exposure analysis, is that right?

A. That's part of what I said, but that wouldn't be totally. I said in part I was aware and I could rely in part on his testimony, in part I could rely on Dr. Reynolds.

There's also information from Dr. Maslia. There's also information based on government documents. There's also information based on publications describing issues of exposure in people who were working as military, or their families, or employed by Camp Lejeune, what their exposure.

So there's multiple -- like any scientist, I think, right, lots of different

types of information. All of those were included in part.

Q. Understood.

Specifically to determining what dates Mr. Hill was on the base, I'm just trying to figure out what documents you reviewed to determine that. So I see you mentioned Mr. Hill's deposition testimony, Dr. Reynolds' reports.

And my question would be, what else did you rely on when looking to determine the specific dates Mr. Hill was on Camp Lejeune?

A. Well, to my knowledge for the specific dates, as much as I can recollect, those are what I know. Of course the exact date, like what day in the week or the exact number of days, I don't know that I'm telling you -- I'm not trying to imply that I'm relying on other people, what he said and what Dr. Reynolds determined, but I don't mean to imply that the exact number of days in itself was what I considered as a scientist and doctor to be the information to support.

I wanted to be factually accurate, but not all of the facts and details are equally

weighted in terms of how I think about making a determination of specific cause.

Q. Did you review any military records for Mr. Hill when preparing your report, either your initial or supplemental Hill report?

A. I don't believe sitting here today that I was provided something, unless I don't understand what a "military record" is. I don't know if the testimony of a former military would be considered part of his military record.

Q. Have you reviewed military records before?

A. Well, asked broadly like that, I wouldn't know. I mean, I have been a doctor at VAs throughout my career, many of my patients are military, and I probably have reviewed some records. Not -- and certainly I don't know if VA medical records are considered military records. I would think in some cases they would be considered military records. So perhaps.

Q. Okay. Would you say you would know what -- you would recognize what a military service record was if you saw it?

A. Well, I'm not sure what that means. I ascribe to what I would consider -- the VA

takes care of people in the military and those government records, If those are considered military records, then I'd recognize those sort of documents.

If you're talking about something specific, you'd have to show me and I can tell you whether or not it's something that I've seen.

Q. Okay. Are you aware that Mr. Hill's military records would show his time stationed on Camp Lejeune?

A. Again, I'm not sure what you are referring to. If there's something you want to show me and see if I've considered, or give me an example of what you mean.

Q. Okay. I'm just asking generally, do you recall reviewing any military records that would show his orders or his record of service that would show the times that he was on Camp Lejeune?

A. Well, if that includes records related to medical records as a veteran, then it's possible those are documents that I would see. Most military will have records that would include aspects of their service that would be

part of their Veteran's Administration medical records, and those are -- so if that's considered part of his military records and records of service, then I would say it's likely at some point I've seen such materials.

If you're asking me did I see orders for him to do a specific military action, no, I haven't, like, looked to see whether or not there was some specific order for him to participate in some sort of specific military function in some site when he was deployed.

But when you ask it broadly, I would say I would think medical records is part of the VA would be considered part of his military records.

Certainly the ATSDR seems to consider issues, and the VA seems to have its own way of thinking about medical records and injury, disability.

I mean, I spent years working at different VAs. I must have worked as a doctor in half a dozen VAs. They're fantastic institutions. They're a great service we do to our military, providing them with medical care.

Q. Okay. There's one other section

between your initial Hill report and your supplemental. It will be on page 27. If you can look -- for Exhibit 2, your first initial Hill report.

A. Exhibit -- sorry. Yes.

Q. Number 2.

A. Yes.

Q. Okay. So you'll see that there is a chart of Hadnot Point that you say you examined, Appendix J of Morris Maslia's expert report, is that right?

A. Just making sure. That's what I believe is the case it says here.

Do you want to point to where -- I see the reference Appendix J. I'm trying to remember where I mention Maslia.

Q. I think it's on the -- sorry, it's on the previous page, page number 26 --

A. Mm-hmm, I see.

Q. -- of Exhibit --

A. Sorry, I didn't mean to go "uh-huh." Take that off.

Q. No, not a problem.

When it says Camp Lejeune Water Contamination heading --

A. Yes.
Q. -- it states, "I have reviewed the expert report" --
A. Correct.
Q. -- "of Morris L. Maslia dated" --
A. Yes.
Q. -- October 25th."
A. That is correct. This is from the expert report of Mr. Morris L. Maslia dated October 25th, 2024.
Q. Okay. And so on page 27, this chart that you have here on Exhibit Number 2, on the left-hand side it says Month and Year. The first date is May 1983 through, the last date at the bottom of the chart, June 1985.
Do you see that?
A. Yes, Mr. Ryan.
Q. Okay. And so if you look at, on Exhibit Number 3, your amended Hill report --
A. Yes.
Q. -- on page 27.
A. Yes.
Q. There is the same chart that you're saying is from Appendix J of Morris Maslia's report, right?

A. Just checking.

That is what I say on page 26, correct.

Q. Okay. And so in the amended report, the first month and year on the left-hand side is July 1983, and it goes through the last date on the bottom of the chart, June 1985, is that right?

A. You're looking at the table, and that is what it shows, correct.

Q. Okay. So between your Exhibits Number 2 and 3, your supplemental report on Exhibit 3, it amends the dates at Hadnot Point that Mr. Hill would have been at Camp Lejeune, is that right?

A. I believe that is correct as much as I recall, but we've talked about that there were -- there was an update to providing more facts regarding the time period in which he would have been exposed to the contaminated drinking water at Camp Lejeune and focused at the drinking water in the well associated with Hadnot Point.

Q. And this update or supplement on page 27, this reflects the exposure analysis by

Dr. Kelly Reynolds which you're relying on, right?

A. Well, it in part reflects. Dr. Reynolds wrote a report. It contains a lot more information. But I believe the table is an effort to update the records so that the facts are updated from the time period in which more likely Mr. Hill was exposed to contaminated drinking water from Hadnot Point.

Q. Okay. From my view, these were the two sections that were amended in your supplemental Hill report.

Are you aware of any other sections in your amended Hill report that were changed?

A. Sitting here today I can't say I've memorized both reports. If there was another change, I'm not recollecting it right now. I believe those are the changes that I recall as best as I can say sitting here today.

Q. And would you say your amended Hill report contains a complete statement of your opinions in the Hill report -- in the Hill case? Sorry.

A. Well, I'm not sure what you would mean by "complete." It provides opinions, and

they're my opinions. I, as stated in the report, could be provided additional information. I could be asked questions by you and a multitude of other attorneys associated with this legal case Department of Justice that would elicit an opinion. I don't know what you're going to ask me.

You have a multitude of experts that may have amendments and supplemental reports, the science papers published during this case. The UK Biobank studies published by Wang and Yu provide the most detailed, important additional information on the role of benzene as being a cause of lymphoma and leukemia.

I can't anticipate what will get published, what other information will be provided.

At the time I wrote these documents I tried to provide a summary of my major opinions. I'm also a scientist-doctor with decades of experience and I have lots of opinions. You're welcome to ask me about any of the opinions that I have, and I'll answer them with the best of my ability.

Q. Understood.

Have you reviewed your initial and amended Hill reports in preparation for today?

A. Well, I've reviewed it in the sense that I had a chance to look at the document. I haven't memorized the document. I wouldn't say it's possible for me to remember all the details. This took a considerable amount of time to prepare. There's a lot of medical details.

Q. Is there anything in your review or sitting here today you want to edit or change about your amended Hill report?

A. Sitting here today I wouldn't say that there's anything, just asked generally like that, that generally I can think I would amend or change.

But certainly you being a bright person and asking me good questions for the rest of today, there could be statements that I'd make that would be clarifications that I can't anticipate that I would make, just based on my efforts to provide the best detail of my understanding of the science and medicine generally and specifically as it relates to Mr. Hill.

Q. All right. If there's anything that comes up in our deposition today that would make you want to change or edit anything in the supplemental report, just let me know, okay?

A. I will try to let you know if there's any detail of that significance.

Q. Okay. I hand you another exhibit here, what I'll mark as Felsher Exhibit Number 4.

(Whereupon, Exhibit Felsher 4 was marked for identification.)

MR. RYAN: This is a document entitled Specific Causation Expert Report of Dean W. Felsher for Scott Richard Keller.

Randy (handing).

MR. LEE: Thank you, sir.

THE WITNESS: Thank you, Mr. Ryan.

BY MR. RYAN:

Q. Dr. Felsher, do you recognize this as a copy of your report in the Keller case? By all means take all the time you need to review it.

(Witness reviewing document.)

A. As much as I can tell glancing at

this, this is a black and white printed copy of the report that I recall that I prepared regarding Mr. Keller.

Q. And you prepared and signed this report, correct?

A. I prepared and signed this report with the caveat like I described, that there were aspects of the report, including the actual title page and the table of contents, that I had assistance in preparing so the document would be easier for one to look at and know what the document was.

Q. Understood.

And when you say you had aspects of it that you had assistance, would it be the same as what you testified for the Hill reports, your initial and supplemental?

A. I believe so.

Q. And it would have been meeting with someone from the plaintiffs' firm, correct?

A. That's my understanding.

Q. But the substance of your opinions for Mr. Keller, would you say that you authored those sections?

A. As much as I understand what the

word "substance" means, I believe that what I can say is that opinions stated here I believe are based on my education, qualifications, review of documents described here, medical literature and experience, so that I would consider them my opinions.

Q. Okay. And Exhibit 4, your Keller report, this is dated February 7, 2025, correct?

A. I see that as the date, correct.

Q. Would you say it contains a complete statement of your opinions in the Keller case?

A. Well, realizing this is from 2024, as in the case of what I described previously in this deposition, there will be information, science, that I have learned that may have and likely happened after February 2024, including the Biobank publications of Yu and Wang.

There could be other government documents that I've seen, other information provided after this date that would now be included in what I've reviewed and considered, and I would incorporate into opinions that I have or that you may elicit from me asking questions today or I get asked at trial.

Q. I know that you mentioned -- I see

that on the bottom left side of the report it says February 7, 2024. Is that meant to say 2025? I saw Randy there signaling that.

What I'm asking, Dr. Felsher, I think the 2024 is a scrivener's error, right? It was actually dated February 7, 2025?

A. I believe that's correct. And that is confusing me as well, because that was more than a year ago.

Q. Okay. So this is February 7, 2025?

A. I believe that's the case.

Q. Okay. And with the correction of the date, would you say that this would be an accurate and complete statement of your opinions in the Felsher case -- I'm sorry, in the Keller case?

A. Thank you. Please, not the Felsher case.

Q. No case against you, Doctor.

A. Especially when I'm with Department of Justice lawyers.

So I would say certainly as of February 2025, I can't say that I recall anything in particular, but it's possible certainly that I've reviewed science or medical

literature, government documents in the last five months that I -- that would be included in opinions you may elicit from me in asking questions. But this does provide a summary of my opinions.

Q. And did you review Exhibit 4, your Keller report, in preparation for today's deposition?

A. I had a chance to look through this document. I certainly didn't memorize all the statements. And the document is complicated. This individual has had a complicated medical history.

Q. And in your review is there anything you want to edit or change in your Keller report?

A. Sitting here right now I can't think of anything that I'd want to edit or change. It's possible you'll ask me questions of clarification, which you're welcome to, which -- that I can't anticipate. I'm not sure what you're going to ask me today.

Q. Okay. And similar to the Hill report, if anything we testify about in today's deposition comes up that would make you want to

change or edit your Keller report, just let me know, okay?

A. As much as possible if there's anything that comes up, I will try to bring it to your attention.

Q. Okay. So between Exhibits 1, 2 and 3 and 4, so your amended Hill report, your initial Hill report, and your Keller report, you've provided the materials you considered in forming your opinions for the Hill and Keller cases, correct?

A. I have provided materials considered within reason. I've been a professor for 26 years, I've been a scientist and doctor for almost 40 years, and certainly there's a multitude number of documents and publications and science and medicine that I understand that would be incorporated into the way I formulated my opinions, and I couldn't possibly list everything I've learned and thought about that would be relevant. But I provided, I think, a reasonable list of documents that I considered.

Q. Okay. Following your initial Hill and Keller reports, you recall that you served some additional materials considered for both

cases, right?

A. I believe that's the case. I don't remember the chronology exactly.

Q. Okay.

A. I know there was some additional materials.

Q. Okay. I have some of the supplements here, and I can just go over them to make sure I understand everything that you've considered.

Dr. Felsher, I'm handing you what has been marked as Felsher Exhibit Number 5. This document is entitled Dean W. Felsher - Additional Materials Considered in the February 2025 Specific Causation Expert Report for Bruce Hill.

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

BY MR. RYAN:

Q. Do you recognize this as a supplement, sir, for your Hill report?

A. I do. And this is what -- this is what I couldn't remember in terms of what you were asking me before that I knew -- I was continuously looking at medical literature, and

all of this literature I could have seen before I provided the reports because it was published after the reports.

So I appreciate the chance to clarify. That's what I was trying to remember --

Q. Certainly.

A. -- when I was suggesting to you that I'm continuously looking at the literature, and there are examples of where I find in -- there's papers in April and in March of 2025, I think even more recently.

In some cases it doesn't look like the scribe put all of the dates, meaning I don't know the month. I can see the year. So I don't know whether -- I can't recall right now whether or not they've been published before or after I produced the reports.

Q. Understood.

And do you recall that this supplement was served April 22nd, 2025?

A. I mean, sitting here I don't remember when it was served, but if that is when it was served, then I'll believe that that's the date.

Q. Okay. I'm going to show you another supplement which is marked as Felsher Exhibit Number 6.

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

BY MR. RYAN:

Q. This has the same title as Exhibit 5, only it's for Plaintiff Scott Keller. It says, Additional Materials Considered for the February 2025 Specific Causation Expert Report of Dean Felsher.

A. Thank you.

Yeah, like, for example, the Yu paper that I've already alluded to in the deposition was published in April 2025. The paper is important, as all this literature. Those papers were not -- that paper was not available to me, I believe, at the time that I wrote and produced both of those reports that we're talking, the Hill and the Keller report and the amended report, I think.

Yes, I recognize -- to the question at hand, I recognize this as a list of additional materials considered regarding Scott Keller.

Q. Okay. And sitting here today, would you know whether this supplement was served April 22nd, 2025 as well?

A. I didn't remember, and it doesn't say the date on here. If that is the date that you received it, I'm not going to argue, but I don't remember the exact date. It had to have been after February 2025.

Q. Fair enough.

So both Exhibits 5 and 6, they supplement 13 additional materials that you considered for the Hill and Keller reports, right?

A. It looks in point of fact that there are 13 additional publications amongst things that I have seen and over the period of time since I produced the Hill and Keller reports.

It certainly wouldn't include all the papers and all the science that I've seen and reviewed, but they were documents -- scientific documents that in being prepared to address your questions regarding my reports I'm calling your attention to.

Q. Okay. And from what I can tell between Exhibits 5 and 6, they're identical for

the additional materials considered for Scott Keller and Bruce Hill, is that right?

A. I couldn't remember. But as best as I can tell looking at the 13 and looking at the first author, it appears that they're identical. If it's not, then I'm missing something unintentionally.

Q. And some of these additional materials look like the medical literature and publications were published prior to February 7, 2025. For example, on number 5 on both Exhibits 5 and 6 is a publication by Jiang?

A. Jiang, yeah.

Q. Jiang. "Genomic and algorythm-based predictive risk assessment models for benzene exposure," it looks like that was published January 21st, 2025?

A. It does look like that's when it was published. So I think technically it was a couple of weeks published before my report, I think. I think factually you're correct, albeit I'm good at looking at the literature.

But I travel over 100,000 miles a year, and I don't know that I actually can look at the date something is published to review.

So in point of fact it is very unlikely that I would have listed this if I actually had seen it before. I think I saw this after I produced the reports, and I think it's reasonable given it's January.

Q. Understood.

So what would have happened here is you would have found this publication after the February 7th report and then supplemented it, right?

A. Right. The documents are 2024. The magical -- like, I don't know. I don't remember if I'd seen it before or after. I can't remember what brought my attention to it.

The Jiang report, much more likely than not, I actually didn't see it until after I produced the report.

Q. Okay. There was another supplement made I believe two days after that I'll show you.

MR. RYAN: I'm going to mark this as Felsher Exhibit Number 7.

(Whereupon, Exhibit Felsher 7 was marked for identification.)

///

BY MR. RYAN:

Q. This is supplement of Additional Materials Considered for the February 2025 Specific Causation Expert Report of Dean Felsher on Bruce Hill.

A. Yes, I see that.

Q. Sitting here today would you know that this supplement was served on April 24th, 2025?

A. I didn't remember the date. I knew it was after February.

Q. Okay. This lists one additional what looks like a publication, is that right?

A. I believe it's a publication based on the fact I see Environmental Research Letters.

Q. Okay. I'm going to show you one more supplement here I'll mark as Exhibit 8. This is the same title as the other supplements --

(Whereupon, Exhibit Felsher 8 was marked for identification.)

BY MR. RYAN:

Q. -- Dean W. Felsher - Additional Materials Considered for the February 2025

Specific Causation Expert Report in the Scott Keller case.

Do you recognize this as a supplement you made for the Keller case?

A. Based on the title of the document, that appears to be the case.

Q. Okay. And this is the -- for Exhibit Number 8, I believe, it's the same publication that you supplemented in the Hill case, right?

A. That appears to be the case.

Q. Okay. From my understanding this was also served on April 24, 2025. That would have been, what, two days after the previous supplement for Exhibits 5 and 6.

Does that sound right?

A. I wouldn't know when you received the document, so I wouldn't know if it sounds right, but if that is the date you received it, I don't have a reason to think that you wouldn't tell me the date that you received it.

Q. Understood.

And from your recollection this would have just been an additional publication that you found after you served the Hill and

Keller reports on February 7, 2025, right?

A. I believe it was an additional publication. I don't remember -- I don't recollect the circumstance of finding the publication. It more likely than not was -- in this case it could have been in response to me perhaps being asked a question by your colleague and that I recalled this publication.

Q. Okay. When you say asked a question by my colleague, would that have been Marcus Tubin in your general causation deposition?

A. I think so. But I think in point of fact I don't remember sitting here right now the exact chronology and when I found this particular document. I mean, I've been reviewing hundreds of documents, hundreds of papers, and I do lots of different things other than work on this particular case, and I can't remember the context in which I found this particular document.

But I do know that I take addressing your questions of the lawyers on the plaintiff and the defense counsel very seriously and do my effort to be a very thorough expert, and there are times where I'll recall science or

literature based on questions that I'm asked, and I can't remember the context of this particular paper.

Q. Okay. It looks like the publication by Lin-Zhou, it looks like it was published in 2023.

Do you see that?

A. It does, and actually it's published by Lin. Zhou would be the second author. But that's okay, you can say Lin and Zhou et al.

It does look like it was published in 2023.

Q. Okay. Is there any reason why this literature wasn't included in your materials considered on February 7th?

A. Not that I recall right now. And I don't recall the circumstances sitting here right now. I didn't review this paper before today's deposition. It's possible this came up as something that I recalled in addressing some other question or issue.

Certainly when I review science I'll be made aware of other publications sometimes by simply my complex brain of having looked at thousands of papers will recall that I've seen

something that I had not mentioned that is worth incorporating in my reliance. But sitting here today I can't tell you there's a particular reason I recall.

Q. Okay. And did you find this literature in your own search, or was this provided to you?

A. Well, in point of fact I don't recall sitting here the paper, and I hadn't reviewed it, so I don't know for sure, but I believe that -- I believe it's -- more likely it's something that I found, but I don't recall when -- I don't recall exactly the circumstances, like I've already testified.

Q. Okay. I've got one more exhibit on a supplement, then we can get off this, I promise.

A. You're welcome to ask any questions, of course, and I'm trying to answer as best as I can.

Q. I appreciate that.

A. Of course.

Q. I am handing you what I am marking as Felsher Exhibit Number 9.

///

(Whereupon, Exhibit Felsher 9 was marked for identification.)

BY MR. RYAN:

Q. This is a document entitled Dr. Dean W. Felsher - Additional Materials Considered for the February 2025 Specific Causation Report of Plaintiff Bruce Hill.

Do you recognize this as a supplement you made for your Hill report?

A. I don't remember the document, but it -- I don't -- sitting here, I don't remember this document specifically, but I do see that it's entitled Additional Materials Considered, and I recognize the description of some of the other reports as reports that had been provided that I had at some point reviewed.

Q. Okay. Would you recall that this was served on July 1, 2025?

A. I didn't know when this had been served. If that's the fact, then I don't challenge that fact. I wouldn't have known when it was served.

Q. Okay. Exhibit 9, it has -- lists eight additional expert materials that you considered for the Hill report, is that right?

A. I see eight documents of expert materials listed, correct.

Q. Okay. And so item number 8 on Exhibit 9, it says, "Rough transcript from the May 12, 2025 deposition of Dr. Peter Shields."

Do you see that?

A. I see where you're reading.

Q. Okay. Can you tell me what specifically you considered in this transcript in relation to any opinion you have in the Hill case?

A. Well, sitting here, I recall only briefly looking at this document and, you know, asked in such a general way, I don't remember in particular there's something to recall necessarily. There could be something -- if there's something specific you want to show me and ask my opinion, you're welcome to.

Q. I'm just asking in a general sense, you listed that it was a supplemental expert material that you considered, and it just says rough transcript from the deposition of Peter Shields, doesn't provide any further information.

So I'm just wondering if there's

anything specific that you considered for your opinions in the Hill case.

A. There may or may not have been. I mean, sitting here right now, I don't recall. I didn't memorize the document. I don't believe anything that I saw changed an opinion I had. I may have opinions about specific aspects of what Mr. Shields said in his deposition, but I can't recall.

I mean, I'd have to be shown something specific and I could tell you whether or not it changed an opinion or whether or not I had an opinion.

Q. And speaking of the rough transcript for Dr. Peter Shields, was that provided to you by counsel?

A. I believe so.

Q. Okay. Sorry, go ahead.

A. I mean, as much as I understand, Mr. Ryan, I would have been provided it, I assume that came from counsel. I assume you mean the plaintiff counsel. I don't believe I've had any direct communications with anybody at the Department of Justice providing me with transcripts.

If you're asking me if I've talked to Dr. Shields, I haven't.

Q. Okay. So Exhibit 9, it also lists five additional literature materials, right?

A. I see that there's five additional literature materials.

Q. Was this literature provided to you, or is this something you researched and found yourself?

A. I don't remember for sure, but I believe it's all material that I found -- just there's five papers and I'm not seeing -- you're not giving me the actual papers. But let me look and see.

So as much as I can recall, these are papers that I found addressing aspects of the question in terms of the mechanism by which benzene can be a cause of cancer, based on just looking through additional medical and scientific literature that was there, but I had done some additional analyses.

Q. A couple of these five publications, they have dates that are before your initial Hill report. So looking at number 2, the publication looks like it's dated 2017, and

number 4 is a publication that looks like it's dated in 2015. Number 5 has a publication date of 2019.

My question for you, is there any reason why this wasn't included in your materials considered in your initial Hill report?

A. What I'll say generally is that I don't recall a reason for not including, and I can't remember sitting here right now the chronology of when these papers came to my thinking as additional papers to be considered.

But I've read thousands of papers. I'm an editor of three or four journals. I've published hundreds of papers. I run five different programs and go to hundreds of meetings. So it's hard for me to recall exactly when I'll see a particular paper and recall the chronology of when I thought about bringing this to the attention.

If there's a question about a specific paper, we can look at the paper and I can tell you about the paper.

Q. Okay. And your July 1st supplement, Exhibit Number 9, it lists some six additional

plaintiff records on the second page.

Do you see that?

A. I do.

Q. Okay. Looking at number 6, it shows additional plaintiff records that's titled Bates label 28_HILL_DPRIS, D-P-R-I-S, pages 2 to 346, is that right?

A. You read part of that correctly. I mean, I see the part you're reading of the document title.

Q. Okay. Can you tell me what specifically you considered in these records in relation to any opinion you have in the Hill case?

A. Most of these records are medical records, and I had alluded to this already, that he was part of the VA medical system, which in my mind are example of me reviewing what would be considered part of his military records. It's the VA, his medical care for the military.

And I have been a VA doctor and taken care of our vets as a big part of my career, and helped vets get medical benefits and disability claims over the history of my career.

Those documents, you know -- I

haven't memorized them, but those are undoubtedly going to be medical records, probably the more recent records we've already talked about.

The housing record, offhand I can't remember based on the title. If you show me the document, I can tell you how I considered it.

But the medical records would have all been talking about Mr. Hill's most recent medical care. He had a CAT scan. He's had blood counts tested. There are concerns about progression of his disease. He has multiple other medical problems that have been worsened or caused by his disease and by the treatment of his disease, and these would just -- I believe these are -- I can't tell because they don't include the dates.

You know, as a physician we don't use Bates numbers in our medical records, and the titling system I didn't memorize. But I believe that's -- what I recall is included in these records more likely than not.

Q. And so item number 6, these housing records, did you review these when preparing your initial Hill report on February 7, 2025, or

were these reviewed after?

A. Well, since I don't recognize the title and I don't have the document before me, and Bates numbers are not something I memorize, I'm being honest with you to say I don't remember what that is, so I can't remember when I reviewed it.

Q. Understood.

Okay. I have just one last thing for the Keller case, and then I think we can just take a break.

I'm showing you what's been marked as Felsher Exhibit Number 10.

(Whereupon, Exhibit Felsher 10 was marked for identification.)

BY MR. RYAN:

Q. This is an Additional Materials Considered for your February 2025 Specific Causation Report of Scott Keller.

Do you recognize this as a supplement you made for your Keller report?

A. Well, I see that's what it's titled. And these actual document is probably based on a list made where I got help making the actual physical document, but I recognize the list of

expert materials as examples of documents that I've been provided and reviewed.

And I see the list of publications and medical records. I can't tell what they are just based on the title and Bates numbers, but it appears consistent that I received additional medical records.

Q. Okay. And under "Expert Materials" of Exhibit 10, there's number 6, it has a -- you considered a rough transcript from a May 12, 2025 deposition of Peter Shields.

This was the same supplement you made for Mr. Hill, right?

A. I believe, as much as I can tell from the single line, that I'm referencing the same deposition of Peter Shields that I was provided.

Q. Okay. And sitting here today, is there anything you recall that you considered in the deposition of Peter Shields specifically for any opinion you have in the Scott Keller case?

A. Well, like I described in the case of Mr. Hill, I didn't memorize the document. I had a chance to review it. If there's a question about something specifically

Dr. Shields said, you'd have to show me the testimony and I could give you an opinion. Undoubtedly I'd have thoughts and opinions.

But I don't sitting here today have memorized the document or know the constellation of thoughts and opinions I would have in relationship to what Dr. Shields said.

Q. Okay. So these three supplements that we went over between Exhibits 5 through 10 for the Hill and Keller case, would you say that these are all the materials you considered in forming your opinions in the Hill and Keller cases?

MR. LEE: Objection to form.

You can answer.

THE WITNESS: Well, the way you said it -- the way you say that, I couldn't say it's everything I considered, because as I described to you, I've been a professor, physician for decades, I've spent decades understanding and studying the science of cancer, and I couldn't possibly tell you every document, every publication that is part of my training and experience.

I provided what I think is reasonable. I couldn't list everything possible. It would be hard for me to even recollect every example of every important paper.

If I were to list for you just simply every Nobel Prize winner I personally know, I'd find it challenging because it's been 26 years, and I've been around a lot of really talented people, much to my humility. I mean, there's a lot of really talented people. So I wouldn't tell you.

But I provided you as best as I can an effort to a reasonable amount of the documents I reviewed in terms of the medical records, the testimony, government documents and publications.

And these supplemental reports were certainly my effort to bring up-to-date any additional expert materials or medical records I provided, and in some cases I've brought additional medical literature to bear that were considered in my opinions.

But I have lots of opinions, and

you're welcome to ask me and I'll give you my opinions on anything that you ask me about that I'm capable of based on my expertise.

BY MR. RYAN:

Q. In terms of the documents and materials you considered, did you read those yourself?

A. I'm confused. As opposed to what? What is it that you're asking me?

Q. Yeah, I'll ask a better question, then.

Were these documents that you were provided summaries of by someone else, or were these documents that you personally reviewed and analyzed?

A. Well, there are a lot of documents, so -- and I can't recollect all of them sitting here, that I've been provided.

The medical records -- so I can -- the ones I can recall, I mean, I'm not going to go through everything, but the medical records I reviewed, the scientific papers I believe on my reliance list, or materials considered -- I wouldn't say reliance because I include

documents I wouldn't consider reliable necessarily, or parts are not reliable, but my additional -- my materials considered I reviewed.

I've already described to you that I provided expert reports. In some cases, I can't tell you that I've had enough time to read -- the Department of Justice has provided hundreds of pages of expert reports, and I've tried to review them, but it's been challenging how many experts.

You've elicited very copious, copious opinions, but I don't recollect -- if there is a summary somewhere that had been provided and vaguely what that means, I don't recollect that there's -- could be in some cases there was some kind of information provided to me that might encompass the word "summary," but not that I recollect right now. Certainly not regarding the medical information and the scientific publications.

Q. Were you provided any summary of the medical records for Mr. Hill or Mr. Keller?

A. So I don't know what that would encompass, but there -- it's possible that some

of the documents or something I was provided included some kind of information that might encompass that you would call a summary, but right now I'm not recollecting something.

If you have a question about something specifically, please bring it to my note. I'll tell you whether or not it's something I've seen.

Q. So, for example, the summary of medical records could be what we commonly call a medical chronology. Perhaps you've seen that in your practice.

Were you provided any medical chronologies of Mr. Hill or Mr. Keller?

A. I may or may not have been provided a chronology. Sitting here, I don't remember. There are times where I've been provided a chronology or there will be some additional dates and times that have been provided.

If there's something specific that I mentioned here, if you show it to me I can tell you whether or not it's something that I reviewed.

Q. Sure.

Okay. So on Exhibit Number 3, this

would be the amended Hill report.

A. Yes, Mr. Ryan.

Q. On page 11.

A. I'm at page 11.

Q. Okay. Towards the bottom it has a section "Bruce Hill Medical Diagnosis and Causation," and there is a subsection called "Medical Summary, Medical History."

Do you see that?

A. Yes.

Q. Okay. So over the next couple pages your amended report walks through his medical history from his treatment with doctors.

Is that fair to say?

A. I believe that's in part what's included here.

Q. Okay.

A. That's what it looks like based on my recollection.

Q. So the medical summary of Mr. Hill listed starting on page 11, would that have been information of his medical care that you reviewed through medical documents personally, or would this have been through medical summaries or chronologies that were provided to

you?

A. I see.

Well, I don't remember whether or not at any point I did or did not receive any summary. I do know that I reviewed his medical records, so I would say if there's something here specifically you could ask me, but I believe this is, to the best of my knowledge, an accurate summary as much as any medical record can be an accurate summary. There can be vagaries about information. But I believe this provides a summary of his medical history.

Q. Okay. So sitting here today, you couldn't tell me exactly whether any portion of the medical history for Mr. Hill was obtained through any medical summaries?

A. Well, I recall that -- I recall that there were maybe in some cases some details -- there were a couple of details that were provided to me. I don't know if they were a medical summary. So you'd have to point to something that you're asking about.

I mean, to me this, as much as I recall, and I haven't looked at this for -- I haven't looked at the medical history part in

detail for months, this is an as accurate as possible account that -- of what his medical records reflect.

I mean, often pieces of the records include material that I could directly glean from summaries written by his physicians, if that's what you're talking about in terms of a summary.

I mean, I don't -- I didn't rewrite his entire medical history. His medical history was through, like, the documents that I reviewed, and in some cases these were simply largely copied and put into a context that made them into a readable history, because sometimes the medical records are very difficult to put in a manner that you can read as a story because there's multiple physicians involved and taking different pieces from different physicians.

Q. Okay. And in your Keller report, there's a similar section that's titled "Medical History."

A. Yes.

Q. Would there be any sections of that medical history where you were provided summaries of medical records?

A. Again, it's possible. I can't say sitting here now, and "summary" is pretty broad and vague. Certainly the medical records themselves are usually for some of these so complicated summaries, and certainly in that context.

Now, thinking about it, I'd say, well, I certainly saw in the medical records what I would say to a non-physician were summaries. It wasn't that the records reflected that each time they talked to Mr. Hill and individually rewrote his medical history. Largely the medical records appear to be just a recapitulation of what previously had been said and adding additional details.

And I think this reflects the nature of how the medical records are documented generally by his physicians.

MR. LEE: When you get to a good point, let's take a break.

MR. RYAN: Yeah, that's exactly where I was going.

Sure, let's take a break.

MR. LEE: Five minutes.

THE VIDEOGRAPHER: Going off the

record at 10:21 a.m.

(Whereupon, a recess was taken.)

THE VIDEOGRAPHER: We are back on the record at 10:33 a.m.

BY MR. RYAN:

Q. Okay. Dr. Felsher, attached to your Hill and Keller reports there's a copy of your CV, right?

A. What I recollect is that some of the -- in point of fact, like two of them have my CV and the one of them didn't for the document, just as a point of fact.

Q. Yeah.

A. My CV is on two out of the three documents you provided me today.

Q. Okay. From what I understand, your initial Hill report, which is Exhibit 2, and your Keller report, which is Exhibit 4, they attach a CV, is that correct?

A. If that's factually correct, I can look, but I know that two out of the three, yes.

Q. Understood.

Okay. And so the CV that is attached to your Hill and Keller reports --

A. Yes.

Q. -- does that accurately set out your education, training, and experience?

A. I believe it does, with the caveat that my record is constantly is being updated. And what I see is the date is September 30, 2024, and there would be possibly -- well, there would be likely additional publications and additional -- there would be additional presentations given.

And it's possible I've taken on an additional leadership role, but there's nothing not -- I'm not intentionally not disclosing something. It's just that as a senior professor, my responsibilities are continually evolving as I'm given different responsibilities.

It doesn't list that I actually was one of the five faculty reading out the names of people who were graduating from the medical school, but I was given that honorific of being somebody who's part of the actual -- but I can't recall, other than what I just described to you. The basic facts of my education certainly historically should be the same as -- now as they were in 2024.

Q. Okay. Sitting here today, is there anything you'd want to update on your CV?

A. Well, I'll provide you an updated CV. It will have whatever publications and presentations I've given. There's no reason not to provide that to you if you request it.

Q. Okay. Yeah, I would -- if there's anything that is updated that would make the CV attached to your Hill and Keller reports not up to date, then, yeah, please provide it to us.

A. My CV is always updated, so I can always provide you an update. I'll do the best I can. It seems reasonable for you to request a document from 2025.

Q. Okay.

MR. RYAN: Randy, if there's any update --

MR. LEE: Yeah, we'll provide it. If there is so, we'll take care of it.

MR. RYAN: Appreciate that.

BY MR. RYAN:

Q. Okay. Dr. Felsher, I understand that you are an oncologist, right?

A. That encompasses part of what I am, yes.

Q. And what else, what other aspect of what your profession is?

A. Well, I have an MD and a Ph.D. I'm trained as a medical oncologist. Albeit at Stanford when I was clinically active, I was doing what also would encompass hematology, but the vagaries at Stanford are that oncology and hematology are separate divisions.

I'm also faculty in medicine and pathology. I have an appointment in the molecular imaging program, so I'm associated, I'm not considered formally faculty, but definitely they consider me part of the associated faculty of radiology.

I'm also the director of TRAM, TRAM scholars, TRAM masters, TRAM arts, TRAM laboratory, TRAM task.

I'm also the director of admissions for the MSDP.

I'm also the co-MPI, I guess is their strict name, of the CTSA, which is the grant and the mechanism that is responsible for all of clinical research at Stanford as directed by the dean's office.

So I have multiple hats that I wear,

mainly involved in either doing medical research, largely oncology, directing other people how to do medical or clinical research, educating people.

And the focus of my research encompass many areas of cancer, including clinical oncology, basic science, translational developing therapeutics, mechanisms, carcinogenesis.

So I don't think I said I also am a codirector of a cancer nanotechnology program. But that's another hat. I probably have other hats that I wear, too, but those are the main ones.

Q. Okay. You mentioned TRAM arts, TRAM a couple times. What is TRAM?

A. TRAM is the Translational Research and Applied Medicine. Basically I decided that Stanford needed a center that would make it easier for us to take medical research and make it useful to all of us in this room -- well, not just in this room, but to everyday people -- to develop better treatments, diagnostics, to develop new technologies, and facilitate the ability of different kinds of medical doctors

and different kinds of scientists and engineers and chemists to work together.

I've funded 150 different projects. I've trained hundreds of people. I have built the first graduate program in translational research. I host symposium. I host leaders in academia to come to Stanford. I allow leaders in Stanford, baccalaureate deans, president of the university, world-class basic scientists, clinical researchers to present their findings. So it encompasses all those aspects.

It often allows me because I do this to have much broader understanding of not just the science, but also to understand issues of regulation, issues of intellectual property, issues that relate to many different other aspects that not all physician scientists would necessarily consider part of their wheelhouse of what they do day to day.

Q. You mentioned --

A. Oh, one other thing. I forgot. I also am on the carcinogen investigation committee of the California EPA, so I spend time now as directed by the California EPA -- they don't call themselves EPA, they call themselves

the OEHHA, for some reason they have a different name -- and I provide advice, guidance, evaluation of whether or not based on a legal standard, proposition passed by Proposition 65, whether or not certain agents are carcinogens.

Q. How long have you been in that role with the OEHHA?

A. I'm in my second year in that role formally. I think they asked me four years -- something like three-and-a-half years it took -- well, you would know this better than me maybe, but it took over a year for Governor Newsom to find time to personally have reviewed and say, yes, we'd like Dr. Felsher.

I mean, I was invited directly by the director of the California EPA, and then filled out the application, and it took a long -- they told me it would take a long time.

Q. Congratulations on that.

A. I appreciate that. I'm, like you, doing a government service which I admire and appreciate and value. I feel proud of myself for doing a service that is for the government and for the better of people.

Q. You mentioned earlier an acronym

MPI. Can you just define what that is?

A. I'm sorry, it's silly I use the acronym. Of course.

Q. We all use them in government.

A. Yes. Multiple principal investigators. The principal investigator is the name we use for the individual who in a grant, in this case National Institute of Health grant, funded who are the professors who are considered the primary people responsible for the research described.

And the CTSA is the largest grant that the Stanford Medical School -- or most medical schools have. And I serve with Ruth O'Hara, the senior associate dean of research, and Manisha Desai, who is also a professor -- they are both also professors, but she is also head of the QSU, the Quantitative Services Unit. And together we bring our different strengths to make sure that medical and clinical research and education is done as well as possible at Stanford.

Q. Okay. So in terms of your roles currently, you're not an epidemiologist, right?

A. Well, I wouldn't say that. I would

say I may not use the word and introduce myself as an epidemiologist in the list, but in point of fact I often am asked to consider or review epidemiology that in my role in the CTSA, that one of the functions I have served is to work with colleagues in epidemiology to make sure that our younger professors have the -- know the methodology for conducting clinical studies that include epidemiology.

The chair of epidemiology is a colleague of mine, and Melissa Body is a wonderful person, I know her personally, we interact. She's actually brought a lot of strength to our epidemiology at Stanford.

So I would say, like a lot of areas of science, it might not be the first thing I would say, but I take for granted that I've been trained and have more than a layperson's understanding of epidemiology.

Q. You're not a toxicologist, are you?

A. Again, similarly I would say -- I wouldn't per se use the word "toxicology," but if you ask me did I have an understanding that toxicology sort of relates to cancer and carcinogenesis, yes, lots of the areas of what

are considered toxicology I would have expertise.

I'm not going to call myself in a courtroom per se a toxicologist, but I'd say I have more than a layperson's understanding of many aspects of toxicology.

Indeed I have had toxicologists come to my laboratory to learn how to do cancer research, so certainly -- and I've never told a lawyer that. I never thought about that, that I have a toxicologist who trained in toxicology come to my laboratory saying, you know, Dean, Dr. Felsher, I want to train to learn about how to do medical research in cancer, and I'm a toxicologist. Fantastic. You know, welcome. You know, appreciate you bringing your perspective. And this person is now a professor doing cancer research.

Q. Dr. Felsher, would you consider yourself a cardiologist?

A. I wouldn't call myself a cardiologist, but what I would say is I also have more than a lay understanding of cardiology. But in this case I would say I'm not going to give an opinion in cardiology, but

certainly I have more understanding because I am trained as an internist.

And in the TRAM program, of those 150 grants, I would guess -- or proposals that we funded that are like mini grants, I would guess that probably at least a third of them or a quarter of them were actually cardiology grants.

Q. Are you board-certified in cardiology?

A. No.

Q. Okay.

A. No, I did not do a fellowship in cardiology. I did a fellowship in hematology oncology.

Q. And in your clinical practice did it include any specialization in diagnosis and treatment of heart and blood vessel conditions?

A. Well, of course it did. My training in internal medicine, a good part of it was actually managing patients with problems in cardiology.

In fact, I remember when I was the senior house staff in the cardiac intensive care unit, my attending tried to recruit me to become

a cardiologist, and I considered it.

But, no, I'm not going to say I did a fellowship in cardiology. I'd say I have the understanding that you would expect and the skill level of somebody who is trained at top medical centers, and in particular as it relates to being an oncologist where many of our patients do have cardiologic problems, and they certainly have problems related to therapy or secondary to the kind of cancer they have, or they have other concordant issues that can relate to them having cardiac problems. I would say that I have more of a layperson's -- certainly much more than a layperson's understanding.

Q. You wouldn't consider yourself an endocrinologist, would you?

A. Only in the sense I've described, that I trained I trained in internal medicine, and endocrinology is usually handled by an internist, other than fairly particular problems. For example, diabetes is usually handled by a general practitioner, not an endocrinologist.

In fact, the field of endocrinology

largely is dying. It's mainly an academic field, though it's a wonderful field, very fascinating, loved learning endocrinology.

I vividly remember when I first learned at University of Chicago from a world-class endocrinologist, I took a class in endocrinology. Absolutely fascinating. Great science.

Q. You're not board-certified in endocrinology, are you?

A. No. I didn't do a fellowship training in endocrinology. My training is at the level of an internist. So certainly I boarded in internal medicine, and endocrinology would have been a significant part, along with cardiology. Those are two areas that are very commonly primarily managed by general doctors.

Q. You're not a nephrologist, are you?

A. No, regretfully. I love nephrology. In fact, an attending tried to recruit me in nephrology as well. Certainly I'm aware of problems of the kidney and how they relate to cancer and oncology and cancer treatment, since often an important consideration in the management of patients with cancer are concerns

related to their kidney and kidney function and how therapeutics or cancer can lead to kidney failure and other problems with the kidney, toxicity.

Q. And you wouldn't have a board certification or any fellowships in nephrology?

A. No. I did not do specialized training, albeit nephrologists who board nephrology usually are dealing with end-stage renal disease and dialysis and specific issues.

One of my buddies from medical school specializes in cachexia as a professor at Harvard. That's usually what academic nephrologists or specialists in nephrology deal with.

Problems in the kidney that relate to oncology or cancer I'm certainly familiar with. It's considered part of a general part of what you need to know as an oncologist since many of the chemotherapeutics we give are eliminated by the kidney, or the kidney can be damaged. There needs to be consideration to understanding kidney function, how to deal with considerations of early or chronic kidney disease or complications associated with an

individual who has kidney disease.

Q. Okay. You're not a biochemist, are you?

A. I did not do a Ph.D in biochemistry. However, in my work as a scientist I certainly incorporate biochemistry continuously. I mean, most of the principles have been -- I did my undergraduate research in a biochemist lab in entomology. The research that I do involves cellular signaling that is biochemistry. I study lipogenesis, lipid metabolism, that is biochemistry. I study cytokines and cellular receptors, that's biochemistry.

So I would say I have much, much more than a layperson's understanding of biochemistry.

Q. Certainly more than me, I would assume.

A. Well, I'm not making any presumption, but the Stanford biochemistry department, like, they're all members of the national academy, three of them have won Nobel Prizes.

I was recruited by Paul Berg to come to Stanford. He passed away a few years ago.

He won the Nobel Prize in biochemistry. Arthur Kornberg won the Nobel Prize in biochemistry.

I remember being invited to give a talk in the biochemistry department at Stanford. They said, Welcome to Stanford. I had been there for five years, but they didn't consider I had arrived until I had already published a couple of papers that had been widely cited and considered to be, quote, seminal work, end quote, and then I was like, Oh, you're here.

So facetiously those sort of biochemists would consider none of us biochemists, but, yes, I would say you would probably say, yes, Dean Felsher could probably teach easily biochemistry in an undergraduate class based on my experience. I won't do it because there's biochemists who would say, We'll do it, Dean, we'll let the assistant professor in biochemistry do it.

Q. You wouldn't have any professional credentials or any certifications in biochemistry, right?

A. Lots of credentials related to chemistry. My undergraduate degree was in chemistry. I've literally collaborated with

almost all of the chemistry department at Stanford, Chaitin Khosla, Carolyn Bertozzi. She won the Nobel Prize, but we published a paper together. Nathaniel Craig deserves the Nobel Prize. Paul Wender, Dick Zare.

I mean, if you look at my publications you'll see that I often do chemistry, medicinal chemistry, therapeutic development. Most of it I can't talk about because it's not published and involves intellectual property, but we've developed many novel chemical approaches, nanoparticles. I mean, it's a big part of my career.

Q. You wouldn't consider yourself a pharmacologist, would you?

A. No. Only as it relates to oncology and as an internist. But I would say that's a discipline that I wouldn't say -- I probably have much more than a layperson's understanding, so I'd have some expertise, but I have not done research specifically.

Albeit, in a medicinal level I understand pharmacokinetics, how to determine issues in improving drug delivery, because these are all intimately connected with chemistry and

all the therapeutic development I'm doing, and I've advised several dozen biotech companies.

And often we -- I guess I do know pharmacology in that respect because I've probably several dozen times done work where we've helped evaluate the pharmacological properties of a therapeutic that somebody was trying to develop for people.

Q. Okay. You're not a statistician, are you?

A. I don't have a degree in statistics, but there's not any work, research that I do or scientific paper I review or grant that I publish, where there isn't statistics. So I have more than a layperson's understanding.

We've used computational biology, AI-based computational biology, coordinate differential equations, systems biology. And then we've used conventional statistical methods, power calculations, routinely every day in my laboratory research program.

Most of the simple statistics or the more complex in describing, I have teams of individuals who are part of my research enterprise that will actually provide the actual

detailed analysis.

I alluded to the QSU, the Quantitative Services Unit. I just talked with them yesterday. We gave them part of a grant. Naively the assistant director asked me if I had heard of them. I'm personally friends with their boss who teaches for me and teaches our translational graduate students about statistics.

Q. Okay. And then looking specifically in this case for Mr. Hill and Mr. Keller, you've never clinically examined Plaintiff Bruce Hill, have you?

A. I have not physically examined, correct, if that's what you're asking me.

Q. Correct.

And have you physically examined Plaintiff Scott Keller?

A. No, I have not.

Q. So your understanding of their medical treatment in this case would have been limited to your review of the materials and medical records?

A. Well, that included that. I also have testimony, other expert reports, and I

believe those are sufficient for the opinions that I've provided in my reports.

Q. You haven't performed an independent medical examination of Mr. Keller or Mr. Hill, right?

A. Well, if you're asking me the same question a different way, I would say yes and no. True, I have not physically examined them. No, what I've done would be considered a medical exam.

In my everyday experience as an expert in oncology, as a professor at Stanford, I routinely will provide opinions regarding issues of oncology based on talking to an individual by phone or being provided records.

Often I'm serving as a vehicle to alert somebody to a treatment or the expert in a particular area of the country or a scientific article or an investigator or a potential therapeutic that I know about that has been approved.

Many of these communications happen in my everyday experience where I'm not able to perform a direct physical interaction, especially since COVID. Since COVID it's become

much more routine that we're providing care as doctors or giving opinions or interacting with people where we don't physically actually see the individual. I mean, now surgeons are performing remote surgery where they're not actually ever physically seeing the patient.

So I'd say in that context and in the context that's being more generally accepted, that constitutes a medical exam, albeit with the caveat I did not physically see like I physically see you. I'm not going to expect to examine you. I don't have a stethoscope.

Q. Okay. Have you spoken with Mr. Hill over the phone or through, you know, a virtual conference?

A. No, I haven't.

Q. Have you spoken with Mr. Keller over the phone or through a virtual conference?

A. No. But I'd point out that it's also been in my experience as a senior professor at Stanford, often the opinion I'm giving is not to an individual directly contacting me, it will be to a fellow leader.

I've had -- I'll get contacted by a

professor at Harvard saying, Dean, I have a relative with X, can you kindly give me an opinion? What do you have -- they live near Stanford, who should they see? What do you think? What's available? What do you think of this circumstance? They might even send me some medical information.

And I don't talk to the individual, and I'm able to give an opinion, an opinion I believe is reliable and has substance and value, as I've done in this case.

In this case I have much more information than that because I have many, copious medical records and documentation.

Q. In terms of your career, you mentioned earlier that -- let me make sure I get this right -- there was a time where you were clinically active. Are you currently clinically active and seeing patients?

A. Not in the sense that I have my own continuity clinic or that I admit people directly to the hospital. In a sense that I'm still a medical oncologist, faculty, I'm associate chief -- I didn't mention I was the associate chief of oncology, but I'm also the

associate chief of oncology, and I daily will provide my expertise/guidance to individuals.

But I'm not the -- I don't now write orders to admit somebody to the hospital, or when somebody is in the hospital be the one who writes orders, or have a clinic assigned to me where individuals come see me.

But I continue to function as an oncologist in the sense that I have expertise in my domain that I, when asked questions of guidance from individuals, family, friends, former patients -- I would give my patients my cell number. I still get texted by former patients who will ask me, for example, My husband now -- I'm better, but my husband has cancer. This is the cancer they have. Can you please recommend what we should do?

Well, I'll suggest generally -- I won't provide care, I won't admit them -- and I will refer them, Here is the individual at Stanford you should go see who is seeing patients, and, you know, keep me updated and I'll help you in any way I can.

Q. Was there a time where you would be the one admitting people to the hospital or, you

know, physically examining in a clinical sense patients?

A. Yes.

Q. When was that?

A. So for over 20 years, and I stopped sometime around -- maybe around eight years ago, maybe -- I can't remember the exact date, but a while ago. I stopped having a clinic, and I was given in exchange -- not necessarily a direct exchange, but it was obvious that I'd become a senior professor, and I took on -- I was asked to take on these other leadership roles.

You should be one of the PIs of our largest grant at Stanford that we got an award from the dean's office because we got such a good review of our grant. We -- you should -- we love your program, you should expand it, make a graduate program. So I made a graduate program of over 30 graduates.

So lots of other aspects of things that I did or have done. And then continue to publish robustly. You know, running a research program in cancer, cancer mechanisms, developing therapeutics.

Q. In your clinical treatment

experience as an oncologist, you've obviously treated patients with cancer, right?

A. Yes.

Q. Okay. And how many patients would you say over the course of your career that you've cared for with leukemia?

A. Well, if you include leukemia in the broad sense using lay sense -- like leukemia and glucemia often are actually lymphomas, because most lymphomas will have a leukemic aspect, most leukemics have a solid component -- I would say it has to be a thousand or more.

My clinic's focus was initially general oncology, and then it was in treating leukemia and lymphoma. And I treated patients with, for example, CLL, or also called small lymphocytic lymphoma, which are basically synonyms, and I treated patients with aggressive lymphomas like immunoblastic lymphoma, and I've done research in my laboratory on both diseases.

CLL is a disease of CD5 positive B cells. This was discovered by the Herzenbergs who I've known since I was an MD-PhD. When I was a grad student I knew them. They remembered me even when years later I was recruited as

faculty.

And immunoblastic lymphoma is a lymphoma that's strongly associated with the MYCN oncogene that I'm considered one of the handful of experts in the world, and this particular oncogene pathway that is activated in cancers that has particularly been associated with certain aggressive types of lymphoma and leukemia, like immunoblastic lymphoma and Burkitt lymphoma, and acute lymphoblastic leukemia and acute lymphoblastic lymphoma.

And AIDS-associated lymphomas, the AIDS patient's got a lymphoma that's very similar or if not identical to immunoblastic lymphoma.

So these are all areas I spent years thinking about. My PhD work was on leukemia and lymphoma. My lab has worked on leukemia and lymphoma for 26 years. I'm part of the leukemia and lymphoma program in the cancer center, or I think we call it -- well, we call it the Cancer Institute now.

Q. Okay. And specific for non-Hodgkin's lymphoma, how many patients did you clinically treat with that condition?

A. Well, to clarify for you, non-Hodgkin's lymphoma, in my mind, to a layperson I would say leukemia and lymphoma. Many leukemias other than myeloid leukemias would actually really be included in the hematopoetic cancers that would encompass non-Hodgkin's lymphoma, and so a thousand.

I also treated Hodgkin's patients, but a lot, or hundreds and hundreds, too numerous to count. And that's exactly what I've done research. We were developing a novel therapeutic that's basically for the type of large cell lymphoma that would encompass immunoblastic lymphoma like what Mr. Keller has.

Q. So speaking of Mr. Keller, he has diffuse large B cell lymphoma, or DLBCL, right?

A. That's the general name that more recently his clinicians feel he has a subtype that's called immunoblastic lymphoma.

Diffuse large cell is a broad category of generally more aggressive lymphomas, and as scientists we can divide them up and try to figure out different aspects, but I'll tell you from my point of view in terms of causality they're really one collective disease of

hematopoetic cancers, because I can tell you that the oncogene I'm an expert in can contribute to the cause of a multitude of them; some of them called leukemia, some of them called lymphoma, some of them called more or less aggressive, some of them called transformed.

Q. Over the course of your career, how many patients would you say you've treated with DLBCL?

A. So of the hematopoetic lymphoma leukemia patients, I would guess that probably about a quarter of them were more aggressive, including large cell or other aggressive lymphomas.

Q. And when you say a quarter --

A. Like if there was a thousand, I probably did several hundred.

Q. Okay.

A. And if you included when I was a resident and intern and fellow, probably many more, because the aggressive lymphomas more often get treated inpatient. And as I became a more senior clinician, I started more subspecializing in the lower grade lymphomas for

practical reasons. Those patients didn't require as much acute care.

A patient with large cell lymphoma, I would treat them, but they require very on top of care, and much more difficult to handle if you're also a professor with other responsibilities and you're a researcher. They're more acutely ill.

But I often took care of large cell clinically. Certainly when I did inpatient oncology, which I did for many, many years, I was the inpatient attending, many a Christmas holiday I was the inpatient attending running the inpatient oncology unit.

Q. How many patients over the course of your career would you say you've treated with chronic kidney disease?

A. Many. It would be hard to estimate. Chronic kidney disease unfortunately is a common challenge in patients who are older who have cancer.

So it would be a lot, but I can't tell you that I -- it would be harder for me to estimate what percentage. And it would depend how you define it. There are different

categories, and nephrologists will use specific categories of a degree based on GFR estimation or actual measurement. Sometimes people use creatinine as an estimate.

And I would say a lot of people have kidney or chronic kidney disease who are older who are cancer patients because we'll have to dose adjust certain therapies because of their kidney function.

Q. Have you previously treated people with cardiomyopathy?

A. Yes.

Q. How many patients would you say you've treated with that condition?

A. Well, if somebody has cardiomyopathy secondary to cancer treatment based on a MUGA showing reduced ejection fraction, that's pretty common, and sometimes it's reversible.

And we actually serially follow ejection fraction in patients receiving cardiotoxic chemotherapy, particularly patients with large cell lymphoma, because they often get Adriamycin or doxorubicin, they're the same drug, therapy, and there's a limit to how much of that therapy you can give, at a point you

start seeing cardiotoxicity. And almost everybody getting Adriamycin will have some amount of toxicity.

So it depends how you define it. True cardiomyopathy to the point where the person is in consideration of going into congestive heart failure, if they're an oncology patient we would generally manage them if we could manage them with the usual over-the-counter medications. But if they required more complicated therapeutics, we would also refer them to a cardiologist who is used to working with oncology patients.

And I don't have a divide in my head how many, but it's a very common consideration. I can tell you I never gave a patient Adriamycin without checking their heart function and then following their heart function. It is basically hardwired in the management of these patients.

Q. So your experience in treating patients with cardiomyopathy would have been a condition secondary to their cancer?

A. Yes, but also I am an internist, so I was trained in internal medicine and managed patients with cardiomyopathy, and also I am a

leader developing new therapeutics.

And if you look up BridgeBio, you'll see they just developed a new therapy for one of the causes of cardiomyopathy related to a very unusual disease, and I visited BridgeBio with our graduate program. All their advisors are Stanford professors. My previous chair is a cardiologist. Ken Mahaffey is a cardiologist.

I mentored one of the junior faculty who helped develop this therapeutic program as part of my role in the CTSA, now developed this research program. We talked about cardiomyopathy. We talked about how you manage it. We talked about how this therapy would work.

So it's something that I wouldn't say I would go treat them, but to say I don't know or I'm not aware or not aware of what some of the treatments or the emerging treatments -- I mean, I knew about the treatment that BridgeBio developed before it became public because I knew the scientists running the clinical trial. I was mentoring them. I knew their primary advisor. He came and lectured in my class, but he didn't know I'd already visited

the biotech company to hear about their drug, you know, confidentially.

Q. So BridgeBio is a biotech company?

A. Yes, right across from the Chase Center, and I didn't even know that. I knew the scientists didn't know it, parked in the same parking lot to go to a Warriors game, and then I parked there for free finally because I visited and was invited to BridgeBio.

Q. Understood.

Have you previously treated patients that underwent a stem cell transplant?

A. Yes.

Q. Okay?

A. I've ordered stem cell transplants.

Q. How many patients would you say with stem cell transplants?

A. I mean, a lot. And I also in my role as one of the PIs at the CTSA have mentored faculty who are part of the BMT program. The chief of BMT is a friend. In fact, for some reason he just asked me to be connected with him on LinkedIn today, even though we've known each other for 20 -- literally today, he's like, Dean, be LinkedIn connected to me.

So when I took care of large cell lymphoma patients and other aggressive lymphomas, when those patients fail treatment they get stem cell transplants, autologous, in more unusual circumstance and disease allogeneic.

I used to -- I had learned how to give those treatments as part of my training in oncology. Those are done by BMT service. But certainly I am aware of transplant. I know the scientists. I've collaborated with them. I've reviewed the science. I've asked for patients who failed therapy. I've given them the pre -- the prep initial therapy, admitted them for it before they -- and when they've responded, then they've gone to transplant.

Q. In your clinical practice, when you've had a patient with NHL or CLL, did they ever ask you what the cause of their cancer might be?

A. Literally I've seen thousands of patients, and to say that I can remember every time a patient asked me about issues of cause -- I'm sure sometimes they did, but I can tell you generally that if a patient comes to you, their

primary concern is can you get them better.

And the only time I can recall sitting here today where I've been asked about cause is when they have taken one of my scientific papers from the literature and sadly have said, Dr. Felsher, you have shown this in this paper, does this mean something to me? And then I take it very seriously because it's very personal then. They're thinking I have figured out something, and I have to explain to them this was science.

One case was a paper published in the Journal of Science. It was a very high profiled paper, and literally they brought the science paper and said, Can this help me. And I have to explain, this is science. It hasn't yet gone to the patient.

But the vast majority of time somebody comes to you and you start explaining to them science, they look at you like, who the hell -- I'm here, I'm dying, treat me.

And so even though I love science and I want to come invent new treatments, my priority 1 through 10 was to make that person feel that I was going to treat them.

And that is what I teach the young physicians and scientists at Stanford, go ahead and do your great science, but when you go see a patient, realize they're worried they're going to die and there's not a treatment, and the first ten words out of your mouth better relate to that.

And so 99.9 percent of the time, I'm sure that's what I did, is I was a very huggy doctor, and usually patients like that. Not when you first meet somebody you don't give them a hug, but if they know you, I'd often say, I'm going to keep you alive because I believe in you and you're going to feel supported by me.

They were usually pleasantly surprised that I was also a scientist. They would say, Oh, you're actually a scientist, Dr. Felsher. And I'd say, Yeah, I actually am.

Q. Okay. So 99.9 percent of the time you would treat their symptoms as consistent with their diagnosis?

A. And I'll qualify that. I'm exaggerating because I don't know the exact percent. Most of the time. Let's take away the 99.9. I'm being too colorful.

Q. Okay. So --
A. Most of the time I would not get asked.
Q. So the other times where you would, what would you typically tell your patients with CLL, NHL?
A. I would actually, if possible, and I did know there was something I knew about a cause, I would tell them. For example, I had a patient who was a vet, he was a Special Forces, and he got exposed to radiation in a submarine and got lymphoma. And I said, Your lymphoma was undoubtedly a major cause because you were exposed to radiation, and I'm sorry about that.
But most of the time I wouldn't know if they asked me. For example, I think since 1974 or somewhere around that time people knew there was an issue of contamination at Camp Lejeune, at least that's what I saw, there are documents saying there was some worry, and if I saw something from Camp Lejeune, I know that I did not know in 19 -- well, I was -- I'm older than you but I was only 11, so I wasn't seeing patients then. But the point is, I wouldn't have known.

And a lot of times I'll tell them, Well, there probably are causes, but I'm here to treat you and I can only tell you about things I do know about.

In some cases, for example, I took care of AIDS patients. AIDS causes lymphoma indirectly. It's not the cause, but people who don't have an immune system get lymphoma.

Trichloroethylene can cause lymphoma by suppressing the immune system. It's a chemical reason for what the virus AIDS can do to contribute to lymphoma.

Autoimmune diseases can cause lymphoma. They're not the only cause but they can contribute to the cause. They can make you more susceptible to something like a carcinogen.

So there are many circumstances, I would say, if I had a recognized, Oh, your rheumatoid arthritis probably contributed to your lymphoma. It wasn't the only cause, but it was -- it made you more susceptible. Oh, you were exposed to radiation. Radiation is a cause of lymphoma.

But I couldn't know what I didn't know, and most of the time people don't know

when they're exposed to something very dangerous. Most of the time it doesn't come up when you're coming to see a clinician.

As I've already described, my priority is to treat them, because most of the time knowing what the cause is or not does not affect the treatment. Most of the time it doesn't matter.

Q. Have you ever had a patient with NHL or CLL tell you anything that would indicate they were exposed to TCE, PCE, or benzene?

A. Maybe. I'm trying to think in my recollection. But again, because most of my priority when I'm treating people is to treat them, and in the treatment decision whether or not they were exposed to benzene or trichloroethylene would be non-important. It is important in terms of determining specific causality when asked, but I don't have -- I've only had maybe two lawyers as patients, and they didn't ask me about specific causality. They didn't say, you know, I'm a lawyer and I would like to know about issues of specific causality. They usually are just as scared as any person.

And I don't blame them. When I as a

doctor go and I'm worried about being sick, I don't say, you know, I'm a world expert in cancer, I'd like you to explain and give me all the literature on what you think is going on with me. I have no interest. I'm just as scared, and that's the way I treat people that come to my clinic. They're not there to get a science exam -- or science lecture.

Q. Okay. In your clinical practice, have you ever determined the cause of a patient's NHL or CLL was exposure to TCE, PCE, or benzene?

A. Well, importantly, I'll make it very clear I'm not going to talk about the cause. I'm talking about the fact that cancer has many causes. And there can be a cause. And I'm arguing that for Keller and Hill, I know that their exposure to chemicals, including benzene, was a cause, and I'll argue that it more likely than not was a cause and it could be described as significant.

I won't say that I know it's the only cause. There could be other causes. I would say it's a significant cause.

Patients -- it would be hard to say

that I'd be in a situation when a patient comes to me clinically to be able to make an assessment.

I probably have been asked -- most people don't know to ask you, Was benzene or trichloroethylene a cause? But they do know to ask you, Could my exposure to something in the environment be a cause or the cause, and I probably have said it could, but let's treat you, you know, because how am I supposed to assess that.

It's not trivial to assess what somebody's -- whether or not they were exposed or not exposed based on a history. Most people don't know, say, Oh, here's the chemical structures I've been exposed to. They just ask whether or not there are things in the environment that can be a cause of cancer, and undoubtedly I would say, Yes, there are things in the environment that could be a cause and that might be the case.

I'm sure I've said that to people. Let's take care of you. I know you're worried. Let's come up with a treatment plan for you so that you're on the way to getting better.

Q. Okay. When you talked about Mr. Hill and Mr. Keller specifically, you said that there could be other causes of, for example, Mr. Keller's NHL and Mr. Hill's CLL, but their exposure to the chemicals at Camp Lejeune was a significant cause, is that right?

A. I said that's one of the ways you could describe it. I'm saying more likely than not their exposure was a cause. I believe it could be amongst things that could be considered significant, but more likely than not it was a cause.

Q. When you say "significant," how would you define that term? What is significant versus not significant?

A. Well, I think of significant as meaning that when I reviewed their records and all of what we've already described I reviewed along with the medical literature, I can say that their exposure, based on many considerations, based on my expertise and reviewing the evidence, weight of evidence, integrative analysis, was something that I would list as being a cause as opposed to I'm not saying I'm speculating.

You could ask me if helium was a cause, and I would say, Well, I don't know. Do I think helium could cause cancer? Well, I don't know so I won't speculate. You ask me am I speculating about benzene? No, I'm not speculating. I have evidence based on my review that benzene was a cause more likely than not, and I can tell you that benzene is a cause of hematopoetic cancers, including the cancers they have, and that they were exposed in a way that I believe was more than likely a cause.

When I say there could be other causes, what I'm saying is I don't know, there's a possibility of something else that I haven't been told about was involved, just like they weren't told they were being exposed to benzene and trichloroethylene and vinyl chloride and perchloroethylene while they were at Camp Lejeune.

There's a possibility. If you show me, I will consider whatever you show me, but I can't speculate about something I don't know about. And I'm making the point that there often can be not necessarily more than one cause that is involved in a disease process like

cancer.

But I believe their exposure at Camp Lejeune was a cause, more likely than not. It's important enough that when asked about causes I found, that is a cause I would list.

Q. Okay. You mentioned it's been, what, about eight years since you were clinically treating patients. My question now is, you're not currently treating with patients, right?

A. Well, that would be in part a mischaracterization of what I said. What I said is I don't have a clinic, I don't do inpatient or admit patients to the hospital, but I do treat patients in the sense that people ask me for medical advice. I refer patients to clinical studies, other colleagues, that former patients will tell me about medical circumstances, and it's not that I ignore them, I respond. But I don't tell them that I can treat you in my clinic or that I can give you a treatment in the hospital because I don't do that.

But certainly treatment in the sense that I provided information and I'll act on it

within the limitations of not having a clinic and not being somebody who directly admits patients to the hospital.

Q. Okay. And so your primary duties right now have to do with your research and work as a professor at Stanford, right?

A. Those include what I do, but also I described to you that I have a major leadership role in mentoring and teaching other professors, fellows, medical students how to be a doctor, how to do clinical work, how to do clinical research.

Q. What would you say the percentage of your work at Stanford currently is devoted to patient care as opposed to research?

A. Well, in the way I described it, I would say half of what I'm doing would be called research, and the other half would be in that hat where I am teaching students about medicine, clinical research, teaching students how to develop new therapies, new diagnoses, how to decide what new therapies are needed, how to decide what new diagnostics are needed, how to talk to a chemist or an engineer, how to consider issues of safety, regulation, all kinds

of different considerations that are required. You know, issues of what is a chemical that is safe, how do you determine, how do you do -- how do you consider -- how would you find out toxicity, how would you find out if something has the right pharmacology. You know, lots of different capacities like that.

And a good part of my research has involved considerations of environmental carcinogenesis. I hadn't mentioned it yet, but I was part of the Halifax project, published multiple papers. I collaborated with people from the California EPA, the national EPA, IARC, on and on and on, to write a paper about, well, how do you determine something is a carcinogen, what are the assays, what makes something a carcinogen.

And I've already told you that I am a part of a committee in the California EPA, so all these kind of different aspects of things.

I also provide advice to pharmaceutical companies and biotech companies in terms of developing therapeutics or evaluating therapeutics and diagnostics and other technologies.

But I would say that's how I spend my time.

Q. Okay. And in terms of your board certification, I understand you're not presently board-certified in oncology because that certification has lapsed, is that understanding right?

A. I think that's a fair way of characterizing it. I did board. And then the only other detail is that Stanford for years didn't ask any of us to reboard, because historically it used to be, and if I had been boarded I think a year earlier in oncology, you only had to board once. And then at some point Stanford decided, well, actually people do need to recertify, and then it was decided if you didn't recertify that you shouldn't have a clinic and hospital privileges, but at that point I'd already stopped having my own continuity clinic and doing inpatient medicine.

But my understanding is if I wanted to reboard, if I decided, well, I need to change what I'm doing and you're making me -- asking me questions, miss taking care of patients, because I do -- I did love that part of my career, that

I could say, screw it, I'm going to go be a doctor, spend time studying for the boards, but I could take the boards just by registering for them and taking them, is my understanding.

Q. You'd mentioned about clinic and hospital privileges. You don't currently have clinic or hospital privileges?

A. I currently do not, as I've already said a couple of times.

Q. Okay. Just in those direct terms. Forgive me if I'm getting lost in the phrasing of it.

A. No, I currently do not have hospital or -- hospital privileges, so meaning that I can't directly admit a patient. If I had a former patient who I believe needed to be admitted, I could contact a junior colleague and say, This was a former patient, they're sick, would you -- would you evaluate, but I'm worried.

And I could send a patient to the emergency room, but I wouldn't be considered the clinician of record. I would contact a colleague who could follow the patient in their continuity clinic, which I've done many times.

My former patients, they still contact me. When they need to see an oncologist, I refer them to a junior colleague.

Q. Okay. Understood. Thanks for explaining that.

Okay. So we talked about your medical oncology board certification. You were also previously board-certified in internal medicine, but that currently is not certified because that certification has lapsed, is that right?

A. Yes.

Q. Okay.

A. That's correct.

THE WITNESS: Bless you.

MR. TELAN: Thank you.

BY MR. RYAN:

Q. Okay. And in terms of your career, have you ever been subject to a disciplinary action or censured by any licensing body?

A. Not to my knowledge sitting here today.

Q. Okay. And have you ever been subject to any disciplinary action by any court or tribunal?

A. I don't believe so. Not that I know of.

Q. Okay. Turning to your amended Hill report.

Do you want to take a break?

A. Sure.

MR. LEE: Let's take a break.

THE VIDEOGRAPHER: We are going off the record at 11:33 a.m.

(Whereupon, a recess was taken.)

THE VIDEOGRAPHER: We are back on the record at 11:41 a.m.

BY MR. RYAN:

Q. Dr. Felsher, I want to turn back to your amended Hill report, which is Exhibit 3.

A. Yes.

Q. And also talk about your Keller report, Exhibit 4. Do you have those handy?

A. Yes, I do.

Q. Okay. For your Hill report, in Exhibit 3 there's a section on page 5 that's titled Methods.

Do you see where I'm talking about?

A. Yes.

Q. In this section you state that you

utilized a differential etiology for Mr. Hill.
Is that right?
A. Are you referring to a specific part of the text?
Q. Yeah. On the second paragraph on page 5, Exhibit 3, it starts with, "I performed a differential etiology."
A. You read that correctly, yes.
Q. Okay. And it says -- you say, methods that "would be generally accepted and commonly used in usual practice of physicians and scientists with expertise in determining etiology and are generally considered standard for considering the contributions of risk factors to a disease process."
Is that right?
A. You read that correctly.
Q. Okay. So is it fair to say you used a differential etiology in authoring your amended Hill report?
A. Well, I would say that's included in the methodology. There are paragraphs in my Methods describing methods, and I'm glad to provide other details. I certainly describe other aspects in the Methods in the first

paragraph. I provide much more detail in the subsequent paragraphs.

So I would say that's included as part of what I am doing. If you just took that sentence alone, I wouldn't say it encompassed all of the methods, but it certainly included.

Q. Understood. I can be more broad to capture what your differential etiology was.

For the section on Methods on page 5 in Exhibit 3, going on to page 6, would that encompass the differential etiology analysis that you performed in the Hill case?

A. I think it provides a description that is reasonable. If there is something I mentioned that's unclear, I'm glad to clarify.

Certainly as a scientist and doctor with decades of experience thinking about methodology and considering things like what a cause is, I wouldn't encompass every aspect of everything I think about in terms of forming a differential etiology and thinking about causes in a few paragraphs. But I think this provides an adequate and reasonable description.

Q. Understood.

Okay. And so page 5 of Exhibit 4 of

your Keller report, there's also a section titled Methods.

Do you see where I'm talking about?

A. Yes.

Q. Okay. This is substantially similar if not identical to the Hill report, is that fair to say?

A. It looks very similar. Sitting here I can see the text slightly must be different, and, you know, I haven't remembered what's different with it or the same, but it looks largely similar.

Q. Okay. Would it be fair to say that you performed a similar methodology for both reports between your Keller and amended Hill report?

A. I believe it's similar in the sense that generally there may have been specific aspects that were different because of considerations that relate to specifics of each individual.

Q. And have you ever used a differential etiology analysis in other cases?

A. I'm not sure what you mean.

Q. So in, I guess, previous litigations

cases that you've been an expert in from -- where you were issuing an opinion on specific causation, have you utilized a differential etiology in those circumstances?

A. I've used similar methods. I would put the caveat that lawyers and the legal system sometimes will conflate a differential diagnosis/differential etiology even though when I've perhaps in some legal cases or depositions used the word "differential diagnosis," I was meaning in that context very similar if not identical to when I'm saying differential etiology.

I do believe that differential etiology provides a more easily understood description since the word "differential diagnosis" can be incorrectly in some contexts to presume that I am questioning the diagnosis involved, clinical diagnosis. I'm trying -- but, so, that's the caveat I'd put.

Q. Have there been previous cases where you've been retained as an expert where you've been, for lack of better term, critiquing or offering an opinion on the medical diagnosis of a patient?

A. Probably. That might encompass times when I've been giving an opinion on more medical litigation where there may be a question of a mistaken or misdiagnosis, I think.

Q. So, for example, like a medical negligence case?

A. Correct.

Q. Have you been retained in medical negligence cases?

A. Sometimes I have, yes.

Q. Dr. Felsher, would you agree that the American Cancer Society is an authoritative source for information concerning cancers?

MR. LEE: Objection to form.

THE WITNESS: I wouldn't generally agree with that. They're an organization, and they have -- as an organization many people are part of the organization, they write documents written by many people. There are documents that I may consider in part or parts reliable, or there may be documents I would say are reliable, and there may be statements they've made or comments or websites that I would consider less reliable. Or in some cases there are

documents from the American Cancer Society that can appear to be in discordance with other aspects of what they reported.

So I'd say generally, I would say no. I wouldn't say that necessarily. I don't -- they're an organization. I don't know that they can be an authority. That makes it sound like they're a single individual with some authority. I wouldn't say generally I'd describe it that way.

BY MR. RYAN:

Q. I see in your CV you listed you've been invited to give a presentation by the American Cancer Society.

A. Yes.

Q. Do you recall that? That was September 1st, 2004.

Does that sound right?

A. I mean, we could look at it. To say I honestly remember what I did on September 1st, 2004 --

Q. No, no, no.

A. -- I would say, no, I do not remember. But I do remember going to the

American Cancer Society and giving a presentation.

Q. Okay. Would you agree that there's generally no known cause for most cases of CLL?

A. Not stated as that way. I would say there are lots of causes and risk factors that can be considered. The fundamental basis of CLL, as stated so broadly as you stated, I'd say, well, no, we know that molecular genetic events are what are the main factor that constitutes when a normal lymphocyte becomes a CLL.

We may not be able to discriminate in a particular context because we're unaware of the precipitating risk factors and causes. But as you said it so generally, I would say that's too vague of a statement that I could simply agree or disagree with it.

And in fact -- in point of fact, if I simply agreed with it, it would be blatantly contradicting the fact that I actually have a pretty good idea that cancer has a known cause which are other genetic events that are cause which precipitates those we don't always know. But sometimes we do.

And with sufficient investigation, there are probably many examples of where we would know, but often we don't know because the information isn't provided to us or easily obtainable, or it's hidden in some cases, either purposefully or unintentionally.

Such as, Mr. Hill and Mr. Keller didn't know they were being exposed to cancer-causing chemicals while they were in the services. They weren't told. They didn't know. They wouldn't have known to tell their doctors.

Q. Dr. Felsher, I am showing what I'm marking as Felsher Exhibit Number 11, which is, for the record, titled Chronic Lymphocytic Leukemia Causes, Risk Factors, and Prevention. This is provided by the American Cancer Society.

(Whereupon, Exhibit Felsher 11 was marked for identification.)

BY MR. RYAN:

Q. Have you seen this before?

(Witness reviewing document.)

A. Not to my knowledge. I mean, it's possible. American Cancer Society has lots of documents. But it's not something that I am aware that I've seen before necessarily.

Q. Okay. If you please turn to page 4. Under -- near the top, What Causes Chronic Lymphocytic Leukemia, or CLL, first sentence states, "We know some of the risk factors for chronic lymphocytic leukemia, but the exact cause of CLL in most people is not known."

Did I read that right?

A. I believe you read the words correctly, yes.

Q. Do you disagree with this?

A. Well, I would -- I wouldn't give a simple yes-or-no answer. I would say this one sentence out of context doesn't encompass a lot of what is known about causes and risk factors, but it's, as I've already described, probably often the case that if you talk about an individual person, they don't know.

But the statement is also misleading and disregards decades of science in terms of molecular etiology of cancer. In that context, they would have to say, We know what causes cancer, it's genetic events in lymphocytes, and we know a lot of this.

They even allude to those when they say it's changes in genes, in chromosomes,

chromosome and gene changes, in B lymphocytes, gene mutations, the bolded statements, which in point of fact the layperson who probably wrote this didn't realize that the first sentence and the other parts of this are in some sense internally contradictory.

Now, I understand what they're getting at. They're getting at, well, most of the time when you go to your doctor they're not going to tell you they know the precipitating cause of the genetic event. But if this was a scientist talking to another scientist and asked me, Do you know why cancer happens, I'll say, Yeah, they're genetic events, and there are lots of them that have been characterized in CLL. Well, what caused the genetic events? Well, there are a lot of things that can cause it.

Do I know any particular individual? Yes. In the case of Mr. Keller and Mr. Hill, I will testify their exposure, for example, to benzene was more likely than not one of the causes.

Now, obviously it was Mr. Hill who had CLL, so I'd say in the case of him, his exposure was, I believe, more likely than not

one of the causes.

Q. A cancer with an unknown cause would be considered to be idiopathic, is that right?

A. Not really. Idiopathic would be a name we would give not necessarily if there isn't a known cause, but you don't know the cause. So idiopathic would encompass also cases of where there is a known cause, you just don't know it.

For example, I already told you that autoimmune disease can contribute to cancer. You may not know you have an autoimmune disease, you might find out later that you did, and then I would say, Oh, now that we know and we didn't know.

So idiopathic can mean also we don't know, but not because it doesn't mean that there isn't a cause. It may mean that we don't -- sometimes you can mean it in a sense that we don't know why something happens, period. It can mean that.

Q. Okay. So you're drawing a distinction between unknown cause for a cancer and unknown cause that we don't know?

A. I'm saying that there's not -- I'm

not trying to draw a distinction, but I'm just saying when the word "idiopathic" is used, that does not mean most people don't know. Most people not knowing can also mean you lived in Camp Lejeune and you didn't know until today, like Mr. Hill, or whenever they found out that they were exposed to a carcinogen. They didn't know when they were there. There wasn't a sign saying, Welcome, you will be drinking water contaminated with carcinogens. That would be not known.

Using the complicated word "idiopathic" for that is obfuscating. It's true they didn't know. Their doctors wouldn't have known, unless somebody said, Alert, anybody going to Camp Lejeune over this period of time who drank the water was exposed to carcinogens. Then they would know.

Idiopathic to a scientist can mean, oh, no, we really don't have an idea of the cause. But I've already told you we know that there's a genetic basis of CLL. I can tell you. It's not that that's unknown.

The aspect that you might say is unknown is, well, we don't know what

precipitated. In a lot of cases we don't know what precipitated because we didn't know something like they were exposed to radiation, they were exposed to benzene.

That is the clarification they're providing. It's not a distinction. I'm just not allowing the words to be blurred in a way to say that this document is talking about and saying most people don't know. That is not talking about idiopathic in that context, and that's what you've concluded. I'm saying, no, you're wrong, that's not what I conclude from that statement.

Q. And so when a scientist uses the word "idiopathic" in terms of, you know, the cause of a cancer, they are meaning that they don't know the cause?

A. Sometimes. It depends on the context. You can use idiopathic. It can also be there's a known -- it could be -- I've already explained to you that a scientist like me will not say we do not know why cancers arise. We'll say, no, they're genetic events. It might be that we don't know in a particular circumstance why the genetic event arose.

I'm saying idiopathic -- you have to be careful using the word "idiopathic" when it says most people don't know. That's all I'm trying to clarify for you.

Q. Okay. Speaking specifically on NHL and DLBCL, would you agree that there's no known cause for most cancers of NHL?

A. I wouldn't generally agree in the way you're saying it. I would say in most cases of NHL, including CLL and immunoblastic lymphoma, we strongly know that activation of oncogenes or an activation of tumor suppressor genes are generally what causes something to be a cancer cell.

Often we don't know because we are not given the information of what precipitated it. Sometimes we can't know because the cancer takes decades to arise, and asking somebody what were you doing over the last 20 or 30 years is pretty difficult. Most people wouldn't necessarily have a way of knowing that there was something that precipitated it.

It's not typical that somebody says, You know, 20 years ago there was a nuclear submarine and I went down and was exposed to

high doses of radiation, and now decades later I have cancer. And I would say, Based on my understanding of cancer and the disease you have, more likely than not that was a cause.

But a lot of times we don't have the information. That's my clarification.

Q. Understood.

When you're either clinically or reviewing a patient with NHL or CLL, it would be common practice, right, to ask for their occupational history or their family history of certain diseases, right?

A. That will be included. Often we'll obtain that information as part of a history.

Q. Okay. And, for example, their occupational history might reveal certain exposures to known and volatile organic compounds or chemicals, right?

A. There are circumstances where that happens. More often than not it's like the case for these two individuals, they weren't told, Come here and while you're in the services just know you're being exposed to a carcinogen.

There are circumstances -- I've had individuals say, I work at place X, they told me

that I would be exposed to this dangerous whatever. But that's unusual.

Usually -- and also since cancer arises over many, many years, most people don't know to tell you, You know, 30 years ago, this is what I did. Usually people tell you, This is what I do right now.

So we get those histories, but they're not usually as -- they're not necessarily informative of knowing about -- it's hard to say that discerns. It's not that we don't try.

But I've already explained to you mostly when you go see -- when you see a patient, your priority number 1 is to treat them.

Q. Are you familiar with a Dr. Richard Hoppe?

A. Richard Hoppe you mean, from Stanford?

Q. Yes. Forgive me. Hoppe.

A. Yes. He used to be the chair of radiation oncology.

Q. Are you aware that he was retained as an expert witness in this case? "This case"

being the Camp Lejeune litigation generally, not Mr. Hill or Keller's case.

A. Maybe I knew or didn't know, but sitting here right now I didn't recall one way or the other. I mean, I might have been informed at some point, but I don't remember.

Q. But he's a colleague of yours at Stanford, right?

A. I believe he's still faculty at Stanford. I think he's emeritus. I certainly know him.

Q. Okay. Are you aware that Dr. Richard Hoppe in his deposition in specific causation in this litigation, he agreed that there is no known cause for most cases of NHL?

A. I didn't know one way or the other, so I would not have an opinion one way or the other, you know, regarding his -- any testimony he had one way or the other.

Q. You haven't spoken with him about this litigation, then, have you?

A. No. No, I haven't. That opinion without any context wouldn't change any of my opinions. You know, I welcome his opinion, but his opinion wouldn't change my opinion based on

my understanding of the medicine and science, just based on that statement. Again, I don't know that I've seen anything, so...

Q. Dr. Felsher, I'm showing you what I'm marking as Felsher Exhibit Number 12, which I will represent is a scientific literature authored by Sophia Wang. I hand this to your counsel first (handing).

(Whereupon, Exhibit Felsher 12 was marked for identification.)

BY MR. RYAN:

Q. It's titled Epidemiology and Etiology of Diffuse Large B-Cell Lymphoma which was published in the journal of seminal hematology November 2023.

A. Just for the record, it's Seminars in Hematology. You'd have no way of knowing that.

Q. No. Forgive me.

A. You have no way of knowing. It's not seminal hematology, it's seminars.

Q. Thank you.

A. They're a whole series of review journals.

Q. Take all the time you need to review

this, and when you're ready my question will be, have you seen this before?

(Witness reviewing document.)

A. I don't know that I've seen this before, seeing it.

Q. Okay. When you're ready, you can turn to page 1 and I can just ask questions.

A. Please, I'm ready.

Q. Okay. On page 1 of Exhibit 12 towards the bottom, the second-to-last sentence reads, "Recent estimates suggest that obesity accounts for nearly a quarter of DLBCLs that develop, but despite recent gains in the understanding of DLBCL etiology, the majority of disease remain unexplained."

Did I read that correctly?

A. You read it correctly. I don't know out of context that I would agree with the statement as stated, and it wouldn't change my opinions, to my knowledge.

Q. Okay. What specifically would bring you to disagree with that?

A. Well, obesity has been associated with a risk of cancer. Risk is not the same as cause. Obesity has complex effects on humans,

but mainly changes our susceptibility by causing a modulation inflammation immune system. Those modulations may make you more susceptible to other causes.

This investigator is not a clinician, I can tell. I don't know the article, but they're a Ph.D.

And that argument in isolation seems to me, reducing complex biology to something that's a statement that is very misleading. They're implying there's a single cause. They're implying obesity can directly cause. If that is what this person is arguing, I would say I don't agree with that. That's not my understanding, and it's certainly not as simple as that one statement.

To say the majority of diseases remain unexplained implies that we can explain diffuse large cell lymphoma simply as being related to being obese, which I find to be misleading and incongruous with a lot of the science that I understand.

It doesn't even take into account -- I can thumb through the article and I can see that they do mention benzene there is evidence

for, so it's not that it wasn't considered.

I'd also point out this is in 2023. Some of the strongest evidence that benzene could be a cause of leukemia and lymphoma was published in the last few years in the Yu and Wang papers as well as other papers that have been published over the last recent years.

I haven't reviewed this so I don't have a strong opinion other than to say that sentence out of context I believe is misleading, and I wouldn't agree with it.

Q. Okay. If you turn to page 12.

A. Yes.

Q. Under the heading Future Directions in Epidemiologic Research.

A. Yes.

Q. It states, "Although there are some very strong risk factors for DLBCL, most patient's DLBCL will likely develop through multifactorial etiology."

Do you agree with that statement?

A. Well, I haven't reviewed the paper, and out of context I would say it's not saying a lot to say that there are strong risk factors. There are factors that probably you might

qualify as strong.

The idea that there are multiple factors involved, as I'd already stated something similar to that, saying this sentence in the abstract appears to imply that obesity alone causes lymphoma, and then here the summary is stating something making it clear that, I didn't really mean to say that statement in the abstract.

So I haven't reviewed this paper, but out of context those two sentences seem to be confusingly inconsistent with each other.

Q. Okay. So you mentioned that strictly in relation to obesity and there being no known cause for most DLBCLs. Early on page 1 it does go over what risk factors are considered.

MR. LEE: Objection. Form.

THE WITNESS: Well, you know I haven't reviewed the paper, so I don't know what's on page 1.

BY MR. RYAN:

Q. Fair enough.

Earlier on page 1 it states, "Family history of NHL/DLBCL, personal history of

cancer, and multiple genetic susceptibility loci are also well-established risk factors for DLBCL."

Would you agree with that?

A. No. Well, I wouldn't say I disagree with it, but I don't know that that's all-inclusive. They're vague statements.

Of course the next statement then refers to the evidence for multiple environmental exposures, including trichloroethylene, benzene, and pesticide and herbicides.

So I think probably I'd have to review the whole article to know whether or not that sentence -- it appears to include some aspects of the biology, but I haven't reviewed this paper.

Q. Understood.

A. But even glancing at it, it brings up benzene at least twice, and other environmental exposures, so -- including trichloroethylene and benzene.

So at least this investigator in 2023 thought to summarize the potential etiology, including two chemicals which are

directly relevant to opinions I have.

This is just a review article, and I don't know that a review from 2023 is particularly remarkable one way or another. But again, I haven't reviewed this paper.

What I mean by not remarkable is, showing me an old review article, I don't know that I'd have a strong opinion on that. I don't know Sophia Wang. I'm glad to review it, the paper, if it's necessary.

Q. So as a scientist and an expert looking to determine causality of certain chemicals in relation to CLL and NHL, can you tell me if there's a percentage of NHL cases where you sought to understand the cause but you determined there was an unknown cause?

A. I don't know how to answer that because I've already explained to you -- and even this review that we've just looked at, I've looked at in cursory, tells you it's multifactorial.

So if that's the case, which I'd say, yes, usually there are more than one, then how can I know something I don't know about to know that there's something I don't know about.

What I can know about are known causes. If I found something I believe is a known cause, then that is included, but that doesn't exclude the possibility there's something that I don't know about that also was a cause.

So how could I possibly go back in my mind and say, how many people have I tried to figure out a cause and found there was a cause I didn't know about that is a cause? That's like asking me did I look at all the patients I saw and every person I didn't know the cause, and 20 years later I realized after the patient maybe passed to their cancer there was a cause I didn't think -- I didn't consider that now we know about. I don't understand that.

What I do know is both these individuals were exposed to chemicals that can be a cause of their disease, and I believe they were a cause. And I'm not saying they're the only cause. I'm saying they were more likely than not a cause, and that they're more likely than not causes. I'm not saying I know -- an unknown cause I don't know about I can't know about.

Q. Has there been previous patients that you reviewed where you could not determine that an exposure to benzene, TCE, or PCE was more likely than not the cause of their NHL or CLL?

A. Maybe, but I can tell you sitting here today that I know that there are chemicals that can be associated with hematopoetic cancers, and whether or not they were a cause or not was not going to influence my treatment decision, and so that wasn't -- that wasn't the primary issue.

Undoubtedly I would have had people who told me there was some exposure, and I don't remember every example I said, Well, yes, that might have been a cause, now let's talk about how to get you better from your cancer. Not dismissing it, but it wouldn't -- in the Special Forces guy, I think he was actually a Navy SEAL and that's why he was in the submarine, we didn't dwell on the fact his radiation was a cause, it's just something he told me. In that case it was easier to say, Well, there really is a line there.

Q. Okay. And you mentioned maybe there

was a time where you determined that -- or you couldn't determine that it was more likely than not it was a cause for a patient's NHL. Do you remember any specific instances?

A. No, but somebody may tell me, I was a farmer one year 30 years ago. And I may have asked them, What did you do as a farmer? And they might say, Well, I don't remember. What did you farm? I farmed tomatoes. What did you use? Did you use chemicals? I don't remember. Was there anything you used? Yes. Do you remember what it was? No.

That would be an example of where I'd say, the person was a farmer, they were potentially exposed to something. Can't determine. I'd have to speculate. Is it going to change my treatment? No.

Lots of anecdotal examples of where people mentioned something, but I can't say. If you asked me could it be, I'd say, Well, it's possible but I can't say, I don't have information on what it was they were exposed to, when, how long. It's very hard to get that information from a person just coming to you as a doctor. They don't usually say, You know, I

chronicled it, and, by the way, I kept each pesticide and each chemical I used. Here they are. Do you want them? Actually I kept all of them with me. And here's a list, and here's how much I used and when. Very hard for the average person to do that. It's very hard.

And as a clinician, as a doctor, what do we say? We say when we know this, was it a cause? We don't know. Could it have been? Maybe.

Q. In your experience as an expert determining causality of CLL or NHL, have you ever determined that you could not say it was more likely than not that exposures to benzene, TCE, or PCE was more likely not the cause of their cancer?

A. Well, I would say not that. I would say that more often -- if I were told like the example I gave you, I would say I don't know because I don't have enough information. So I don't say it's not more likely than not, I'd say I don't know.

Very much like if you said to me, Doctor, you seem like a smart guy, I just want to show you, this is something I'm using. And

you give me this product you're using. Could that give me cancer? And I'd say, I'm sorry, I don't know. Could it? Well, maybe. I'd look at what's in it.

That's not ruling out. That's not saying it's less likely than not. That's saying I don't know.

And that's the distinction I'm making with the word "idiopathic," is you can't use idiopathic when you don't know when it is -- you don't have enough information to decide either way. It's not more likely or not, it's that you don't have the information, you don't know, what you would call as a lawyer would be me being speculative. I'm not going to speculate. And as doctors we don't speculate either.

Somebody says, you know, I drank this. Do you know what's in it? No. Do you think it caused my cancer? Yes. Why? Well, because you drank it. I'd say I don't know. Would you say it definitely did it? No. I'd say I don't know what's in it.

So information where I can't make a decision either way is simply it's not that I

make a determination one way or the other, I just say I don't know, just like I'd list he was a farmer. Did I think it was? I don't know.

Q. Can you recall how many times as an expert witness where you've come to the conclusion that, I don't know what a patient's NHL or CLL was?

A. Most -- no, because most of the time that is not the 1 through 10 goal, is to decide whether or not I know or don't know. And I don't say I don't know when I don't have information. I just not consider it.

I know as a scientist and a doctor not even to remark on speculations. I'm not a brand-new doctor who doesn't know anything about medicine where I list 5,000 things that could have been the cause. That is not -- there's no reason for speculating about every possible thing.

I don't ask every person I see, you know, I had one patient who was a Navy SEAL who got lymphoma. Were you a Navy SEAL? I don't -- why? Well, because it's not something that makes sense in terms of the management of the patient.

If they volunteer they're a Navy SEAL, I might ask, Oh, you're a Navy SEAL, were you exposed to something dangerous? I might. But I don't go to every person and ask them.

I wouldn't have known until more recently, the last few years, that if you worked at Camp Lejeune you were exposed more likely than not to carcinogens through the drinking water. I never saw, Camp Lejeune, come here, you will drink water contaminated with known carcinogens.

I don't -- I've never had any of military say, you know, this is -- the military likes us to work in a place where you drink known carcinogens. It wasn't something that was generally known.

So I know as a doctor and scientist, most people don't know, and so I don't even remark on it. I'm not going to think of every potential thing I don't know and say I've concluded I don't know.

Can you imagine going to a doctor who before treating you said, I've ruled out 10,000 potential causes, I'll go through each one. You would think I was crazy. What kind of

doctor does that? You would say, Are you going to treat me or are you going to rule out every possible thing you can think of?

Q. So when you're in a clinical setting, I understand that you're not going to rule out 10,000 different things. But in your role as an expert on specific causation, have you ever considered in your differential etiology risk factors, other known causes, and then came to a conclusion that you couldn't say it was more likely than not the cause of NHL or CLL?

A. Likely.

Q. Do you remember any specific instances of that?

A. None I can think of offhand, but generally I am going to ask in a consideration. If one of these individuals had told me, I have been a farmer for 20 years, or if I'd known in the history, then it would have occurred to me to ask is there any more information, because I'm being asked about specific causality, I would consider.

And it's not like if a person came to me and said, I was a Navy SEAL, could that be

a problem? I wouldn't ask them, Were you exposed to anything?

I've had -- I had a case of a nurse who -- I don't think it's public so I don't know what I can talk about, but I asked the nurse, You're a nurse, did you use anything dangerous? I don't know. Did you use -- what kind of nursing did you do? Would you have used radiation? Well, some patients got. Did you go into the room when the radiation? No, of course not, Dr. Felsher. Okay. Did you ever spill the chemicals you were giving a patient? One time. Okay. How much? One time. Oh, okay. Just one time, that seems very...

So it's not that I wouldn't. I consider -- I do consider thousands of considerations. That's why people seek my opinion. I often am asked my opinion because I will consider thousands of considerations that I'll rule out based on things that are hard to articulate based on decades of thinking about causes of cancer, and I will think and I will ask.

That's why I'm telling you the methodology list here can't possibly list

everything I consider. I can't list everything I consider.

You gave me one sentence on autoimmunity. I spent my entire Ph.D working on how autoimmunity contributes to cancer. These lawyers were shocked how much I knew about immunology. They said, I didn't know you knew. Yeah. Are you kidding? I'm a faculty in immunology. Oh, You are? Yeah. I've published papers on immune checkpoints, I've published papers on natural killer cells and their mechanism.

So if there was something leading a direction that that was relevant, I'd say, oh, you know, I actually know that this chemical works by blocking this immune mechanism. And I know that actually can be a cause of cancer. It would lead to different set of questions and considerations.

So it would be hard to encompass all the examples, I think.

Q. Okay. I want to turn to some language you use in your Hill and Keller reports regarding a legal standard.

A. Yes.

Q. On page 5 of Exhibits 3 and 4. Those are the amended Hill report and the Keller report.

A. Yes.

Q. Under the Methods section kind of in the middle of the paragraph, I'm going to read specifically from the Keller report, it states, "My opinions consider whether there is at least as likely as not a causal relationship between the chemical carcinogens described in this report" --

A. Hold on a second. I was still in the -- I was looking at the wrong document.

Q. Sure.

A. Okay.

Q. Okay. In the middle of the paragraph in Methods in the Keller report, it states, "My opinions consider whether there is at least as likely as not a causal relationship between the chemical carcinogens described in this report and hematopoetic cancers, and in particular, non-Hodgkin's lymphoma and chronic lymphocytic leukemia also called small lymphocytic lymphoma."

I read that right from your Keller

report, right?

A. You read it from the Hill report, I think.

Q. You're absolutely correct.

A. You're trying to trick me again. You see, I caught you.

But Hill has CLL and Keller doesn't, so I added in the clarification for your purpose.

Q. Again keeping you on your toes, Doctor.

A. Thank you.

Q. Yeah, that was from page 5 of the Hill report.

A. Correct.

Q. There's a similar sentence in the Keller report, states the same thing, "My opinions consider whether there is at least likely as not a causal relationship between the chemical carcinogens described in this report and hematopoetic cancers, and in particular non-Hodgkin's lymphoma."

Is that correct?

A. You read those correctly. Although, it doesn't look like it, but it's pronounced

hematopoetic.

Q. Hematopoetic?

A. Yeah, but don't -- it's a ridiculous word. Nobody can pronounce it.

Q. Thank you. I'll endeavor to get it right. Thank you.

Both reports use the same language going forward, "I understand 'at least as likely as not' to be the causation standard under the Camp Lejeune Justice Act. I define 'at least likely as not' as meaning that there is at least an equal or greater than equal chance, 50 percent or greater than equal chance (50 percent or greater chance) that the exposure described below was sufficient to have a causal relationship."

Is that right?

A. You read that correctly. And I believe it's correct that that is the Camp Lejeune Justice Act from 2022, the standard that was in that Act.

Q. Okay. Did you review the Camp Lejeune Justice Act in reaching your opinions in the Hill and Keller reports?

A. At some point I have reviewed the

document. I haven't memorized it. And there's language in it that has less -- but I have reviewed it at some point.

Q. Okay. Were you instructed to opine on the Camp Lejeune Justice Act legal causation standard in your reports?

A. I don't know that I'd describe that I was instructed. I was aware of the Camp Lejeune Justice Act, I was aware of the standard. I'm aware of what ATSDR describes when they considered the different carcinogens in -- that people who worked or served in Camp Lejeune were exposed to in the language. And it's language familiar to me, as these are words that often you could use in a combination to give an idea of a relative relationship between in this case exposures and a cause. And I refer to the 2017 ATSDR right after, the sentence after.

Q. Have you previously reviewed statutory language when rendering an expert opinion?

A. I believe that generally I'm aware that there are -- there's language that relates to regulation that I would say -- I don't know

what constitutes reviewing, but I'm certainly aware of the language of causality can be specific to a particular jurisdiction, whether it be federal or state, specific states, that there can be language this relates to a particular proposition or law.

So I have some familiarity with this idea that the words used that relate to what is considered a cause by a legal standard can be different in different contexts, different legal contexts.

Q. In your prior practice, however, have you ever diagnosed a patient using the at least as likely as not standard?

A. Well, I think that's misconstruing multiple concepts. Diagnosis would be determining what disease somebody has.

And if you're asking me about when I'm being a clinician diagnosing somebody with disease, if that's what you're asking me, that's a different kind of question than asking me the question of whether or not I'm considering a cause of differential etiology.

So are you asking me about my skills as a clinician diagnosing, or are you asking me

about my skills as an expert determining issues of causality?

Q. Well, how about both?

So in your clinical skills in diagnosing, have you ever previously diagnosed someone on an at least as likely as not standard?

A. Well, when I'm diagnosing somebody as a clinician, I don't know that we use a legal standard. If you're asking have I been in a courtroom where I disagreed with a diagnosis where there was a legal standard about a diagnosis, I can't remember if -- what the standard was. I know I've given opinions on whether or not I agreed or disagreed with a particular diagnosis.

As far as etiology, it's very common that as a scientist-doctor when we're talking as a doctor about patients, when I'm teaching junior doctors, interns, and residents, or fellows, and we're considering issues scientifically of cause, or actually when we're considering diagnosis we'll talk about, Well, how likely is the diagnosis? Is this diagnosis equally likely?

I guess I'm revising my answer, realizing every time I function as an attending we would talk about issues of about how likely or not a certain diagnosis is. I mean, it's very common. We prioritize it differently.

Clinically I don't prioritize cause etiology, I prioritize urgency. It's much more important that if there's even a small chance of something very bad -- for example, if it's equally likely you're having heartburn versus a heart attack, I'm not going to assume you have heartburn, I'm going to assume you're having a heart attack.

Even -- in fact, I would worry if you had a 2 percent chance of having a heart attack, because you could die of that if I don't diagnosis you. If I don't diagnosis heartburn, you just are uncomfortable.

So clinicians generally do use this kind of verbiage. We'll say, Well, how likely? Is it really likely? Is it equally likely the person is having -- is the person equally likely to be having polycythemia versus are they having a myeloproliferative syndrome? Well, polycythemia -- never mind, polycythemia isn't

urgent.

Some myeloproliferative syndromes like chronic myelogenous leukemia are more urgent. Or if you're trying to distinguish between a leukemia and an inflammatory response, you miss a leukemia, that could be urgent than somebody just having an inflammatory response.

So I would say, yeah, this sort of weighing and deciding and is it equally likely or less likely, very common that we do as doctors when we are in our clinical hat diagnosis.

As scientists we also will think, amongst the possibilities, are they equally likely? Is this more likely? Is this really likely? Is this unlikely, but it would be important to know?

Q. Would you say that the standard as likely as not is equatable to equally likely?

MR. LEE: Objection to form.

THE WITNESS: It's not exactly the same, because at least as likely as not -- well, I guess they're similar. I don't know. I think it's similar. Somewhere I think I talked about this.

So at least as likely as not, I defined it as 50 percent or greater. Equally likely would be 50 percent/50 percent.

So at least the way I conceived it here, I mean at least as likely as not, at least 50 percent or greater as opposed to exactly 50/50. So it wouldn't be the same thing.

BY MR. RYAN:

Q. Are you aware of any published guidance on how to apply the as likely as not standard?

A. If there's a publication that you believe that I've listed that includes such language or there's a paper you want me to consider, but sitting here today, I believe the words themselves are understandable, and the idea of are things being equally likely or more likely than not or as likely or more likely are concepts that are part of the general understanding of part of the training of being a doctor and scientist.

As much as I can't imagine somebody saying I need to read guidance on the fact that

50/50 is different from 51/49, I'd say, yeah, they're different. One is a 50/50 chance; 51 is bigger than 49.

Q. In any of the materials you've listed as things you considered, I'm not aware of anything that shows any published guidance on how to apply the as likely as not standard. Is there anything I'm missing in the materials you've considered that would be published guidance?

MR. LEE: Object to the form.

You can answer.

THE WITNESS: It could be, because certainly the ATSDR document that I cite talks about equipoise and explains what equipoise and above means, which is another way of describing "at least as likely as not."

And I cite that, and I specifically cite it, and it talks about it, and I define what it is, so at least that's one example.

I don't remember the Camp Lejeune Justice Act they describe. They must have, but I don't remember, you know, what

exactly the wording is. But the ATSDR document is one example.

Are there other examples of what I cited? Maybe. I don't remember that I've memorized all the government documents and publications.

MR. RYAN: How are we doing on time?

MR. KLOTZBUCHER: About an hour. 57 minutes.

MR. RYAN: All right. You guys want to keep going, or is this a good time to take a break?

MR. LEE: Let's take a quick break. Let's go off the record if we can.

THE VIDEOGRAPHER: Going off the record at 12:38 p.m.

(Whereupon, a recess was taken.)

THE VIDEOGRAPHER: We are back on the record at 12:47 p.m.

BY MR. RYAN:

Q. Dr. Felsher, I want to turn back to your amended Hill report, which is Exhibit 3, and your Keller report, which is Exhibit 4.

A. Yes, Mr. Ryan.

Q. On page 27 there's an "Exposure

History" section.
A. On both of them?
Q. On both of them.
A. Okay.
Q. So for the Hill report it's page 27; for the Keller report it's page 27 to 29.
A. Okay. I have 28 and 27.
Q. For which one?
A. So for Keller I think you're talking about page 28. Is this what you're talking about, this table?
Q. Yes.
A. Okay. So that's on page 28.
And on Hill, the amended, I have it on page 27 in my copy.
Q. Okay. Forgive me, I'm just trying to find my place here.
In both reports for the Hill -- the amended Hill and the Keller report, in the Exposure History sections you opine that Mr. Hill and Mr. Keller had significant exposure to VOCs during their time at Camp Lejeune, is that correct?
A. Well, I'm not sure the specific text you're referring to. I do characterize their

exposure, and I believe their exposure was significant in the sense that I'm opining that that exposure was a cause of their cancers, not the only cause, but a cause.

If there's specific text you're asking me about, I'd have to be pointed to it.

Q. Understood.

I don't see in your reports where you define what significant exposure is. Do you have a definition that you would say what constitutes significant?

A. Sitting here I don't remember there's a section where I'd give a definition of significant. But you've already asked me previously and I volunteered that significant would include to me that the contribution would be sufficient, that based on my expertise as a scientist and doctor reviewing the science and reviewing in this case the specific records and other expert reports that are part of my consideration, that I am listing the VOCs as something that I would put as one of the causes.

So to me, if it's something that as a doctor or a scientist I can say this is a cause, it's one of the causes I would list as a

cause.

Q. Okay. Can you tell me what an exposure to a VOC -- when you said VOC, you're talking about a volatile organic compound?

A. Yes, in this case I'm referring to the specific chemicals tetrachloroethylene, trichloroethylene, vinyl chloride, and benzene.

Q. Okay. Can you tell me when an exposure to those VOCs is not significant?

A. Well, I wouldn't know it's signi -- so that requires a bit of a narrative answer.

Certainly one issue would be if the exposure happened after the diagnosis, that would be an example of where I would say, well, that's not significant, because how could I say something caused somebody if it didn't proceed.

The second are considerations about a knowledge of the other issues regarding the characterization that are included here, such as I have estimates of the amount of exposure, times of exposure, and how they relate to the diagnosis. So those are all amongst the considerations.

And then I have an awareness of amounts based on what I've already talked about

in the deposition for general causality that have been associated generally with a risk of hematopoetic cancers including leukemia and non-Hodgkin's lymphoma, amongst other considerations. Those would include some of the considerations.

Q. So you mentioned there if an exposure happened after a diagnosis, it wouldn't be significant.

Is there instances where the exposure happened long before the diagnosis where you would determine that the exposure was not significant?

A. In some contexts that might be the case. It would depend on other considerations that I could discuss. But the timing is one consideration, the timing of exposure and the occurrence of disease.

Q. For NHL or DLBCL, is there an exposure period that happened long before the diagnosis that you would consider was too far to be a significant cause of NHL?

A. It would depend on -- I mean, it would depend on what we're talking about in terms of exposure.

In both of these cases the individual was exposed in a time period that, consistent with my understanding of the pathogenesis of their diseases, I believe more likely than not it was contributing to the cause, based on the time they were exposed and the relationship between the diagnosis.

Chronic lymphocytic leukemia is a more slowly progressing disease. And just as we know from Mr. Hill, he, in retrospect, had evidence suggestive of disease years before he was diagnosed because he had a leukocytosis. At the time he wasn't diagnosed, claiming a mistake was made, but in retrospect I believe that's likely when he first started having a clinical presentation of his disease.

Immunoblastic lymphoma, large cell lymphoma is generally a kind of -- it's also hematopoetic cancer, is more like a -- relatively more like a sports car. Chronic lymphocytic leukemia is more like an old grandma car.

An old grandma car grows slowly, it can take longer to realize there's something wrong, when you look under the microscope it

doesn't look particularly exciting.

Immunoblastic lymphoma, the cells look all amped up and it's easier to tell they're abnormal, and they tend to be -- they actually are remarkably similar diseases in one sense. They're both diseases of your B-cell lymphocytes. They both are genetically caused. They can both be caused by the same precipitating exposure.

But in one case you've genetically caused damage to an amped-up lymphocyte, and that lymphocyte behaves like a more reckless car, and the other case it's like an old man and the disease behaves that way.

And that's -- Mr. Hill's had a progression, slowly responded, reoccurred. Mr. Keller's had a more aggressive disease, treated much more aggressively, and he's had a better response. But he had a disease that if nothing had been done would have killed him very quickly, whereas Mr. Hill has a disease that often is untreated initially and at first doesn't cause problems, and then he's had many of the problems that you have of the disease.

So all of that and many more details

would be amongst many, many details I would consider in the contribution of these chemical exposures and their cancer. I'm not surprised at the temporality. The temporal associations of diseases can be different.

And if the exposure had happened when they were much younger, would I have less regarded it? Not necessarily based on my understanding of the pathogenesis of cancer.

If you were able to prove to me they really weren't exposed until after they were diagnosed, I still might have an opinion that it would not be a good thing to expose a mutagen to somebody with cancer for other reasons. It could make their cancer much worse. We know that scientifically. But I would find it harder to say that it was a cause if it had happened a day before, similarly. But in this case the temporality is consistent with the general understanding of the relationship between exposure and cause for these diseases.

Q. Okay. Looking at your Keller report, the chart we mentioned earlier on page 28.

A. Yes.

Q. This is Exhibit 4.

Did you prepare this chart?

A. I'd helped preparing in both cases -- or all three cases the chart. The chart was something from a document that I saw, but this was typed in from the document that I reviewed for me.

Q. Okay. And this was taken, I believe, from Appendix J of Morris Maslia's expert report, right?

A. That's what I recall.

Q. Okay. And on page 28 of the Keller report, it states Mr. Keller was exposed to the water at Hadnot Point for approximately 525 days.

Is that correct?

A. That's what it states, and to my knowledge that's correct based on the documents I've reviewed.

Q. Okay. And then on the chart on page 28, there's a column on the left, "Exposure Start" and "Exposure End," and then it lists dates between November 30, 1985 and December 31, 1987, is that right?

A. That's what it looks like to me. I

believe you're looking at the table correctly.

Q. And where did you look to get these dates?

A. I mean now, at this point, I don't remember where they were in Maslia's report.

Q. Well, so Maslia's report wouldn't have given dates specifically for Mr. Keller, right?

A. I'm sorry, it's Reynolds, I believe.

Q. Okay. Understood.

A. Yeah. That's confusing because, as I say, you know, Maslia provided part of the information, and then Dr. Reynolds' report -- I believe Dr. Reynolds provided details and estimated days and tried to provide more of the chronology.

Sitting here, I reviewed those a while ago, and I'm sorry if I'm conflating both reports to some extent. Clearly I'm describing here that I'd reviewed both.

Q. Okay. So the exposure dates specific for Mr. Keller, those were -- you relied on Dr. Reynolds' report for those, right?

A. I believe so. I know that there's also information based on deposition testimony

that provides some additional information, as independently they provide some documentation of when they were at the Camp Lejeune location.

But Dr. Reynolds with more granularity made an effort to determine what days they actually were present. And we already talked about the issue of redeployment and -- or deployment, I think it was referred to.

Q. Okay. So for page 27 of your amended Hill report, which is Exhibit 3, you have a similar chart here. And the exposure dates in your chart, is it fair to say that you also relied on Dr. Reynolds' report for the exposure dates for Mr. Hill?

A. Well, in part. As I just explained to you, I'm relying on Maslia and Reynolds in part. I also, as I've described already in the deposition, had seen deposition testimony.

I also am aware of information that's published, stated in government reports or published, for example, in Bovey that provides some additional information regarding exposure, and I believe much of that is described in my general causality report, if not all that I've described as.

Q. So, okay. In your Hill report, Exhibit 3 on page 24.

A. Yes.

Q. Towards the bottom there's a section titled "Residential History."

Do you see that?

A. Yes.

Q. Did you prepare this chart?

A. I don't believe. I don't recall making the chart. I believe the information I knew about, but it was prepared for me.

Q. Do you know who prepared the chart?

A. I'm not sure sitting here right now. I believe it was likely part of the legal team that I was interacting with.

Q. Okay. And on page 22 of the Hill report --

A. Yes.

Q. -- there's an "Occupational History" section with another chart.

Do you see that?

A. Yes.

Q. Did you prepare this chart?

A. Well, the actual chart I didn't physically prepare. But again, all this

information I'd seen and reviewed as part of the medical records and/or deposition testimony.

Q. Okay. And would this be someone from your legal team that prepared this chart?

A. Well, I wouldn't characterize it as my legal team, but I would characterize it as -- because again, you're implying that I need a legal team, which I believe in this circumstance I don't.

I believe it was a member of the lawyers who helped put the information that I knew about and considered a summary.

Q. I'm certainly not implying you need a legal team, Dr. Felsher.

A. I understand, Mr. Ryan. I know you're not, but the record will read funny if I don't actually say something.

Q. Fair enough.

And so the Occupational History section, there is individual cites to certain things in the record including, you know, Mr. Hill's deposition transcript. There's some reference to some, looks like military records. For example, in September 1976 to 1978 on page 23, it states Mr. Hill was in the US Navy,

stationed on the USS Guam as an aviation boatswain's mate, and there's a citation to his transcript as well as a document titled 28_HILL_1179.

Do you see that?

A. Yes.

Q. You would have reviewed that document, right?

A. If it's listed that it was provided to me, then I reviewed it. Sitting here right now just based on the number, I don't remember. I do remember reviewing the deposition.

Q. In your analysis of the exposures for Mr. Keller and Mr. Hill, did you assume that all of Camp Lejeune was contaminated the entire time that they were on Camp Lejeune?

A. No. No. I know based on the factual history and documents available to me and I believe government and published reports that not all the wells were contaminated. Many of them were, but not all of the wells were contaminated.

Q. Specific to the time periods that Mr. Hill and Mr. Keller were there, are you aware of what the contamination of the wells

that they would have been living and doing their jobs by?

A. I'm aware in the sense that I reviewed and knew. I can't say that I memorized the complexity of it. But I know, for example, the reason why for -- in the Keller document benzene is listed, but in the Hill document all four of the relevant volatile organic chemicals are listed, is that I knew that I had reason to know that Mr. Keller was exposed to benzene, and I knew -- I had reason to know that based on the history and what we know factually that Mr. Hill was exposed to all four chemicals. And so that's an example reflecting, you know, some.

And I'm aware that not every place was contaminated the same way, and that it was a history to this, and I've reviewed this, but I hardly would pretend I memorized exactly. And I'm relying on other experts to provide those details.

It was provided to me, I know about it, but I'm relying on other experts who had actually investigated, looked, and providing me information and what they counted when when somebody was exposed.

But I can tell you based on the government reports and published records that I know at a higher level that more likely than not they were both exposed to the chemicals that I'm describing in these reports.

Q. For the charts on page 27 of the amended Hill report, page 28 of the Keller report, did you independently verify the volatile organic compound concentrations as listed in these charts?

A. I'm not sure what it means to independently verify. I didn't make measurements myself, if that's what it means. I don't know how I would have. I didn't -- I am relying on estimates that other experts have made.

But as I've described, there are also estimates generally provided by multiple government documents. There are also estimates provided by published documents.

The numbers provided here I'm relying on Maslia and Reynolds, but -- to the best of my knowledge. But if verifying or considering includes the fact that I'm aware of government documents and published documents, to

the best of my knowledge, my understanding is that your experts describe that there's exposure. I didn't think that was something that is being argued about, that there weren't chemicals that people were exposed to. There may be other arguments.

I've reviewed Goodman's report and publications from Goodman, for example, who works at Gradient, and some of the other experts.

Q. Understood.

A. Which reminds me, I forgot to mention that when I reviewed Goodman, she uses "equipoise" and "above" in her published papers. So your own expert apparently uses this in published papers as a way to describe science.

So I think if an expert working for a company, for Gradient, the Department of Justice hires, uses that as a way of describing findings in their published papers, I guess it's common knowledge. They certainly didn't go out of their way to avoid using this description. It was something quite remarkable when I reviewed papers that she reported.

Q. I'm showing you what I'm marking as

Felsher Exhibit 13, which is -- this is Appendix J of the expert report of Morris Maslia.

A. Thank you.

(Whereupon, Exhibit Felsher 13 was marked for identification.)

BY MR. RYAN:

Q. Do you recognize this document? And take time to review it.

A. So as much as I can tell, I recognize the document. The challenge is you're printing it out, which is totally fair, and I saw it as an electronic document, and generally, as I believe many of them are huge, like an Excel file, they are huge.

And so as much as I can tell, this is the same thing, but it's not exactly what I reviewed. I didn't review a physical copy.

Q. Understood.

A. Thank you.

Q. If you turn to page 235. And I've premarked it, you see the red tab --

A. Yes, I'm there.

Q. -- just to make it easier for everybody.

A. I'm there. Thank you.

Q. This page sets out water modeling data for Hadnot Point in the 1980s.

Does that look right?

A. Reconstructed monthly simulated. I believe if it's simulated, if this is talking about the modeling, and it does look like it's Hadnot Point, I believe that is what this shows.

Q. Okay. Is this the portion of Appendix J from Morris Maslia's expert report that you relied on when putting in the numbers in that chart on the Hill report?

A. I'm just -- it looks like, as much as I can tell, the numbers are not exactly the same, so I don't remember. Maybe they are exactly the same. I'm sorry, they are exactly the same.

Q. Yeah, that's perfectly fine.

A. I'm just checking. They look exactly the same. I thought maybe you were asking me a question and trying to trick me.

Q. I'm not trying to trick you this time.

A. Hey, I don't trust you, you've tried to trick me too many times. You've twice asked me about my legal counsel.

Q. From my review, the numbers match what's on page 27.

A. It looks like it matches.

Q. Okay. I notice in this chart on Appendix J it includes values for dichloroethylene.

Do you see that?

A. Yes.

Q. Is there a reason why you didn't include these exposure concentrations on page 27 of the Hill report?

A. Not in particular that I can say sitting here right now, other than that in my consideration, I was aware of generally more evidence for -- the most evidence for benzene and trichloroethylene as being a cause of cancer, significant emphasis for vinyl chloride, albeit less in regarding to hematopoetic cancers, and the least relatively just scientifically for PCE.

So I think those -- the chemicals that I considered the most were chemicals in which there's more relative consideration that they would be important potential causes.

But I'm glad to consider DCE if you

want me to.

Q. No.

My question is, if it wasn't included, dichloroethylene, is it your opinion that that VOC wouldn't be a causative factor of Mr. Hill's CLL?

A. Well, sitting here right now, I can't say I've thought about this recently, so I'd just say I don't have an opinion.

I do have an opinion on benzene, trichloroethylene, and tetrachloroethylene. All of them can be a cause. Vinyl chloride is a cause of cancer, but I believe in my general causality I concluded it was less likely to be something that had been proven to be a cause of hematopoetic cancers like lymphoma and leukemia.

Benzene very compellingly is a cause, and while this legal case has been proceeding, the evidence has become even more compelling that benzene can be a cause of hematopoetic cancers based on multiple published papers linking benzene to lymphoma and leukemia, and then also additional papers linking benzene to other cancers.

So the evidence that it is a

carcinogen have been remarkably substantiated for multiple recent studies, which are a large part of the studies that were in my supplemental information considered was these papers that I found, making it even more compelling and concerning that individuals at Camp Lejeune were exposed to benzene.

Q. Are there any more recent publications that you discussed linking benzene with certain cancers that weren't included on your supplemental materials considered?

A. There are -- I do know there are other recent papers that say that benzene can be a cause of cancer. In some cases I noticed, and I didn't include every paper I found, because in some cases they were evidence for solid tumors. There's lots of literature on specific aspects of benzene that are complicated science, about mechanism.

I didn't include every paper that I found suggesting the mechanism by which benzene causes hematopoetic toxicity and can interfere with the immune system, simply for the sake of not obfuscating conclusions by providing -- bludgeoning the record with records.

But any paper that you found that you want me to consider I'm glad to consider and tell you if I've seen it or thought about it or considered it if it wasn't listed.

Q. So turning back to the Exhibit 13, the chart we just looked at, are you aware that this comes from a chapter of a 2013 report prepared by the ATSDR summarizing its water modeling for Hadnot Point?

A. You're talking about the Maslia?

Q. Yes, the Maslia report.

A. Yeah, I believe that's what I actually describe in my -- I thought I described that in my report, that these come from another document -- or the information comes from another document.

Q. I'm showing you exactly what I just said. This is Chapter A: Summary and Findings of a 2013 ATSDR report for Hadnot Point. I'm marking this as Exhibit 14.

(Whereupon, Exhibit Felsher 14 was marked for identification.)

A. Thank you.

BY MR. RYAN:

Q. Take all the time you need to review

it, and when you're ready, my question is do you recognize this.

(Witness reviewing document.)

A. So it's a physical document, and if I had seen something, it would have been an electronic document. And I don't recall whether or not I've seen the full chapter. I don't recall if I cited it.

If I've looked at it, I haven't looked at it recently, certainly not in preparation for today. I was aware of it being from a chapter, the information that we're talking about in that table.

Q. Did you review this document when you were preparing your Hill or Keller reports?

A. Well, did I -- I don't remember if I listed it or not.

Did I list it?

Q. I don't see that it's listed.

A. Then I don't recall that I reviewed it. I may have seen it at some point, but I can't tell you sitting here today that I reviewed it if I didn't list it, and I don't recall reviewing it in detail.

Q. Okay. If you'd please turn to page

A168, you'll see towards the top I've premarked some things. It's going to be one of those.

A. Okay. A --

MR. LEE: What's the number again? I'm sorry.

MR. RYAN: A168.

THE WITNESS: I see A168.

BY MR. RYAN:

Q. Okay. Do you see that this page sets out the water modeling for Hadnot Point in the exact manner as from the Appendix J of Maslia's report, which is Exhibit Number 13, is that right?

A. Well, I haven't reviewed the chapter so I can't say it's exactly the same.

What I can see is that, as much as I can tell quickly looking at it, the table looks to be the same table unless there's something different I'm not noticing by looking at it briefly.

Q. Okay. You're aware that plaintiff Bruce Hill, he was at Camp Lejeune from July 1983 to May 1985, right? That's his exposure period?

A. It will be stated in my report. If

we're citing the report we can look at it. I haven't memorized the exact dates sitting here, but I know it's in my report.

Q. Okay.

A. And whatever the facts are the facts.

Q. In looking at this ATSDR water modeling chart on Exhibit 14, do you see that from July 1983 through May 1985, ATSDR modeled PCE as between 0 and 39 micrograms per liter?

A. July 1983 to when?

Q. Until May 1985.

A. And you're saying it went from what to what?

Q. I'm saying they modeled PCE as between 0 and 39 micrograms per liter.

A. Okay. I do see the highest number is 39 and I see numbers that are 0, so that appears to be factually correct.

Q. Okay. And in water, 1 microgram per liter is equal to 1 parts per billion, right?

MR. LEE: Objection to form.

THE WITNESS: Yeah, I mean, it can be. I mean, the actual precise could be -- it could be an approximation. You

know, I don't know the exact calculation just sitting here. I'd have to look up the exact calculation.

BY MR. RYAN:

Q. Okay. If I state these values in parts per billion, would you understand me?

A. If you give me parts per billion, I understand you. I'm just telling you sitting here right now I can't calculate it, and usually these calculations are affected by other considerations for the actual amount. You can approximate, but obviously water can have a different density depending on issues like temperature, and there are other issues that can make it -- the exact number, you know, that we would qualify.

Q. Okay. Looking at this chart on page A168, do you see that from July 1983 through May 1985, the ATSDR modeled TCE as between 0 and 783 micrograms per liter?

A. Yes, that seems to be factually correct.

Q. And from July 1983 through May 1985, the ATSDR modeled benzene as between 2 and 12 micrograms per liter, is that right?

A. I believe that's factually correct.
Q. Okay. And if you just turn to page A174 on Exhibit 14. That's the next tab, I believe.
A. Yes.
Q. Do you see this sets out PCE modeling data as to Paradise Point, right, this chart, page A174?
A. A174. I see Hadnot Point and Holcomb Boulevard water treatment, and point -- Holcomb Boulevard study area. Am I looking at the wrong...
Q. No, you're looking at the right thing.
So you see they separate it by years in the chart, 1972, '73, '74, and so on?
A. Yes.
Q. You'll see that the top left of the chart they have the initials PP?
A. Yes.
Q. And that's defined above as Paradise Point, correct?
A. Yes.
Q. Okay.
A. That's factually correct.

Q. And you're aware that from December 1983 to May 1985, Mr. Hill resided at Paradise Point on Holcomb Boulevard?

A. I don't remember the exact timing. If that's the facts, the facts are whatever the facts are.

Q. Okay. Would it surprise you if that were the facts?

A. I don't know if I'd be surprised or not surprised. If I've memorized all the locations of all the places we've been, it will be summarized somewhere in my report.

Q. Understood.

Okay. So looking at A174, you agree that ATSDR modeled 0 PCE as to Paradise Point during the month of December 1983?

A. Well, if that's the fact. This document I haven't reviewed, and I see the table and I see the numbers, but I haven't reviewed this chapter or this specific table, so I only can see the number. So I don't know that I have an opinion on other than that I see -- factually I see a number 0.

Q. Understood.

Are you aware that this modeling

data on page A174 was also included in Appendix K of Morris Maslia's expert report?

A. Not sitting here today did I remember a chapter I haven't seen and all the tables that were put in Maslia's report. If you want to show me Maslia's report, I could say whether I've seen this information. But this appendix I hadn't seen before, to my memory.

Q. Understood.

Okay. And you see in this chart that the ATSDR modeled 0 PCE as to Paradise Point during all months of the year 1984?

A. As much as I can see, having not reviewed this, I see factually there's zeros. I don't know what the modeling is or what I'm looking at. I haven't reviewed this document before.

Q. Okay. And do you see in 1985 the ATSDR modeled 2 micrograms per liter PCE in January 1985 and 3 micrograms per liter PCE in February 1985, right?

A. I don't know if it's right, but factually I see the numbers. You're reading them correctly.

Q. And the ATSDR modeled 0 PCE as to

Paradise Point for all remaining months in 1985.
Do you see that?
A. Looking at this table, that appears to be what I see. I don't know that I've ever seen this before.
Q. If you look at the next page, page A175.
A. Yes.
Q. This sets out TCE modeling data as to Paradise Point.
Do you see that?
A. Where are you looking at?
Q. Up towards the top, do you see it says, "Reconstructed (simulated) monthly mean trichloroethylene concentrations in finished water distributed to Holcomb Boulevard family housing areas"?
A. Okay, I see where you're reading. I don't recall reviewing this table before.
Q. Do you see in the chart on page A175 that the ATSDR modeled 0 TCE in December 1983 for Paradise Point, right?
A. I see where you're looking. I don't know if it's right or not. I hadn't reviewed this chapter, I haven't reviewed this table

before, to my knowledge.

Q. Okay. And in the chart, do you see in 1984 the ATSDR modeled 0 TCE in Paradise Point?

A. I see where you're reading. I see the number there. That seems to be factually correct for this particular table I haven't seen before.

Q. Understood.

And for 1985, the ATSDR modeled 34 parts per -- well, I'll say it in micrograms, 34 micrograms per liter TCE in January in 1985 and 66 micrograms per liter TCE in February of 1985.

Do you see that?

A. Yes, I see you're reading -- where you're reading. I see those numbers.

Q. And they modeled 0 benzene at Paradise Point for -- excuse me.

They modeled 0 TCE in Paradise Point for all remaining months in 1985, right?

A. I don't know if it's right, but I see the numbers factually. I haven't seen this table before. I haven't seen the document before so I can't say if it's right.

Q. Please turn to page A178. It might

be the -- it's the last page of the document.

A. Yes, I'm there.

Q. Okay. Do you see at the top this sets out monthly benzene concentrations for Holcomb Boulevard family housing areas, right?

A. Well, I don't know if it's right, but I see what you're reading.

Q. Okay. And do you see that the ATSDR modeled 0 benzene at Paradise Point during all months for the years 1983 to 1984?

A. I see where you're seeing the numbers. I haven't seen this before, but I see that factually the numbers are 0 in the document.

Q. Okay. And in January 1985, the ATSDR modeled 1 microgram per liter of benzene, right?

A. I don't know if it's right, but I see where you're looking, and you're reading it correctly.

Q. The ATSDR also modeled 0 benzene as to Paradise Point for all remaining months in 1985.

Did I read that right?

A. You read it correctly to the best I

can tell.

MR. RYAN: How are we doing on time?

MR. KLOTZBUCHER: 50 minutes.

MR. RYAN: Do you guys want to break for lunch?

MR. LEE: Sure. Since you finished that particular document, certainly.

THE VIDEOGRAPHER: We're going off the record at 1:33 p.m.

(Whereupon, a luncheon recess was taken.)

AFTERNOON SESSION

THE VIDEOGRAPHER: We are back on the record at 2:16 p.m.

BY MR. RYAN:

Q. Dr. Felsher, I want to direct your attention back to the chart in your Keller report, Exhibit 4, on page 23.

A. Yes.

Q. The concentration values you list for benzene in this report, that was taken, I believe you've previously stated, from Appendix J of Morris Maslia's report, correct?

A. I believe so.

Q. And similar to the values in the Hill report, are you aware that the water modeling concentrations for benzene that Mr. Maslia pulled in Appendix J of his report were pulled from the Chapter A of the 2013 ATSDR modeling report?

A. I believe I'm aware that they were pulled from this other document, as much as I can tell.

Q. Understood.

So if you look at -- back at Exhibit 14, which was that -- the Chapter A of

the ATSDR, and look at page A169. It's going to be marked by one of the tabs.

Are you there?

A. Yes.

Q. Okay. You'll see at the top of this page, this page sets out water modeling data for Hadnot Point from November 1985, beginning on page A169, through January 1988 on page A170, is that correct?

A. Again, I hadn't seen the actual chapter, but as much as I can tell looking at that, the actual table for -- it looks like that's correct.

Q. And during that time period, do you see on the chart that the ATSDR modeled PCE as 0 micrograms per liter?

A. From which date to which date are you looking?

Q. From November 1985 to January 1988.

A. Yes.

Q. And during that time period the ATSDR modeled benzene as between 2 to 4 micrograms per liter?

A. I see that, yes.

Q. Did you review this chart in the

ATSDR report when preparing your Keller report?

A. I don't believe I reviewed the chapter. And I think the key thing is, what seems to be -- you seem to be confused by is I'm relying on these other experts, but I can clearly tell you these individuals were in different locations. In some of the locations they were exposed to carcinogens that caused cancer, and I know they sometimes were in locations where there weren't chemicals.

That doesn't change my opinion. I believe they were exposed exactly as I document in my report to multiple chemicals, they're genotoxic, they work by multiple mechanisms synergistically, based on my understanding of the science for both of these individuals.

So if you pull tables that I haven't seen before that show zeros that are not relevant because I know they were exposed in places they were, what difference does it make?

Q. So reviewing this chart in Exhibit 14 doesn't change your opinions on any exposure Mr. Keller may have had?

A. Well, you walked through times where depending upon where they lived or worked or

where they physically were whether or not they were exposed or not exposed, but that's kind of like saying somebody walked across the street and got run over by a car because there were cars there and you told them to close their eyes, but they were somewhere where there weren't cars and they didn't get run over, so it was fine that you told them to go somewhere where they'd get hit by a car.

Both of these individuals were exposed to chemicals from Camp Lejeune unknowingly. That's what I cite. I know that not all the locations, we've already talked about that.

So you can find -- we can go through the chapter and you can walk me through examples of where a particular chemical was not present or was present, and I'll say that my opinion is that based on when I know they were exposed, and the times they were exposed and what they were exposed to, that it was clearly a reason for me to consider the possibility this was a cause of cancer, and I'm telling you, based on my opinion, it was.

It's particularly in the case of

where you have exposures to multiple carcinogens, multiple mechanisms is particularly concerning, and benzene itself is particularly concerning as a carcinogen alone.

Q. Okay. If you could turn to page A12 on Exhibit 14.

A. Of course.

Q. Under the top section you're going to see Hadnot Point wells number 602 and 608?

A. I see 602. I see 608.

Q. Are you aware this chart shows that the only wells that were ever found to have been contaminated at Hadnot Point were closed by February 1985, and that would be these two, 602 and 608?

A. I'm not aware one way or the other. I see the table. It's a complex table. I had reviewed this table. I am aware that there's a history of wells closed, open, some had contamination, some didn't.

I believe based on my understanding of what I've reviewed, I know both these individuals were exposed to water that was contaminated, and based on that information it doesn't -- I'm able to give you the opinion that

it could be a cause generally, and specifically I believe that their exposures were a cause of their cancers.

Q. When forming those opinions, did you review this page A12 on Exhibit 14?

A. Well, I already told you that I don't believe I've reviewed or seen this chapter. I see this complicated table. I see that this chapter -- you walked me through where I believe there's a reason that I know that both individuals were exposed to carcinogens. Whether or not there was in all the wells or which wells or when they were closed, those are all, of course, important details, and relying on other experts to go through the weeds of figuring out which wells were involved and whether or not there was an exposure, but based on what I know, they were both exposed to carcinogens, and that could be a cause and I believe it was a cause of their cancers.

Q. No, I appreciate that. The purpose of this exercise is just to walk through what you reviewed and what you may not have in forming your opinions.

Do you understand that?

A. Yeah, I think that's fair. And I have already volunteered to you that I don't recall and it wasn't listed in my reliance that I had gone through the entire chapter. What you've shown me so far, that I'm only seeing in detail right now, I don't believe changes my opinions.

Q. Okay. One more ATSDR report, then I promise I'll get off it.

A. Oh, respectfully, Mr. Ryan, you can ask me about whatever it is that you feel is most helpful to you, and I will answer to the best of my ability.

Q. I appreciate that.

A. Of course.

Q. Showing you what I'm marking as Felsher Exhibit 15.

(Whereupon, Exhibit Felsher 15 was marked for identification.)

BY MR. RYAN:

Q. This is Chapter C of the 2013 ATSDR water modeling report titled Chapter C: Occurrence of Selected Contaminants in Groundwater at Installation Restoration Program Sites.

Take whatever time you need to review this, and my first question would be -- is have you reviewed this before?

(Witness reviewing document.)

A. So I don't believe I've reviewed this before. I don't recall that I listed it on my documents considered. I don't think I've seen this before.

Q. Okay. If you could turn to page C108 which is at Tab A-40.

A. Thank you. Yes, I'm there.

Q. Okay. There's a Table C12 on page C108. It's a summary of analyses for benzene, among other contaminants, in water samples collected at the Hadnot Point Water Treatment Plant at Camp Lejeune.

Do you see that?

A. I see where you're reading, yes, Mr. Ryan.

Q. Okay. Do you see in this chart that benzene was detected in water samples taken on sample dates November 19 and December 10th and December 18th of 1985, right?

A. Well, I know that's right. Looking at this for the first time, what I can tell

compared to the 2013 document is the measurements are clearly not as reliable, because rather than saying they don't detect, they give a limit of less than 10, which would suggest that whatever way they were measuring, and I don't know the details, was not very quantitative or sensitive, certainly not enough to make the determination of whether or not there were levels that would be carcinogenic.

And I see a very high level in 11/19/1985 at 2500 and a high level at 1210. So I find that -- it seems uninformative, that whatever measurements they were making, they were not very quantitative or not very sensitive measurements.

Q. Understanding the limits of the detection limit listed here, do you see on chart C12 that none of the other water sample dates on C108 were able to detect benzene even at levels that could be detected but not quantified?

A. Respectfully, that's nonsense. That would be like saying, you know, I have a way of measuring height but I can't measure anybody less than 5 feet tall. I think all of us would qualify. But nobody -- none of the female

members in my family would. My wife is like 4'11" and half. Don't tell her I said that. But you would say -- would you say she doesn't exist?

A limited detection of 10 when we've already talked about the fact that levels of 3 to 10, I'm going to tell you I believe are significant. I would say unfortunately this archived document -- and probably if we went through the history we'd find out that they must have tried to repeat the measurement a few years later because they realized the measurements they made, they must have been using a method that was not particularly sensitive or quantitative.

When you have a measurement that's not quantitative sufficient to inform you, then you don't say you didn't detect, what you say is the test wasn't helpful.

I'd say this isn't helpful to me. Granted, I haven't reviewed the whole chapter and maybe there will be something else that will be helpful to me, but my impression is, huh, they really didn't know how to measure these things in 2010.

Q. Well, there's water samples taken the date listed, so 1984 through 1987?

A. Correct, correct. So they measured them again realizing, well, we didn't really use a very good method. I thank you for correcting me and saying something that is spurious.

Clearly they remeasured, got values, because for some reason 2010, whatever method they used was not very sensitive.

Q. Do you see on the chart that the water samples taken from all dates in 1986 showed no detection of benzene at levels that could be detected and are quantified?

A. I don't see that. I see that they had a crumby test that made a measurement that could not detect a chemical at levels that would be dangerous, and therefore I would say you'd better go back to the drawing board, which presumably is what happened, because they realized, yeah, these are really crumby measurements, we're not really using -- we could look through and find out what was the actual method they used, why was it insensitive, what did they do that was inaccurate, why a few years later did they remeasure and they suddenly could

detect measurements that appear to be quantitative?

Q. Would you say in the detection limit which they specify, what, as the 10 micrograms per liter, it would have been at the very least less than that?

A. I'd say if it's that inaccurate and that insensitive, I would say these measurements are not reliable. When you see a bunch of things saying we can't detect anything at a limit that we now know looking through today's eyes, I would say do I trust the measurement?

It would be like if you said to me you couldn't detect my wife because she's 5 feet tall, but you know that I'm around 6 feet tall. I'd say, What kind of measurement is that that you can't measure somebody who's 5 feet tall? I'd disregard that.

My point being that in the order you presented the documents I haven't seen as a scientist, my first impression is, huh, boy, this tells the story of why the measurements are retaken because, boy, they said 0 for a lot of levels that are pretty high limit.

I mean, this routinely happens in my

lab. Somebody in the lab will make a measurement. They'll show it to me and say, We're concluding something. I say, No, you can't conclude anything. Do the test again. I've done that test. If you can't detect anything, you're not doing it right. Do it again where you can make a measurement where you legitimately can say you're doing a test that has the sensitivity to detect levels that are relevant, that are biologically, medically relevant.

Q. Okay. Turning to -- back to your reports, Dr. Felsher --

A. Yes, yes.

Q. -- you mention that you relied on the estimation of exposure for Mr. Keller and Mr. Hill from Dr. Kelly Reynolds' report, right?

A. I believe, yes. I believe in part I'm relying on Kelly Reynolds, in part I'm relying on Maslia, in part I'm relying on publications, other documents that describe exposure or potential exposure.

Q. Are you aware that Dr. Reynolds used cumulative total mass as an exposure metric for the chemicals at issue in her report?

A. I'm aware that that was one of the ways in which she quantified the exposure.

Q. Do you know whether this is an accepted exposure metric in risk assessment?

MR. LEE: Objection to form.

THE WITNESS: Well, that's saying two things at the same time. It depends on what you mean by "risk assessment" and depends on what you mean by "acceptable," and both of those would have to be defined and put into a context.

You've just shown me a document, saying it doesn't show anything, that I'm telling you the test clearly I can tell, having never seen the document, doesn't mean anything to me.

And sitting here today, I'm not saying something about risk assessment, I'm saying something about whether or not there was an exposure that individual cases could be a specific cause.

So to me until you define these things and I know what you're talking about, you're asking -- you're putting two things together that are completely

non-sequiturs to me.

I tell you, I believe I can rely on Kelly Reynolds as providing me useful information to tell me these individuals were exposed during a period of time that is significant in my mind based on my understanding of the medicine and science to be suggesting it could be a cause, and I've concluded in these specific cases that they are a cause.

I'm not telling you about a risk because anything -- the word "risk" is saying whether or not something will happen. If I told you that I thought Mr. Keller and Mr. Hill were going to get cancer based on their exposure, you should justifiably say, that's ridiculous, Dr. Felsher, because they did get cancers, what are you talking about risk? It would be ludicrous.

It would be like me calling up somebody and saying, you know, you might get cancer. I did, Doctor. Oh, I'm sorry. I was trying to warn you. Too late. Risk doesn't mean anything really,

generally.

But, you know, if you want to explain to me what you mean, we can go into more granular detail.

BY MR. RYAN:

Q. In your reliance on Dr. Reynolds's report, would you agree that you're assuming Dr. Reynolds's methodology was reliable?

MR. LEE: Objection to form.

THE WITNESS: Well, broadly speaking I would say I don't know how to answer a question like that, because I'm relying on aspects of what Reynolds did.

But methodology can refer to a lot of different aspects, and I don't know what you're asking me about and what's reliable or not reliable. You would have to be more specific.

I've told you that I can use Reynolds, Maslia, published materials, other government-associated documents to tell me that these individuals were more likely than not exposed to the chemicals as we've already described and that could be a cause, and in their cases and my

review of their specific circumstances I believe they are a cause.

BY MR. RYAN:

Q. You're not an exposure assessment scientist, are you?

A. Well, I'm not sure what you mean by that. If you have a specific idea of what you're referring to, I'm glad to qualify it.

I'm not calling myself those combination of words, but I am a scientist. I'm a scientist who is asked to consider things like whether or not an exposure in a specific circumstance can be a contributing cause.

But if that makes me a scientist who uses exposure as one of the ways of thinking about cause, then in that sense I'm certainly more than a layperson exposure scientist.

If you have a specific job title you're thinking about, or asking me if I work for the ATSDR in a specific job category, I'd say, well, no, that's not what I'm doing.

Q. Have you ever authored a risk assessment report?

A. Well, it depends on what you mean by that again. If we're talking about IRIS, no, I

haven't worked for IRIS. Actually the government fired the head of IRIS. They're now working at the California EPA. So technically in that capacity they're now my boss when I work for the California EPA.

If you were talking about have I written a report where risk is part of what I estimate by considering factors based on my science and understanding, well, in that sense I have expertise in thinking about, considering risks, and making some estimation, and certainly I'm aware of some aspects of the science.

But I'm not claiming to be a scientist directly working for the EPA, so you'd have to be more granular about what it is that you are asking me.

But if you're asking me am I able to think about the science of risk or make estimates based on medicine and science, yes.

If you're asking me specifically about ATSDR, I'll tell you that in every document I read from ATSDR that I can think of, in the preamble it says you cannot use this document to tell about whether or not something for a specific individual can be a cause, that

is done by a health professional. I am a health professional.

Q. Are you aware what a maximum contaminant level, or MCL, for chemicals is?

A. I've seen descriptions of MCL in some context.

Q. Have you -- are you aware that the EPA sets MCLs for chemicals?

A. I believe that the EPA is one of the organizations that can describe the MCL in terms of an environmental chemical. I don't know in all contexts that the EPA is responsible. I don't think they're responsible necessarily for a worker, or there might be specific contexts, but certainly the EPA is involved in that sort of assessment.

Q. Are you aware of how the EPA establishes MCLs?

A. I have some idea of how they think about or determine, but I wouldn't say that I know all the different methodologies. If there's something specific or a document you want me to look at and say, I'm glad to comment.

Q. Are you aware that MCLs are designed to be acceptable daily drinking water

concentrations over a lifetime of exposure around 70 years?

MR. LEE: Objection to form.

THE WITNESS: Well, it depends on the context, but I'm certainly aware that in many EPA risk assessments they'll define lifetime as 70 years. Like in IRIS documents that's a very typical estimation.

BY MR. RYAN:

Q. Are you aware that the MCL for TCE, PCE, and benzene is 5 parts per billion?

A. Well, I may or may not be aware. I believe I've seen some of the numbers. I do not find those as informative, because in my knowledge of how the EPA establishes and considers these numbers, in some contexts they are not updated as quickly as the science has changed, in terms of my understanding.

And I'm confident that the MCL for benzene does not take into account the papers published in the last two years that show very large epidemiologic studies, relatively speaking, hundreds of thousands of individuals involved, also estimating environmental effects

and demonstrating that chemical exposures to benzene over time can cause disease processes including cancer at levels -- certainly the Yu article describes at .2.

The Wang article says it did not find a level of exposure in the levels within the study that did not have some associated risk, and they were much -- they were in the neighborhood or lower, I believe, when estimated. They used micrograms, and I believe 1 microgram's -- I believe 1 part per billion is equivalent to something like 3.2 micrograms of benzene.

So I can't do the calculation in my head, but I believe the Wang and Yu article suggested pretty low exposures were actually a risk for cancer.

I doubt the MCL -- they're not -- those measures aren't updated quickly enough to take into account science published over the last few years. I can, which is part of the reason the EPA will say things like to make these sort of determinations requires an expert with knowledge of the -- meaning the knowledge of the science in a particular circumstance,

which I believe I'm not exaggerating to say that would include somebody like me. At least the California EPA also agrees with that.

Q. In your review of the materials in this case, Mr. Keller and Mr. Hill's case, do you assume that ATSDR's water modeling was accurate?

A. Which water modeling for which circumstance are we talking about?

Q. So the Appendix J that you relied on in the charts in your Hill and Keller reports from Morris Maslia's expert report, that water modeling which tracks -- you know, was taken from Chapter A of the exhibit that we covered in Exhibit Number 15.

A. I got you.

So my understanding, the modeling, I don't know just the modeling, and I think the modeling is reasonable. To say whether or not it's accurate is a subjective description.

But based on my understanding of the science right now, the modeling suggests levels of exposure that I'm confident can be a cause of cancer, and based on my knowledge of specific cases are certainly, I would conclude, more

likely than not or as likely as not for the legal standard to be a cause of cancer in these two individuals.

And even if there was some variation, because modeling is modeling and different models can slightly, or change values, I can't imagine how based on my knowledge from multiple sources that still wouldn't suggest there was an amount of exposure that would lead me to conclude that this -- both these individuals, their exposure to these chemical and combination of chemicals was a contributing cause of their cancer.

Q. Okay. I want to turn to background levels of certain VOCs like benzene or TCE.

Do you agree that people in general are exposed to background levels of benzene and TCE in everyday life?

A. Well, by definition as a scientist, there's some background of exposure. Importantly, often those backgrounds include exposures that may not be completely natural. It can include release of the chemicals, for example, contaminated drinking water that somebody just didn't know about. That could be

incorporated in the background.

But there's always -- by definition as a scientist, there will always be a background.

Q. Did you consider background levels of exposure in your Hill or Keller reports?

A. Well, I believe I did, as any scientist would in multiple ways.

First of all, the science that I am referring to concludes that environmental exposure in consideration of background or other sources of exposure is a -- can be a contributing cause.

By necessity the science is done in a way so we're talking about cause in addition to whatever contribution there is to background, and therefore I'm not going to say that there's something in the background that may not also be a cause. That's possible. What I'm saying is the exposure through the contaminated water at Camp Lejeune was a cause.

Also importantly, for many of the individuals that are exposed to multiple chemicals that work by different mechanisms, genotoxic mechanisms, mechanisms that interfere

with the immune system or cause bone marrow toxicity, that are synergistic. There are many ways in which carcinogens can cause cancer.

And I believe that that combination and the amount, regardless of any contribution to background, is all additional unnecessary risk that in this case I believe was a cause.

Q. Would you agree that benzene is ubiquitous in the environment?

A. Well, it depends on the contextual. In part now it is because benzene and trichloroethylene have contaminated the environment.

Trichloroethylene when it's in water essentially is a permanent chemical, and it's been banned by the EPA because there's no way to get rid of it almost when it's in water. When it's in groundwater it lasts for decades.

Similarly, contamination with benzene, when it does not get exposed to the air, lasts for a long time. It can be present for a long period of time.

Would there be some amount of these chemicals caused from other so-called natural sources? Certainly that's possible. I mean,

these chemicals can exist. But the amount that these individuals got from drinking water was not necessary and was not something they knew about, and posed an unnecessary cause.

Q. You would agree we're exposed to benzene when we're filling up our cars with gas, right?

A. There's some amount of benzene in gasoline, and so that is a potential exposure. That doesn't change my opinion that drinking water contaminated with benzene and trichloroethylene and other organic chemicals was a cause of cancer.

Q. And you agree that we're exposed to, you know, benzene in certain foods, right?

A. There's some amount of benzene in particular probably caused by contaminated water from things like what happened in Camp Lejeune. That doesn't change my opinion that the water contaminated at Camp Lejeune would be a cause.

Q. But there is benzene in foods, right?

A. There can be some amount of benzene that could be measured in food. That doesn't change my opinion that benzene and

trichloroethylene and vinyl chloride and tetrachloroethylene in drinking water in Camp Lejeune would be a cause of cancer.

Q. Are you aware that the ATSDR has a toxicological profile for benzene that listed, there's as much as 30 parts per billion of benzene in avocados?

A. I don't know specifically about what you're talking about in terms of avocados. I haven't memorized the values for particular circumstances, so I don't have an opinion.

Even if you do produce a document showing that, that doesn't provide a reason why dumping benzene, tetrachlorethylene, trichloroethylene, in the drinking water of people who lived unbeknownst to them drinking the water, bathing in the water, living in a place with contaminated water were exposed to these chemicals that can be a cause of cancer.

Q. That same toxicological profile from the ATSDR, they listed coleslaw with dressing as having 102 parts per billion of benzene.

Are you aware of that?

MR. LEE: Objection. Form.

THE WITNESS: Again, you haven't

shown me the document, and so to me it's just hearsay. You can show me the document and we can look at it, but it's not going to change the opinion that the fact that avocados and coleslaw may have benzene in them as being a reason why there should be benzene in somebody's drinking water when they're serving as a soldier or working for the government at Camp Lejeune.

BY MR. RYAN:

Q. Understood.

MR. RYAN: Are we on...

MR. LEE: 16, correct.

MR. RYAN: So this would be 16, not 17. Thanks for that.

(Whereupon, Exhibit Felsher 16 was marked for identification.)

BY MR. RYAN:

Q. All right. I'm going to show you what I'm marking as Government Exhibit 16. This is ATSDR's 2007 toxicological profile.

So the foods I just mentioned are on page 272 if you want to check that.

A. 272.

Okay. So looking at this, the other problem is that the amount of measurements made are ridiculously small to make that much of a quantification. I think there's up to 14, and in some cases the estimates are based on two measurements, in some cases one measurement.

I see avocados is based on -- raw is based on ten measurements. So this is not particularly scientifically quantitated.

And when you look at the measured values, you told me what they found, but it's ranges from 3 to 30 parts per billion. So 30 is the highest? How many did they see that, in one value? Was that one using Camp Lejeune water?

I mean, you can't conclude -- you can't conclude much from this other than that there may be benzene in some foods and we don't know why. But there's not enough information here to conclude anything.

I don't see the coleslaw. I can't find the coleslaw. It's not alphabetical. It seems random how they listed it.

Q. It would be, it's halfway through -- down the page, "Coleslaw with dressing."

A. Okay, coleslaw. So ranges from 11

to 102. 14 measurements.

Q. Did you review this toxicological profile, Exhibit 16, when you were preparing your Hill and Keller reports?

A. I don't believe I did. And looking at this table, I wouldn't see how it would change my opinion that living on -- in a base, working in a base that had drinking water contaminated with multiple carcinogens that work synergistically to cause cancer would be a potential cause and in these two individuals a cause of their cancer.

Q. So you didn't consider Mr. Hill or Mr. Keller's background exposure to food when preparing your reports or opinions in these cases?

A. I wouldn't say that. I'm aware there's a back -- could be a background. Looking at this table, this information is not useful to me.

To put into perspective, avocados range from 3 to 30. That would be like telling you I had a measurement that suggested that either you're 3 feet tall or 30 feet tall, as an estimate of how tall you are, to tell you what

your risk is. In a small number of measurements -- so I don't see how this would change. I recognize it will be a background.

I've told you I don't believe there's necessarily one cause, there could be other causes. That doesn't change my opinion that the exposure to Camp Lejeune contaminated drinking water that included not just benzene but also trichloroethylene, perchloroethylene, and vinyl chloride as being a -- as a potential cause of cancer, and in these two individuals a cause of their cancer.

Q. Okay. Turning back to your differential etiologies in your amended Hill and Keller reports, you'd agree that there are certain demographics and many risk factors associated with NHL and CLL?

MR. LEE: Objection to form.

THE WITNESS: I mean, stated that way, it's so broad it's hard to agree or disagree. I don't know what you really mean.

BY MR. RYAN:

Q. I'm just pulling up your reports here.

A. Sure.

Q. We're at that point where I'm buried underneath documents.

So if you turn to Exhibit Number 3, this is your amended Hill report, on page 9.

A. Yes.

Q. Towards the bottom it says, "In general, there are certain demographics and many risk factors generally associated with lymphohematopoietic cancers and/or NHL," right?

A. Well, that's what I state, and I put it in the context of a paper, and then I describe what I mean by this by writing several pages of describing the demographics.

Q. Would you agree that many cancers, including NHL and CLL, have more than one substantial risk factor?

A. Yes, there would be more than one risk factor.

And I would point out that risk factor is not the same thing as a cause. Some risk factors are causes, some risk factors are susceptibility factors or not independent causes, but they can indirectly be a contribution to another cause, to another risk

factor that actually is a cause, and I describe that in detail here. I'm glad to explain this to you.

Q. What makes your distinction between, you know, risk factor and, you know, a cause? What would make something causative of NHL or CLL versus just a risk factor?

A. So a risk factor can be something associated or create a circumstance that allows a cause to happen.

For example, being a woman is a risk factor for having breast cancer. Women don't cause their breast cancer. Being a man is a risk factor of prostate cancer. It's not a man's fault. They don't cause their breast cancer, but it's a susceptibility. It means you can get prostate cancer, women can get breast cancer.

More likely, age, age allows time to happen which can allow a cancer to occur after an exposure. So age is not independent of a carcinogenic exposure because the older you are, the more chance you have to be exposed for a period of time and have there enough time for a cancer to occur.

Family history. When investigated, almost every case, if not every case of where there's a family history of cancer is because somebody has a susceptibility to cancer. Most susceptibility syndromes have been shown when investigated to increase the ability of environmental carcinogens to cause cancer because most susceptibilities in genes involve, for example, genes that regulate DNA repair.

And so chemicals that cause DNA damage when you expose somebody who has a susceptibility because they're less capable of repairing their DNA, they're going to be more susceptible to carcinogens. In fact, that's why there's so much heterogeneity in the ability of carcinogens to cause cancer.

Autoimmune disorders aren't directly causing, but they can cause a circumstance that makes your lymphocytes behave more like race cars, so that if you undergo a genetic event, for example, through being exposed to a genotoxic carcinogen or a carcinogen that blocks the ability of the immune system to eliminate cancer cells, then you're more likely to get cancer.

Immune suppression, similarly.

Radiation and chemotherapy are examples of a chemical or an exposure, and radiation, really it's ionizing radiation where they cause direct genetic damage, and they are examples of causes.

Exposure to chemical carcinogens are direct causes. They can cause damage to your DNA. They can force proliferation. They can block the immune system. They can antagonize mechanisms that cause cellular senescence. They can block apoptosis. They can antagonize the ability of the immune system to find a cancer. They can block and cause bone marrow toxicity. They can stimulate lymphomagenesis and leukemia genesis.

So those are just some of the examples. I could talk to you for ten hours about examples.

Q. I wish we had that amount of time, unfortunately we don't.

A. No, for all of our sake, at another time over a beer.

Q. Surely.

When you're performing your

differential etiology, are you able to quantify the degree to which an individual risk factor contributes to their cancer?

MR. LEE: Objection. Form.

THE WITNESS: Well, a cause -- the cancer did happen, and so saying when something did happen 20 percent, 30 percent, 50 percent of it happened, it's kind of like saying if I knocked a wall down in your house, to what percentage did it knock down your house. If somebody else knocked down another wall, you'd say, well, you knocked down a wall, it happened because you knocked down a wall. Were there other causes? Yes, there were other causes. Somebody was knocking down another wall at the same time.

I don't really think you can think about it as the way you assign a relative quantification. What I can say is, based on my knowledge of the science, these exposures can be a cause, and these specific cases, more likely than not they were a cause.

I'm not saying they were the only cause. I'm saying what happened more likely than not happened in a way that was -- that was likely because of this exposure.

BY MR. RYAN:

Q. So specific for Mr. Hill and your opinion on that, your opinion is applying a differential etiology, it's more likely than not Mr. Hill's exposure to the VOCs at Camp Lejeune caused his CLL, right?

A. I didn't -- no, with the qualification I'm not saying it caused. I'm saying it's a cause, because it's a big difference saying whether or not I've done a differential etiology and I found every possible cause.

We've already talked for a good hour about the fact that I accept the fact that there may be other causes, and there may be causes I don't know about.

The issue is whether or not I believe the exposure to these chemicals in the contaminated drinking water of Camp Lejeune were a cause. They were one of the cases. They were

a cause I would list as a cause, and I've concluded they are. I'm not going to speculate there's possibility of other causes. It would be a speculation. So I'm not going to say it caused, I'm going to say it was a cause.

Q. Well, you also -- in your Hill report you recognize that Mr. -- risk factors and demographics, for example, Mr. Hill is a male. Being male is in and of itself a risk factor for CLL. You also recognize advanced age is a risk factor for NHL and CLL. And that Mr. Hill is obese, and that generally increases his susceptibility to cancer. And he also has an occupational history of exposure to jet fuel, right? You recognize these factors?

A. I considered those factors, and I believe age is a risk factor, but in his case age was a risk factor that was not an independent risk factor. It also meant that he had the time for his exposure to cancer-causing carcinogens to give rise to his cancer.

His -- he was overweight, and obesity can interfere with processes of the immune system and inflammation in a way that make him more susceptible as a risk factor, but

I don't believe it was an independent cause. I believe it made it more -- more susceptible, but this is -- these susceptibilities of age, gender, are exactly why I believe that individuals who were in the services in Camp Lejeune needed to be warned that if you're going to drink the water here, you're going to be exposed to a carcinogen.

They didn't have the chance to say, you know, I'm going to -- I'm pretty sure I'm going to be overweight in my life. I have other risk factors. I shouldn't choose to do this because I know I'll be exposed to dangerous chemicals that cause cancer.

So none of these are factors in themselves that can be a proximate cause. They can influence the ability of other causes to be a cause, like exposure to a genotoxic carcinogen, exposure to trichloroethylene. They can be genotoxic but also be immune suppressive. Benzene also causes hematotoxicity, bone marrow toxicity.

We haven't talked about it, but disturbing the microenvironment in the bone marrow and other lymphoid organs is a mechanism

of cancer. There's a delicate architecture, and just like lawyers have a hierarchy and my lab has a hierarchy and the military has a hierarchy of leadership and checks and balances, if you disrupt that you're more likely to have a pathologic process and it can give rise to cancer.

Q. Okay. In your differential etiology for Mr. Hill, how did you consider the risk factors and rule out each factor in determining that the VOCs were causative of his CLL?

A. Well, I -- again, I'm going to tell you, I didn't determine they were causative, I determined that they were a cause, that they're certainly -- I'm including them as one of the causes. There may be other causes.

These other factors, it depended on the circumstance. Age in itself is a risk factor, and it's not independent of the exposure to a carcinogen, I've already explained.

The same thing with obesity. Same thing with -- the jet fuel, in that case I'd be speculating. The exposure was brief, he used protective equipment. As much as I can tell, that did not appear to be something that I could

quantify as being a cause.

I considered the possibility, but from what was described to me, it didn't appear that -- in that case he did take precautions. In that case the military did know he needs to wear protective equipment. He needs to be protected. He should not be exposed to the jet fuel.

I don't have any evidence that when he was drinking the drinking water or exposed to the water at Camp Lejeune that there was any protection.

Q. So you -- looking at your etiology, so you ruled out age as a risk factor for CLL?

A. No, I considered it a risk factor but I said it's not a cause. It was not an independent risk factor. It's not independent of the exposure to carcinogen.

Q. Forgive me, I misspoke there.

For age, you ruled out it as a cause for Mr. Hill's CLL?

A. I would say that it is unlikely to be a cause. As a scientist, I would be hesitant to just use the word ruling out, ruling in. I didn't tell you that I ruled in that ethylene --

ethylene. Now I'm talking about other carcinogens -- that benzene or trichloroethylene is a cause. What I said is it's more likely than not it's a cause.

What I would say about age is it is unlikely -- it's very likely that it is a dependent risk factor that increases susceptibility to the carcinogen exposure. It is unlikely in itself to be a cause.

Obesity, likely to have increased susceptibility, unlikely in itself a direct independent cause. But I'm not going to -- I try to consider what you would say ruling in, ruling out, but generally as a scientist I try not to treat this as a check-off list because most of these considerations are somewhat complicated.

Q. In your etiology, did you consider obesity in combination with his age and his sex being a male was a cause of his CLL?

A. Would I consider, no, because I don't know how age and obesity and being male interact other than -- we didn't talk about male, but male susceptibility to -- relatively to CLL is not an independent risk factor in this

case because, more likely than not, at the age at which he was working at Camp Lejeune there were probably more men than women who were exposed.

So often gender is a bias based on other sorts of causes, like workplace exposures that favor a job that a male will have can confound that it's not the gender that's causing.

There are other cases where the gender does have an influence. Sometimes there's subtle reasons why being male or female would make you more or less susceptible. In his case I can't think of a reason.

And the relative gender difference for non-Hodgkin's lymphoma is not very great, usually. It's not that it's 10 to 1, 100 to 1, that one gender or the other gets a particular. It's usually much more subtle than that.

Q. In speaking about Mr. Hill's occupational history in fueling aircraft, are you aware of the general duties that Mr. Hill carried out as a Naval boatswain's mate for fuel?

A. Well, asked that way, I mean, you

can -- I know some of the description based on review of records and testimony.

Q. Mr. Hill's deposition testimony?

A. Including that, yes.

Q. Is there any other materials you considered when determining what his duties were and what his exposure were to jet fuel?

A. Sitting here, I believe that was -- the main information I have are his deposition testimony. I believe other experts also considered this possibility, which I saw their opinions. I didn't see that other than what appeared to be just simply speculative conjecture, that any of the defense experts gave a reason why exposure to the jet fuel would be a cause or a contributing cause of his lymphoma.

Q. In your differential etiology for Mr. Hill, when you consider what type of personal protective equipment he used, are you aware of the specific type of equipment that a Naval boatswain's mate for fuel would have done in the mid '70s?

A. I don't have granular detail of what particular equipment, other than the description provided me that he took protection. I'd be

speculating on whether or not he did or did not deviate from what was disclosed through his testimony.

Q. Did you review any specific literature on exposure to jet fuel in your etiology?

A. I -- sitting here right now, I don't recall whether or not there was a specific literature. If there's a paper that you want me to consider and see whether or not I considered it, I can look at that and I'll tell you whether I considered it.

Q. Sure.

I'm showing you what I've marked as Felsher Exhibit 17. This is a document entitled IARC Monograph, Volume 120 on Benzene.

(Whereupon, Exhibit Felsher 17 was marked for identification.)

BY MR. RYAN:

Q. Take whatever time you need to review that, and when you're ready, my first question is, have you reviewed this before.

(Witness reviewing document.)

A. I believe at some point I may have reviewed this. I don't recall if it was listed

on my documents considered.

Q. When you're ready, please turn to page 68.

A. And just to be clear, of course, this is not the whole document.

Q. No, it's not. I'm trying to -- I have the full document if you would like. I'm trying to save trees.

A. I understand.

Q. But if you'd like to see it, I brought a whole copy.

A. If you ask me a question where I need to see the whole document, I clearly have not memorized the IARC monographs.

Q. No. Perfectly fine. Just let me know.

On page 68, there's a section titled "Use of petroleum-based products containing benzene in small amounts."

Do you see that?

A. Yes.

Q. The first paragraph reads, "Benzene is a residual component in petroleum-based products such as mineral spirit, jet fuel," and then it goes on for other solvents.

Do you see that?

A. Yes.

Q. And then on the next column, top right corner of page 68, it goes on to say, "There have been some reports on exposure to benzene during handling of various types of jet fuel; although exposure concentrations vary between the studies, work tasks, and circumstances, the reported values indicate a potential for exceeding is from exposures of 1 part per million."

Do you see that?

A. I see that.

Q. It goes on to list some studies including 1987 by Holm et al; Egeghy et al, 2003; and Smith et al, 2010.

Do you see that?

A. I see the studies.

Q. To the best of your knowledge sitting here today, did you review these studies when forming your etiology for Mr. Hill?

A. Well, to the best of my knowledge, just based on the name and the year, I would say I don't know. I would have to see the studies.

In just reading this paragraph in

this part of the monograph, I would say I'd be speculating what he was exposed to by handling jet fuel. I considered the possibility, knowing that fuel can contain benzene, that there was some exposure.

But it would be purely speculative in terms of what he was exposed to if. And it wouldn't change my opinion that his exposure to benzene in his drinking water was a contributing cause of his cancer.

Q. So if I told you that these studies indicate that exposure to benzene could pose a health hazard among personnel involved with the handling and maintenance of jet fuel, that wouldn't affect your etiology for Mr. Hill?

MR. LEE: Objection to form.

THE WITNESS: Well, I don't see those, and I'd be -- I don't know whether or not I've seen or not seen these documents because I don't remember just based on one author and a date.

But even in reading this paragraph, it says, "Reported values indicate a potential for exceeding exposures," which, okay, so that they're speculating that

there's a potential. So where is the measurement? Am I supposed to speculate?

I considered the possibility that his work caused him to be exposed to benzene. I'm not saying -- like you've asked me, did I completely rule out. No, I didn't. I considered it. I said it's possible. That doesn't change my opinion that his exposure to drinking water contaminated with not just benzene but other chemicals could be a contributing cause of cancer.

BY MR. RYAN:

Q. Okay. And turning back to your amended Hill report --

A. Yes.

Q. -- which is Exhibit 3.

A. Yes.

Q. On page 21.

A. Yes. Which one is the amended? Here it is.

Q. It is Exhibit 3.

A. Okay, page 21. Yes.

Q. Last paragraph before it gets to Radiological Procedures, it states, "Finally,

and of most significance, Mr. Keller was exposed to benzene, TCE, VC and PCE at Camp Lejeune."

Do you see that?

A. Yes.

Q. It states Mr. Keller here, but I'm assuming that you meant to say Mr. Hill?

A. Yes.

Q. Can you tell me why Mr. Keller's name would appear in Mr. Hill's report?

A. No, any more than you referred to Mr. Keller and Hill and got confused, probably the same thing. I don't know how that typographical error occurred right there.

Q. Understood.

So it's just a typo, right?

A. I believe so.

Q. Okay. When you were preparing Mr. Hill's report, both the initial and the amended, did you use a draft from another report as a template?

A. I can't remember whose report I did first. There's the chance that when I prepared the reports I prepared one before the other, and I certainly was trying to make documents that I was -- that were aware of each other in terms of

the symmetry and conclusions expressed in a way that were understandable in relationship to each other.

And it's possible that that's how a typographical error happened, that literally I did take a sentence from somewhere in Keller's report and put it here and had missed the fact that as I was modifying the sentence to be in respect to Mr. Hill, that I changed the cancer, but I didn't change the name.

Q. Understood.

And in your Hill report, in your differential etiology you didn't consider idiopathy, right, as a cause?

MR. LEE: Objection to form.

THE WITNESS: What do you mean, "idiopathy"?

BY MR. RYAN:

Q. Idiopathy, unknown.

A. Oh, idiopathic?

Q. Yes. Sorry.

A. Well, that's an internally self-contradictory statement. It's like saying did I consider -- when you considered what causes contributed, did you consider the fact

that you had no idea what the cause was.

When you're doing a causality consideration, implicitly you're considering the possibility you won't find a cause, so in that sense of course.

In another sense, I've already told you I believe there could be multiple causes and there could be causes that I don't know about, because just as I didn't know about Camp Lejeune until I knew about it, and Mr. Hill and Mr. Keller didn't know about the risk at Camp Lejeune.

So did I consider the possibility in considering that I would not find something to consider? Well, obviously. Either it's a silly question or it's, like, a silly tongue-twister concept.

How can you go in the process of thinking the causality and say, did you rule out the possibility in considering causality you wouldn't find a cause? Well, of course I considered the possibility. I don't find any causes in one sense. I also believe there's more than one cause.

So I would tell you by its very

nature there's likely to be components I don't know, so why would I -- so I either -- in the process during causality it's impossible to determine it's idiopathic because I found a cause, but I know that there could be other causes I don't know about, so there's always the possibility that there's a component that's idiopathic.

Q. Okay. Turning to your Keller report, Exhibit 4.

A. Yes. Yes.

Q. Your opinion for Mr. Keller in this report is applying a differential etiology, it's more likely than not that Mr. Keller's exposure to VOCs at Camp Lejeune caused his NHL, is that correct?

A. No. As I've repeatedly corrected you, I'm saying it was a cause. There could be other causes. There could be causes I don't know about.

Q. Okay. And so you conducted your etiology in Mr. Keller's case in a similar manner as you did for Mr. Hill, right? You considered the risk factors, all the materials, your education, training, experience, the

literature, and that led you to determine your opinion that the VOCs in Camp Lejeune were more likely than not a cause of his NHL, right?

A. I think that in part characterizes the methodology I used. Those include aspects of what I did.

Q. Okay. And in your etiology for Mr. Keller, did you consider and rule out Mr. Keller's gender being male as a cause of his NHL?

A. I did in the sense that I consider gender as a risk, but it would be susceptibility and would be confounded by the fact that in his case he was more likely to be in the services because he was a man, and that would also be associated with him being exposed to these carcinogens.

Q. Okay. And did you rule out Mr. Keller's age as a cause for his NHL?

A. I didn't rule it out. I consider age to be not an independent risk factor. Age is also associated with having the time to be exposed to a carcinogen and for sufficient time to -- for that exposure to lead to cancer.

Q. So when you say something like age

is "not an independent," what do you mean by that? Is it in and of itself it's not a cause of NHL, or is it that in combination with other risk factors?

A. Well, it's not either of those. It includes elements of that. So I would say when you talk about something not being independent, you're getting at the notion that sometimes it is because the risk itself is not actually demonstrably the actual cause.

It would be like if a bomb went off in this building because somebody hates the wedding and we're all killed, we could conclude that because I'm an expert and you're all lawyers that that was the cause because we happen to be more likely in a hotel. It would be totally -- we'd be totally fooled. But it turns out the bomb would have nothing to do, it turned out somebody hates this family that's noisily having their wedding.

But you could be fooled because other reasons for being in this building at the same time, like doing a deposition, could happen for the same reason, for a concordant reason. You're more likely to be in a hotel conference

room near a place where there's a wedding.

So sometimes there can be a risk, but it's not actually the cause. We're not doing anything that's affecting that wedding. The wedding was going to happen in a hotel and depositions often happen in hotels.

Being male can be indirectly a cause. Males do jobs different from women, especially 20, 30 years ago. The services, there are more men than women.

The relative risk of lymphoma is only modestly greater, but if it's because of workplace exposures like exposure to carcinogens that are more likely to happen if you've served in jobs where you're exposed to chemicals like benzene and trichloroethylene and perchloroethylene and vinyl chloride, then it would be a confounding variable.

Age is very complicated, and simple. Longer periods of time allow for more exposure. So if you know that a carcinogen can be a cause, you have to take into account that it's not independent.

Scientists always consider this. We do what are called multivariate analysis where

we're trying to make an association. We try to discern what's cause, what's association. All the studies that I reviewed will make some efforts to try to discriminate between cause and association by looking at analyses and trying to discern is there a reason why a variable is seen but it's not a direct cause.

There are other examples. Like race can be a strong confounder. Why? Well, because certain ethic backgrounds will be poorer generally, and they're more likely to live in a place where they're going to be exposed to chemical carcinogens.

So if you look at cancers that are associated with chemical carcinogens, generally it appears to be more common with people who have a lower socioeconomic status, and in many cases that will be people who come from certain disadvantage groups that often correlate, unfortunately, with race.

Would I conclude that race is a cause of cancer? No. I would conclude in that case, oh, there is economic factors.

So when I'm considering, I consider these variables and many other considerations

that I can't describe in terms of trying to discern are these factors risks or causes.

Q. For Mr. Keller specifically, did you rule out his obesity as a cause of his NHL?

A. I didn't rule in or rule out. But obesity based on my understanding of the science contributes to cancer by increasing susceptibility, by influencing inflammation that can increase the ability of genotoxic agents to be genotoxic.

It can impair immune surveillance that can increase the ability of chemical carcinogenesis that cause genetic events to result in cancer.

It can influence angiogenesis that can allow the tumor to grow more rapidly.

It can influence other homeostatic mechanisms such as cellular senescence programs, metabolism.

It can influence all these concordantly.

It can create a microenvironment context that make it easier for a process to result in carcinogenesis.

And we know that genetic events are

more likely to cause cancer experimentally if we elicit an inflammatory state.

Dean Felsher published a Nature paper showing if you cause changes in lipid metabolism, and basically inflammatory state you start seeing with obesity, you accelerate hepatocellular carcinoma caused by the oncogene, for example, MYC, which is one of the oncogenes that usually will get activated in lymphomas.

So I know this based on my general knowledge. I have contributed directly to this knowledge. It's something I've studied. We published papers on how antagonizing lipids and lipid metabolism can be used as a treatment for cancer.

We studied how metabolism and inflammation and changes in weight can accelerate cancer. We're studying cancer prevention. We've studied how we can modulate the microenvironment and factors that obesity influences to block cancer.

We haven't published all of those findings. They were part of a large consortium grant where we were chosen as one of the couple of labs in the country to work on this as a

question.

I mean, there's a lot known about this and a lot of it, and I'm summarizing it in just a few minutes of statements.

MR. LEE: When you get to a point, we'll take the next break?

MR. RYAN: Yeah, sure.

THE VIDEOGRAPHER: Going to do that now?

MR. LEE: Yes.

THE VIDEOGRAPHER: Going off the record at 3:33 p.m.

(Whereupon, a recess was taken.)

THE VIDEOGRAPHER: We are back on the record at 3:43 p.m.

BY MR. RYAN:

Q. Dr. Felsher, turning back to your Keller report, Exhibit 4, on page 27.

A. Yes.

Q. The paragraph right above the Damages heading, it states, "Finally, and of most significance, Mr. Keller was exposed to benzene at Camp Lejeune. Benzene exposure is a known cause of hematopoetic cancers including NHL, as described above. Mr. Keller's exposure

to benzene was medically more likely than not a significant contributing cause of his NHL."

My question is, what constitutes a significant contributing cause?

A. As I already described to you, based on my review of the science generally, and specifically considering his circumstances and materials that I've already described multiple times, I've concluded that his exposure to benzene could be a cause and it was a significant cause based on the materials that we've already gone through and described, such that if I were going to list a cause, I would include it as a list.

It is something where I believe it was a contribution that would be definable as a cause if I were doing a differential etiology like I am and I'm going to list it as one of the causes.

Q. Okay. So in your etiology you're determining that the exposure to benzene was a cause, but you're also stating it's a significant cause, so I'm just trying to figure out what's the difference between what you're defining as a significant cause and just a

cause.

A. Well, because generally his exposure could be a cause, and then I had to evaluate, well, when was he exposed? And he was exposed for a significant period of time. I looked at considerations of duration, quantity, a variety of different considerations. I considered the context of other risk factors.

And as a scientist-doctor who has spent decades thinking about cause and mechanisms of cancer, I would list this as something I can say here I have a cause. As opposed to, you've asked me about age, and I've said, well, age is a risk factor, it's not a cause, and I've explained why. We've talked about how other considerations can be a risk but not a cause.

We didn't talk in his case about that he has a family history that includes cancer but not any evidence of familial susceptibility syndrome, and I would say, well, I won't list that as a cause. I don't know that he has a susceptibility syndrome, he doesn't have a family history of non-Hodgkin's.

We didn't talk about, but would I

say that there could be a risk? Yes. Would I list it as a cause? No. Why? Well, there's not any specific evidence of a familial susceptibility syndrome.

And if he did have, then I would have said, well, would I list this? I'd say, well, I'd list it as a risk factor. It's something that's susceptible. I would put it down as a list, this is a risk factor.

Instead, I concluded, well, there's some evidence of history, but it's anecdotal, there's not in evidence that it is actually a cause or that it's -- I'm sorry, that it's actually a susceptibility factor, that it's contributing in a way that I would list he has a familial susceptibility.

Q. Dr. Felsher, according to the ATSDR data that you relied on and cited in Appendix J, Mr. Keller was exposed to at most 4 micrograms per liter of benzene over a period of less than two years. You would agree that this is below the EPA's MCL for benzene being 5 parts per billion?

A. Well, I wouldn't agree or disagree. We talked about the MCL. When was that updated?

Did that take into account evidence that I considered as a scientist? No. I don't see that they -- did they in 2025 update it to consider Yu and Wang's papers showing that at .2 parts per billion there's an associated measurable increased risk of cancer, or the Wang paper that found exposure even at the lowest environmental exposures increased the risk of cancer in that study that was in fractions of a microgram over the minimum exposures? They didn't consider any of that literature.

Those MCL values are rarely updated. Now they'll never be updated because I think half the EPA doesn't work there anymore. There's no IRIS. IRIS is, I guess, being disbanded. And that's not their fault. I mean, if there's nobody there to update, there's nobody there to do the work, then it's not possible.

So I discount that as being completely irrelevant. I can tell you the science. And I'll tell you the ATSDR will say -- you find an ATSDR, look at the introduction, the preamble, and they'll say, our risk estimates can be used to give an idea at a

population level, but for individuals you need to have other information. Like a health assessor is usually the way it's described, meaning presumably a physician-scientist like me.

Q. In your etiology in your Keller report similar to what we discussed with Mr. Hill, you didn't consider idiopathy, correct, as a cause?

A. Not true. As you've asked me multiple times, I explained to you, something idiopathic, it's both an illogical question and it's discounting my -- mischaracterizing my testimony.

First of all, if I'm going to do a differential etiology and I find a cause, to say I didn't consider the possibility I wouldn't find a cause is comically absurd.

Second, I told you there are multiple causes, and I've already multiple times told you that there could be some I don't know about, including idiopathic contributions.

I think the key aspect here is -- and maybe the implicit confusion on the defense part is there is an argument that to some extent

cancer happens, bad luck, spontaneous.

And what I haven't spit out for you maybe to make it so you're not confused is there is an element of chance in what happens. Not everybody exposed to carcinogen will get cancer. But that chance changes when you are exposed to genotoxic agents and agents that suppress your immune system. Multiple carcinogens work through different mechanisms.

While we're replicating, crap happens. Usually it's fixed. But if you throw a wrench in the ability to repair because you're constantly being exposed -- and you might think this parts per billion, whatever, is a small amount. It turns out to be trillions of molecules. It sounds like a small amount, but the issue is, if you're constantly being exposed, it makes it more likely that you won't be able to fix.

And particularly if that happens -- and you're also being exposed to agents that suppress your ability to eliminate early cancer cells, for example, because of blocking immune surveillance mechanisms, something -- I've spent my career demonstrating the role of T-cells and

B-cells and NK cells and innate immunity and how this interplays with oncogenesis and how this interplays with microenvironment considerations, how you can perturb it either in a negative way to block cancer or a positive way to contribute to causing cancer.

But there's always idiopathy, as you're using the word, there's always elements that we don't know. The issue here is what we do know, is benzene is genotoxic, it's bone marrow toxic, it's immune toxic.

Trichloroethylene, it's genotoxic, it can cause defects in immune system, it can stimulate autoimmunity.

These are all mechanisms that I know based on my own science, based on the science of my friends, based on the science published, based on science generally accepted as mechanisms that cause cancer.

And dancing around this idiopathy, spontaneous, it's just chance misunderstands a fundamental axiom here, benzene, trichloroethylene, PCE, vinyl chloride work through mechanisms that would exactly cause a problem in these, making it much more difficult

for everyday replication of your cells to happen in a way that you don't make mistakes, where you screw up your chromosomes, your DNA, cause mutations, cause genetic events that activate oncogenes and activate tumor suppressor genes, and it takes multiple events to cause cancer.

So that's sort of the longer answer to address this. I think that explains exactly why I've considered in aspects implicitly idiopathic, I've considered implicitly that we don't know all the causes, I've considered implicitly I have a deep understanding of the spontaneous random aspect of this, and I'm very aware and I'll be able to explain in transparent detail whether or not this goes before a judge or eventually goes before a jury. Even more fun if it's in front of a jury because I am fantastic at explaining it in a way that a jury will understand. I've done it many times. If it's a judge, fantastic, I'll explain it in a more detailed way.

Q. Okay. You state in your Keller report that his NHL hasn't relapsed in the past 24 years, correct?

A. I can't remember the exact

quantification, but there is some number of years. If that's what it says in my report and you point to it, I'll agree.

Q. Okay. Well, let's see. On page 25 you'll see --

A. Prognosis. It's probably here.

Q. Prognosis. Yep. Second sentence, Mr. Keller's history of NHL, was treated with chemotherapy and SCT and now has CKD and cardiomyopathy. He is now in remission from NHL. Is that right?

A. Currently he's in remission. He has long-term medical problems that were directly his cancer and treatment contributed, cardiomyopathy and chronic kidney disease, both unfortunately significant, dangerous, and life-shortening processes.

Q. At this point would you consider Mr. Keller's NHL as cured?

A. Well, yes and no. Yes, he's been in remission for a long period of time. No, I believe his exposure to carcinogens was a cause. And I would explain to you that the way this happens mechanistically, likely he will have many cells in his body still mutated, there will

be cells that increase his risk of having a secondary cancer, just like you already know because you asked me, isn't one of the risk factors for non-Hodgkin's lymphoma having had non-Hodgkin's lymphoma.

One of the reasons there's a risk is precisely because if the cause was genotoxic events occurring in your cells, there will still be cells -- other lymphocyte cells in his body that may be partly mutated, and also anybody who has had the treatment he's had does not have as intact of an immune system, and so he's more likely to have a reoccurrence or a new secondary cancer.

Also, I believe he's exposed to benzene, and benzene causes a myriad of other types of cancers, or can be a cause. I would need to be consistent with myself. It could be a contributing cause.

So he's at risk of other malignancies because he had a malignancy, because he was exposed, because he's relatively immunocompromised that were a consequence of his disease, a consequence of his treatment, a consequence of his exposure.

Q. What would it take for you to consider Mr. Keller's NHL as cured? Or in other ways, is there a point moving forward where you would consider his NHL as cured?

A. Well, in terms of his primary cancer, the type of cancer he had, we'll usually say with an aggressive lymphoma, if you're five years out and your cancer hasn't recurred, you're more likely than not cured.

But the distinction here is I'm saying something else. I'm saying he may be cured of this cancer. That doesn't mean he's not at risk of another non-Hodgkin's lymphoma or another cancer because of his exposure and because of his history of cancer.

And could he have a recurrence more than five years out? Absolutely. Have I seen that in my career? Yes. I've seen people with lymphoma who thought they were cured and many years later. I know a patient who had five reoccurrences of their lymphoma -- sorry, four reoccurrences and then another cancer.

Q. To ask maybe more pointed, would you consider Mr. Keller's DLBCL as cured?

A. I would consider that more likely

than not he is cured. I would not say 100 percent. I would say he still has a risk of reoccurrence. Is it small? Yes, it's relatively smaller.

Most recurrences of immunoblastic lymphoma would occur in the first two or three years. Can it occur later? Yes. Is he at risk for a secondary cancer? Yes. Is that a consequence of his exposure and of his disease and of his treatment? Yes, all those independently would be risks.

Could he get a completely different cancer related to his exposure? Yes. In somebody who has lymphoma and has had a stem cell treated, are they at risk of secondary malignancies? Yes. Does it have to be a lymphoma? No. It could be a different kind of cancer. Have I seen that? Yes. Do I see it often? Enough that having been a professor 26 years I'm very aware of the secondary cancers, in the literature that there are secondary cancers.

Q. So in Mr. Keller's case you also offer opinions about his kidney disease and his cardiomyopathy, right?

A. I provide some opinions regarding those diseases.

Q. So for his kidney disease, your opinion, at least in your report, is the development of Mr. Keller's kidney disease is more likely than not caused by his treatment for NHL, is that right?

A. I would say that it was a cause. If I said caused, it was entirely caused -- I can qualify it here and say, just as I would not say cancer has one cause, I'm not saying that this was the only cause, but it was certainly more likely not a substantial cause.

And it's certainly something that's seen in patients who are treated for non-Hodgkin's lymphoma and get stem cell transplant, that they will have kidney disease and that they'll have cardiomyopathy.

I realize most of what I said to you I do say in here.

Q. So is that something you're changing or you want to supplement about the report or what?

A. No, because I think it's clear that I believe this really was a significant

contribution to the cause. I don't have evidence that there's another cause.

And I can tell you for a fact that there are examples of kidney disease and cardiomyopathy happening, right, as an association with the treatment for lymphoma, whereas oncologists, we'd say, well, yeah, we caused that damage to the heart, we caused that damage to the kidneys.

If you're dying of cancer -- the one time we disregard cardiology is if you're dying of cancer, and he would have died of cancer if he was not treated. We were willing to take the risk of damaging somebody's heart or kidneys. We try not to do that, but you're aware of the fact that that is a consequence.

You also damage people's brains. I didn't mention this, but that will add, is that people getting this kind of treatment usually will in short term complain of changes in their ability to think, and often they'll have some changes. In some cases it can be discernible through evaluation.

I didn't have any evidence from his records that happened, but I can tell you that

it often happens.

Q. Okay. And you're also offering an opinion that the worsening of Mr. Keller's cardiomyopathy is more likely than not caused by his NHL treatment, right?

A. Based on the association and how he was treated, very likely.

Q. How did you conclude that his kidney disease was more likely than not caused by his treatment for NHL? In other words, what did you consider?

A. Well, I considered the fact that the kidney disease worsened proximate to his treatment. The type of treatment he got can be a cause of kidney disease, and chronic kidney disease, there can be other causes, but there weren't any discernible causes.

But it's common that people have long-term chronic changes in their kidney function after they receive high-dose chemotherapy associated with a stem cell transplant. Unfortunately, it is toxic and causes profound and often permanent changes in people.

Q. Okay. Similarly for cardiomyopathy,

what did you consider in your opinion that it's more likely than not caused by his NHL treatment?

A. Well, there are other causes of cardiomyopathy that I don't see that were discernible, that were acutely changing temporally with his stem cell transplant and the therapy that he received.

And so I can't imagine, as an oncologist, where I've often seen that after such therapies associated with changes in heart function and permanent changes, the type of therapy we give directly damages the heart, particularly when you give high doses of therapy associated with a stem cell transplant, or even the induction therapy associated with a stem cell transplant is highly toxic.

Q. Dr. Felsher, would you agree that in the United States, at least, the most common cause of death for people with diabetes is heart disease?

A. Most common? Well, if you put all together it might be, although diabetics, the heart disease they get is typically -- they get accelerated myocardial infarction, not

cardiomyopathy associated with being treated with chemotherapy.

Q. Okay. Would you also agree that in the United States the most common cause of renal failure or end-stage kidney disease is diabetes?

A. Maybe, but the -- it might be something that is common, although in this case he had diabetes and he did not have the same loss of kidney function, and then he had a stem cell transplant and it aggravated.

I think, though, that the fact that he had diabetes complicated his treatment for his cancer, and it's possible to consider that he had non-recognized kidney disease and cardiomyopathy -- he didn't have cardiomyopathy, but he had some heart dysfunction that was not discernible, and certainly having diabetes was not an advantage for him.

But temporally, he had a stem cell transplant treated for cancer, and both of these disease processes were much worse. They contributed in a significant way. It's hard to imagine otherwise.

Q. In your etiology for analyzing the chronic kidney disease and the cardiomyopathy,

you didn't consider Mr. Keller's obesity or diabetes as causative for either of those, did you?

A. Well, I just explained to you exactly how I considered diabetes and said that if he already had had heart disease and kidney disease that were attributable to his diabetes and that's what he had, but after his stem cell treatment and high-dose chemotherapy associated with his treatment, that's when both of these processes were aggravated.

Obesity in itself is not a proximate cause of heart disease. In fact, now in 2025 we would say that metabolic syndrome rather than obesity itself, being fat in itself, many people can have a normal weight and have diabetes.

In fact, we're listening to probably an Indian wedding, and interestingly, for some reasons, Indian and Indian Americans have diabetes often associated without obesity.

I know this from brilliant Indian physician colleagues who were part of my translational research applied medicine program that we've mentored multiple research programs on how diabetes and metabolic syndrome

influences disease processes. So there are clearly other factors and metabolic disturbances independent of whether or not you're overweight or not that influence these biologic processes. Regardless, it may or may not have contributed.

What's clear in this case is he was treated, had a stem cell transplant, and both of these processes became worse. There's a strong temporal association. I can't imagine that it was not a proximate cause. Could there have been other causes? Sure. Maybe he was more susceptible because he had diabetes, maybe metabolic disturbances related to being overweight, but his stem cell transplant and high-dose chemotherapy appear to have been a substantial cause.

Q. Okay. I want to turn to the Prognosis section in your Hill report. That's Exhibit 3.

A. Sure. Which page number?

Q. It's going to be page 20.

A. Okay. I don't see it yet. Okay, I see it, yes.

Q. Okay. In this section on page 20 of Exhibit 3, it states, "Mr. Hill suffers from a

number of chronic conditions including: Steatosis" and chronic kidney disease, among others.

Do you see that?

A. Yes.

Q. Okay. Are you offering the opinion that Mr. Hill's steatosis was caused by exposure to the water at Camp Lejeune?

A. Not sitting here today.

Q. Okay. Are you offering an opinion that Mr. Hill's chronic kidney disease was caused by his exposure to the water at Camp Lejeune?

A. Not sitting here today.

Q. Okay. Further down on page 20 you state, "Mr. Hill will require long-term treatment and management."

My question is, what kind of treatment and management do you believe he will require?

A. Well, we know as of April his CT scan showed progression of his disease. He has pancytopenia and he has had chronic infections. They are considering giving him additional therapy.

All of these suggest his disease is progressing. He's going to require either treatment for his cancer or treatment for the associated complications of his cancer, including infections that he's had and continues to have.

He's going to progressively decline and require long-term care. Most individuals with this disease will eventually succumb related to either the pancytopenia or infection that are direct consequences of the CLL.

Q. Understood.

I understand that you made some recommendations to, I believe it's Michael Fryar who is a damages expert for Mr. Hill.

Do you recall giving those recommendations?

A. I remember at some point talking to Mr. Fryer a long time ago.

MR. RYAN: I'm marking as Exhibit 18, this is a report by Michael Fryar dated February 6, 2025.

(Whereupon, Exhibit Felsher 18 was marked for identification.)

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BY MR. RYAN:

Q. If you go to the tabbed section, it's not numbered because it's at the end of the report, it's a cost analysis table for Bruce Hill.

A. Yes. And I realize he doesn't know how to spell my name or that I have a Ph.D. That's okay. You know how to spell my name.

Q. It was him, it wasn't me.

A. I'm not blaming you, Mr. Ryan.

Q. Okay. So on page 2 of that cost analysis, you see it says "Support Services."

A. Okay. Page 2. Where does the support services appear?

Q. It's up top, on the top of the chart.

A. The attendant care services, is that what you --

Q. No, it's the previous page, page 2.

A. Oh, it is listed as page 2. Yes, I see it.

Q. Okay. It listed service -- "Housekeeping Services," and it's under the tab "Recommended by," it lists your name incorrectly but I'm assuming it's you, as recommending

housekeeping services. And the purpose is listed as "Provide support for Mr. Hill's completion of necessary residential cleaning requirements secondary to his diagnosis and history of CLL."

Do you see that?

A. Yes.

Q. My question to you is, did you recommend this to Mr. Fryar for Mr. -- as part of services that Mr. Hill needs?

A. So I didn't review the analysis that I'd done with Mr. Fryar before today, so I'm recalling based on conversations we had months ago.

And what I recall is that I had described to him what usually it would look like as somebody is progressing with their disease and having issues in terms of increasing inability for one to take care of themself.

And I believe that I describe the progressive decline that would be associated, and that Mr. Fryar inferred from that that there would be certain other kinds of services because -- that would be required based on how I describe what would happen to an individual with

CLL as they're progressing with the disease and they become more debilitated and less capable of caring for their everyday needs.

Q. Are you aware of the medical records that Mr. Hill remains listed as ECOG Status 1? That's the Eastern Cooperative Oncology Group scale.

A. I haven't seen anything most recently about his ECOG status.

Q. If you're listed as ECOG-1, what does that generally mean?

A. ECOG-1 means that you're still able to care for yourself, at least whenever last -- they spelled my name correctly above, so it's just whoever made the table. So it is me.

Q. Okay.

A. It would suggest the oncologist's -- at least in their evaluation if the person is still able to care for themselves.

Q. Okay.

A. There would be some decline, it's not perfect, but it would be -- and I would give the caveat that I describe what I believe would happen, but the timing and temporality of it is hard to predict.

And right now the description of him is he's doing much worse clinically as of the last couple of months, to my understanding, compared to what he was doing a year ago.

And usually, this is my observation, I would have told Mr. Fryar this, there will be an acute decline at some point, and predicting exactly when that would occur can be challenging to determine exactly. It's not that I could provide a map of exactly, but it is going to happen, and his disease is progressing now.

His CAT scan showed a significant progression of all of his disease. He's got a low white count, platelets, and hemoglobin. Those are bad prognostically in somebody with CLL showing pancytopenia.

Q. On the following page, page 3.

A. Yes.

Q. It states that you recommend Mr. Hill for having, attendant care services and specifically home health aide or a certified nursing assistant. And the purpose is listed as providing attendant care support services within the residence to assist with the completion of activities of daily life secondary to his CLL.

My question is, is this something you recommended to Mr. Fryar for services that Mr. Hill requires?

A. I believe that like I usually would do in my capacity as a clinician, I described what -- the progression of the disease and how this would lead to decreased function, and that Mr. Fryar in his ability and expertise suggested based on his expertise how that associated decline would require additional services.

Q. And it lists these services as three to four days per week, four to six hours during each visit.

In your opinion as a medical doctor, do you think that is reasonable and necessary?

A. Well, as a medical doctor I would usually, as every other time as an attending, I defer to the opinion of an individual who is provided such services and has experience based on what I describe is going to be the clinical trajectory.

I know the clinical trajectory can be linear, linear decline. It could be acute. At the time that this was prepared, I gave the best estimate of clinically what would happen.

I think this description for an individual based on what I know now about him is he's going to require significant help, more likely than not soon because his cancer appears to be no longer, at least as most recently measured, no longer responding. He's having progressive disease, and he's starting to have evidence of pancytopenias, which is a bad prognostic indicator in a patient with CLL.

Q. Moving on to page 4.

A. Yes.

Q. It states the service as Facility Care, and the purpose is listed as "Facility support services for Mr. Hill during the final 2 years of his life secondary to...CLL," listed as being recommended by you.

My question is, is this something that you recommended to Mr. Fryar that Mr. Hill requires?

A. Well, in this case I would say I would have the most proximate understanding as an oncologist. Usually we rely on other experts to provide the intermediate kind of care assessments, but in a patient when they are no longer responsive with cancer, and they're at a

point where the priority would become comfort, and that the idea would be that we're going to accommodate them, in my experience it is the case they generally require facility services for their care.

Q. Okay. And in your experience as a medical doctor, do you believe that this service of the final tiers of his life, do you believe it's reasonable and necessary?

A. To the best of my understanding, all the services recommended were reasonable and necessary, and appear to be consistent with what I've seen decided for many of my patients in the past and similar kinds of patients with oncologic-hematologic malignancies, it was required as part of their care, particularly as their disease becomes refractorated treatment and progresses.

Q. Okay. And then on page 25.

A. Is that in the same document? Do the numbers change?

Q. No. It's the last tab in it, I'm sorry.

A. Okay.

Q. It's page 2, and this is --

A. I see it.
Q. -- a Vocational Rehabilitation Questionnaire. It says it's authored by you. It's dated February 2nd, 2025.
My question to you is, is this something that you filled out and signed?
A. I believe it's something I filled out and signed. I didn't see a physical copy, but I see my electronic signature, so I believe this is something I filled out and signed.
Q. Okay. On page 2 of that, item number 3, you write in here that, "Mr. Hill has incurable progressive cancer and is not capable of performing in a job."
Do you see that?
A. Yes.
Q. Okay. My question is, at what point in Mr. Hill's history of his CLL was he -- did he become incapable of performing in a job?
A. Well, the best as I can tell, around the time that I was asked to give an opinion and he was already showing progressive disease associated with re-occurrent infections, it appeared that he was having more challenge being able to perform in a job.

Q. Okay. Do you understand that Mr. Hill retired in 2012, right?

A. I couldn't remember the exact date he retired. I knew he retired previously.

Q. Okay. Are you aware that he worked after that point for many years as a pastor in his church?

A. Yes, I saw that was described, that he had been a pastor in his church in his records.

Q. So do you have an opinion on whether after he retired in 2012 he could have continued in a full or part-time job in an environment that's consistent with his CLL diagnosis?

A. I'm confused. Are you asking me if he could function as a pastor?

Q. No, no, no. What I'm asking is, after he retired in 2012, do you have an opinion as to whether he could have gotten any alternative employment, full or part-time?

A. Well, it seems more likely than not he would have had challenges in a full-time job. It's hard to say that I could say he couldn't perform in any kind of part-time job. I mean, with that granularity, and I believe it's -- as

his incurable progressive cancer has progressed, then it's not surprising that he has found it increasingly challenging to perform in a job.

Q. So if you have -- strike that.

If Mr. Hill was able to work for years as a pastor after he retired in an environment, presumably a church, that he would have had exposure to people in confined spaces, would that lend itself to reasonable thinking that he could have gotten a job in a similar circumstance in a part or full-time manner?

MR. LEE: Objection. Form.

THE WITNESS: No, because I can't -- I can't opine on that. Are there individuals who function as a pastor, the once-a-week function is to give a sermon, delighted that that's something he found value in. I admire it.

To say that I can have knowledge that that meant that he could do a job where he was constantly around people, working continuously, I wouldn't infer one way or the other.

My experience as an oncologist, after having taken care of many people

with CLL, is that it is a bad disease and people are very sick, and the doctors tend to -- cheerfully we tend to overestimate and patients sent, when they come see us, overestimate what they can do.

I remember fondly a Vietnamese grandma, I remember Vietnamese because she told me, I'm Vietnamese and I want to be alive for my granddaughter. And she was like 5 feet tall. She seemed plenty tall to me because I already told you my wife's around the same height. She would always say, Stop calling me tall, I'm short.

Every time she saw me, despite the fact that she had been dying of lymphoma for two years, she dressed beautifully, wore makeup, until the last day I saw her, and then she suddenly died. And orchids came to my house and they flowered for years, and I would every time they flowered again tell her daughter.

And they loved it because it was special. It was the continuity. I went to her funeral and they kept in touch with me for many years.

I knew she was dying. I didn't document, She's dying, she looks worse than last time I saw. I would document, Lovely grandma. She appreciates that she was able to watch her granddaughter be born."

This gentleman, from all the description, has bad CLL. He's suffering. It's awful. If he gets a little joy out of being a pastor, fantastic. Would I discourage him? No. I would be telling him, go in a wheelchair if you need to to do something.

But to say that's the same thing as being able to work in a job around people continually that requires concentration, physical ability, stamina, when I know he's been compromised and been fighting this disease for years, just in my experience all the description is, this is a person who has been severely compromised by his disease, and it's easy to understate it, and he'll probably understate it himself, and I would encourage him to. I'd always encourage

the patients to fight if they wanted to fight because that's what you do as a doctor. You help people. Helping people is not telling them what they can't do.

But I think he's severely compromised. This is awful. And that's what I would tell a judge and that's what I'll tell a jury.

BY MR. RYAN:

Q. Okay. Turning to the Prognosis for -- section in Mr. Keller's report --

A. Of course.

Q. -- which is Exhibit 4 --

A. Yes.

Q. -- at page 25.

A. Of course. One second.

I am there.

Q. Okay. You state, "Mr. Keller has an increased risk of future hematopoetic cancers, other non-hematopoetic cancers, late recurrence of cancer, and other benzene associated cancers."

My question to you is, what are benzene associated cancers?

A. Well, leukemia, lymphoma, many solid

tumors, including lung cancer, colon cancer, and other cancers have now been associated based on epidemiology particularly over the last couple of years.

Q. And what type of chronic conditions? The next sentence, "He is also at risk of post-treatment chronic conditions." What type of conditions are you referring?

A. So that refers to the fact that he has kidney disease and heart disease, that patients who have had a stem cell transplant and high-dose chemotherapy do not have a normal immune system. He's more at risk of infection. He'd be more risk, for example, generally of COVID.

One of the things we discovered during the COVID epidemic is that patients with lymphoma particularly are at high risk with COVID.

So I would say, you know, he'll always have more of a risk of getting a worse infection than -- there would be a multitude of other things. Often part of the high-dose chemotherapy and stem cell transplant, he'll go on high-dose steroids. Steroids accelerate

diabetes, heart disease, they can cause cataracts, other problems. I didn't see a description of those, but I would tell you, oh, all of these things can be associated with people who received the high-dose chemotherapy. Very common.

Unfortunately, they'll have -- it may be subclinical now, but he's more likely to have this as a problem, many, many other problems. It is not something you casually decide to do to get somebody just to do it, a stem cell transplant and high-dose chemotherapy.

Q. Okay. And you continue on, "He will need continued long-term follow-up and management for the future increased risk of cancer."

My question is, what type of treatment and follow-up will he require?

A. Well, not all that I can anticipate. Obviously if he has a secondary cancer related to his exposure and his treatment, then he'll need specific.

Given the fact that he has kidney disease and cardiomyopathy, he'll need management. He can go into end-stage renal

disease, and there's a chance he'll need a nephrologist and dialysis. His cardiomyopathy could progress to causing more severe dysfunction and require a cardiologist. The other medical complications I talked about require a variety of medical interventions and treatment.

Generally he would be followed after having received a stem cell transplant and chemotherapy certainly by a generalist who is used to taking care of patients post-intensive chemotherapy, and usually we'll follow these patients as oncologists for many years after they've been treated. Probably initially be followed by a bone marrow transplant doctor, and then usually subsequently by an oncologist.

Q. Do you have any opinions on what Mr. Keller's life expectancy is?

A. Well, overall his life expectancy has been shortened. That I can quantify how much would be, I think, challenging to give a number, other than to say that patients with non-Hodgkin's lymphoma who have been treated with intensive chemotherapy and now have heart disease and kidney disease are unlikely to live

a full lifespan, and it's likely that their life has been on average shortened by years, whether it will be shortened by five years or ten years or two years.

Most studies that have looked at survivors of cancer generally show that there's an average shortened lifespan even in patients that are cured, usually in years, but there will be a large range of how the effect could be.

Q. Okay. And just circling back for Mr. Hill, do you have any opinions on what his life expectancy will be?

A. Mr. Hill seems more likely than not will not live more than in the neighborhood -- if his disease is progressing right now, he may not live more than a year or a few years. It's possible he'll pass away this year.

Hard to estimate exactly. It will depend on if he responds to X manager salvage therapy. He's already been treated with multiple rounds of salvage therapy. But if he doesn't respond at all, he could regress.

If he'd get an infection, he could pass away any time in the next weeks or months. If he responds again, he can go into remission,

and it would be hard to predict.

But he's going to succumb to this disease eventually, unfortunately. He does not have a curable disease.

Q. Okay. And something that you included in both your reports for Hill and Keller, you mentioned you considered the Bradford Hill considerations, is that right?

A. Somewhere I mention Bradford Hill.

Q. Yeah. It's page 5 of both reports.

A. But to clarify, Bradford Hill -- wonderful scientist, Sir Bradford Hill, and his considerations are helpful for considering general causality, and they provide some perspective on how to interpret epidemiology, but I didn't mean to imply I did Bradford Hill considerations for specific causality per se.

Q. Okay. So this wouldn't be -- Bradford Hill considerations wasn't really considered in your methodology for your specific causation reports for Mr. Hill and Mr. Keller?

A. Well, only in the sense that I clearly have provided a general causality, and general causality suggests why I believe these volatile organic compounds/chemicals are causes

of cancer, how they can be a contributing cause, and those considerations allow me to think about issues of causality more generally.

Specifically I would say they're not really part of -- you don't do a causality differential etiology for an individual patient thinking about Bradford Hill directly, but it helps -- they provide some framework as part of my methodology for interpreting the general studies. So there's some value. But I didn't mean to imply I did Bradford Hill sort of considerations for each patient.

Q. Okay. I just want to talk about some -- an invoice we received in response to our document request for this deposition. I'm going to show you what's marked as Felsher Exhibit 19.

(Whereupon, Exhibit Felsher 19 was marked for identification.)

BY MR. RYAN:

Q. And this is an invoice for Camp Lejeune dated May 24, 2025.

Take all the time you need to review it, and my first question is, do you recognize this?

A. I believe I recognize it.

Q. Okay. Is my understanding correct that this is an invoice you submitted for your services between April and May for this case?

A. I believe so.

Q. Okay. About halfway down it says -- under the title Meetings, it says you had one hour of meetings.

Do you recall when these meetings occurred?

A. Right now, no. It may have been -- it could have been -- oh, in the context, this would mean more likely than not when we had -- when I had a Zoom conference to discuss having the deposition, the first deposition.

MR. LEE: I just want to make sure I'm clear. You haven't asked any unfair questions yet, but I want to make sure.

He's not entitled to anything we talked about or the specific purposes of those meetings. Otherwise, please respond.

MR. RYAN: No. Very good point, Randy.

///

BY MR. RYAN:

Q. At no point am I asking you to say what you discussed, only just when.

A. Understood.

That meeting was probably talking with the attorneys.

Q. Okay. And when you say "the first deposition," are you referring to the general causation deposition that you did sometime in April?

A. I'm being confused because this is May, so this must be talking about issues related to today.

MR. LEE: Okay. Fair enough.

BY MR. RYAN:

Q. Now, so it's dated April to May 2025, so that would have been a month where you had the deposition.

A. Honestly, Ryan, I can't remember.

Q. That's fine.

A. I can't remember. At the time I prepared, I can see that I list the actual time I spent in preparation for deposition. That would have been the time I'm talking about related to discussions with the lawyers at the

time of the deposition.

That meeting -- so the meeting probably was a meeting to discuss with the lawyers related to before the deposition.

Q. Okay. And talking about preparation for deposition, yeah, you provide specific six hours for meeting with lawyers.

Without any reference to what you discussed, can you tell me how many meetings that you had in this six-hour period?

A. Two.

Q. And what depositions were they? Were they in the general causation deposition you had in April, or was it this specific causation deposition we're having today?

A. I believe this is for the general. I haven't -- I don't believe I've invoiced anything related to today. I would wait until after the deposition because in my experience we're all busy and sometimes it doesn't happen, so I would wait until after the deposition to bill you for a deposition.

Q. The review of depositions, the four-hour period, would that be deposition transcripts?

A. Yes.
Q. Do you recall which depositions specifically? I know you talked about one before in one of your supplements. I forget who that was.
A. Well, I'm not billing for work today. This would have been what I reviewed before my general -- my general deposition.
Q. Okay.
A. So whatever I told your colleague -- they probably asked me what depositions I reviewed. I would disclose it. Sitting here right now I don't remember.
Q. Okay.
A. Because what I remember is what I did for today.
Q. Okay. And then the total for April and May 2025 was 62 hours at a thousand dollars an hour, which is $62,000, is that correct?
A. I believe so.
Q. Okay. Have you issued an invoice to the attorneys -- the plaintiffs' attorneys here for any period after May 2025?
A. I've issued an invoice for the Department of Justice, which Lori Merz explained

to me that because you're the government, there's some complicated form that needs to be filled out.

Q. Yeah. I'm sorry about that. That's not my choice.

A. No, and I wouldn't say anything, and it's the same thing for any work I've done for the government.

Q. Okay. And so other than the invoice submitted to the DOJ, have you generated any invoices submitted to plaintiffs' lawyers after May 2025?

A. If I have, I've forgotten. I don't believe so.

Q. Okay. If there is any other invoice submitted after this period up until currently, I'd ask that that be produced.

Okay. And just one last exhibit -- what are we on now, 20 -- I'm marking as Felsher Exhibit 20. This is a retention letter produced in response to our document request for today's deposition.

Take all the time you need, and my first question when you're ready is, do you recognize this?

(Whereupon, Exhibit Felsher 20 was marked for identification.)

A. I don't remember the document, so I can't honestly tell you I recognize it. It probably is something that I saw, but I don't see a date on it so I don't know when I would have remembered seeing it.

BY MR. RYAN:

Q. Okay. It states your consultation fee structure is a thousand dollars per hour. Is that your correct charge you're currently...

A. It has been what I've charged, though honestly all new cases I've just as of today -- as of the last couple of months I've been telling lawyers I'm just going to bill everything $2,000 an hour, because most of what I've been doing has been in trial or deposition.

But that doesn't affect. This is reasonable. I don't know how 12,000 per day was decided. Usually I've charged $2,000 an hour. It may be that this was signed so long ago that it was 1,500 an hour, but I don't know how it gets to 12,000. I don't even remember.

Q. Okay. So would you say your current fee structure would be 2,000 per hour?

A. Yes. So today you were given, my understanding, seven hours of actual time. I'm only to bill the Department of Justice the actual time we've talked to each other, which is fine, and so I would -- you should expect a bill when I figure out how to fill out the form of $14,000, roughly the same.

Q. Okay. And the 12,000 per day of trial testimony, is that something you currently still charge, or is it just 2,000?

A. I've been charging $2,000 an hour, and usually I've charged the entire time I've been here. But it's been explained to me that's not what the Department of Justice does, and I'm glad to do what it is that you do.

Q. Okay. And so what you're charging the plaintiffs' attorneys, would that be $2,000 per hour for the full time?

A. If we go to trial and they're paying for me to be in trial, I'll charge $2,000 per hour.

Q. Understood.

MR. RYAN: Okay. That about wraps it up. If you guys don't mind to take like a quick break, review, and see if

there's anything else I want to discuss, and then we can conclude.

MR. LEE: Five minutes?

MR. RYAN: That works for me.

THE VIDEOGRAPHER: Going off the record at 4:41 p.m.

(Whereupon, a recess was taken.)

THE VIDEOGRAPHER: We are back on the record at 4:48 p.m.

BY MR. RYAN:

Q. Dr. Felsher, I just have two follow-ups.

Turning back to Mr. Keller's report, we talked previously about your opinions on his chronic kidney disease and cardiomyopathy.

Do you recall that?

A. Yes.

Q. Have you reviewed the expert reports by the government's expert, Dr. Ambinder and Dr. D'Alessio?

A. If I've listed that they were reviewed, I reviewed them. I believe I reviewed Ambinder. I probably did. If they're listed, I reviewed them at some point.

Q. Understood.

Are you aware that Dr. Ambinder opines it's enormously unlikely that diabetes rather than chemotherapy was the major cause of Mr. Keller's heart disease?

MR. LEE: Objection to the form.

THE WITNESS: Well, actually what you just said is it's very unlikely that diabetes rather than chemotherapy.

BY MR. RYAN:

Q. Likely. Yeah. Thank you.

A. So I would say yes, but I think that's probably not what you meant to say.

Q. No. Thank you for that. That would have been a find it on the transcript now.

A. Yeah.

Q. Likely that diabetes rather than chemotherapy was a major cause of his heart disease?

A. Well, now you changed it to heart disease. So do you want an answer about diabetes or -- oh, okay. Say the question again.

Q. I'll read it again just to be clear.

A. Okay. Read it again so that we're both on the same page.

Q. Sure.

Dr. Ambinder finds it's enormously likely that diabetes rather than chemotherapy was a major cause of Mr. Keller's heart disease.

My question to you is, do you disagree with that opinion?

A. Well, yes and no. I think that characterization I would say generally I disagree with. I don't disagree that diabetes could contribute to heart disease.

But to say that somebody who had high-dose chemotherapy and stem cell transplant and then had significant compromise of heart function, to argue that diabetes was the cause and that the treatment was not, I think is wrong. I think it's very common for patients who receive intensive chemotherapy that's associated with a stem cell transplant to have permanent loss of heart function.

Is it worse and could it be that diabetes may increase susceptibility? Yeah. But the aggravation didn't happen because the diabetes suddenly got worse. Although, honestly you could even say, and I don't remember whether or not Dr. Ambinder considered this, is most

patients who have diabetes when they are treated with stem cell transplant high-dose chemotherapy, often their diabetes can be short-term aggravated, because often part of our treatment is high-dose steroids that usually causes decompensation of people's diabetes.

So I would say I disagree, but I don't completely disagree. I appreciate the opinion that diabetes is a factor. As I clarified for you, I didn't say diabetes is a non-factor and had no influence. I said that his treatment was a factor and very likely, and I can't imagine how that treatment was not a significant factor because of the temporal association and because of the fact that the treatment is often a cause.

I did not read Ambinder or D'Alessio's reports prior to this deposition. At some point I've looked at them. So I don't recall the specific comments, but based on my assessment I would say if you're characterizing the statement correctly, then I would disagree. Albeit, I've already qualified for you, I'm not saying that diabetes was not any factor --

Q. Understood.

A. -- or no contribution.
Q. Understood.
The steroid Mr. Keller received was dexamethazone, is that right?
A. I believe so.
Q. Okay. And wouldn't you agree that the glucose levels generally return to normal after stopping treatment?
A. Yes, but usually you receive multiple rounds of treatment, and you'll have periods of decompensation, and so certainly anything that you're talking about in terms of diabetes would be aggravated.
And it's not that the treatment happens over just a day. You're not giving somebody -- you give people steroids at multiple times. He would have had induction therapy where he had a couple rounds of really high-dose therapy associated with very toxic therapy, and then his stem cells would have been harvested. This would have all taken place over a period of weeks.
Q. Okay. My understanding is that Mr. Keller received dexamethazone for four days over two weeks during four cycles of

chemotherapy before his transplant. And my question is, for dexamethazone the glucose levels would generally return to normal within days or weeks after that last chemotherapy treatment, is that right?

A. Yeah, but you get high-dose steroids and you're aggravating the metabolic processes associated with diabetes. He also would have only gotten chemotherapy for a short period of time, but the cardiac effects are usually seen subsequently.

And some of the mechanisms have been understood. There are effects that seem to be somewhat dose-dependent. We try to keep people below certain doses of exposure to certain chemotherapeutic agents. And usually you'll do serial evaluations of the heart demonstrating -- in order to make sure that you're not causing an acute decompensation associated with cardiomyopathy.

The point is that diabetes could have contributed, but the fact that he had an exaggeration of the effect of his cardiomyopathy associated with his treatment make it very likely that it was a proximate cause, a

significant cause, a contributing cause.

Q. Okay. And Dr. Ambinder, he also opines that Mr. Keller's renal failure, his kidney disease, was also a consequence of his heart disease and diabetes.

Do you disagree with that?

A. Well, similarly I would say, as I already described to you, that there are likely multiple causes. His diabetes may have made him more susceptible to the toxic effects of his chemotherapy, but the chronic kidney disease clearly appears to have been exaggerated, made worse after he received chemotherapy.

If he didn't have chemotherapy and he didn't have the high-dose therapy, could he eventually have had diabetes-associated complications? Certainly. But I'm arguing that it was a proximate cause that could have been prevented if he had not gotten cancer.

So that aspect of causing more severe disease was associated with his therapy that he only had because he had cancer, and he had cancer where his exposure to Camp Lejeune associated toxic carcinogens were a contributing cause.

Q. Okay. And Dr. Ambinder also states that the lymphoma chemotherapy that Mr. Keller received is generally not damaging to the kidneys. Is that something you disagree with?

A. Well, I would say, what does that mean? And again we're talking about a document that I'm not seeing and you're quoting indirectly, and I don't -- didn't review it. I wasn't expecting to be asked questions about it right now, so I don't have it memorized. So I'll say that I don't know how to characterize what Dr. Ambinder said.

Regardless, I would say usually or not, he had the treatment and it was associated with a change in his kidney function. And when we're thinking about cause and effect, one of the most important ways to consider this is the temporality if you get a treatment.

And it's not just the chemotherapy that could cause kidney problems, it's the stress on the individual associated with stem cell transplant and treatment, the associated -- there can be other associated things that occur, changes in blood pressure associated with acute changes in vascular status, the use of other

kinds of medications that are associated with the transplant that can sometimes interfere with kidney function, and then simply the process of going through getting high-dose therapy.

Q. Okay. And have you reviewed Dr. D'Alessio's report? He's an endocrinologist.

A. If it was provided to me and I listed it in my documents considered, I will have. Sitting here today, I haven't memorized the document.

Q. Okay. Dr. D'Alessio opines Mr. Keller had multiple other risk factors that better established a cause for his chronic kidney disease. Those include -- I'm going to butcher this -- hypercalcemia, use of NSAIDs, dyslipidemia, and arthrosclerosis, and obesity and diabetes. My question is, do you disagree with this?

MR. LEE: Objection to form.

You can answer.

THE WITNESS: Well, I'm taking a quote of a quote from you not having memorized the document, so I won't directly respond to D'Alessio's because I

don't have it before me and I don't have it memorized.

It's the same with Ambinder. I'm not going to say I'm directly responding because I haven't memorized these documents.

BY MR. RYAN:

Q. Okay. I can ask just a better question, then.

Did you -- in your etiology, your differential etiology when you were considering Mr. Keller's chronic kidney disease, did you consider other risk factors including those I just mentioned, hypercalcemia, NSAIDs, dyslipidemia, arthrosclerosis, obesity, and diabetes?

MR. LEE: Objection to form.

THE WITNESS: Well, in general I'd say I considered other factors, and what I respond now would be those factors were continual, his treatment was not, and his disease progressed after he got treatment, and so more likely than not a major determinant of the aggravation of his disease was his treatment.

Could those other factors contribute? Sure, they could be a contribution. Could they have increased the sensitivity to the treatment causing kidney disease? Sure, it's possible.

I don't know of an acute arthrosclerotic event, hypercalcemia, all the different -- dyslipidemia. Those are all chronic features, they were chronically part of his state, and in the trajectory of his disease process those were around -- were changed as he was treated.

And a priori would not expect an endocrinologist to know one way or another whether or not a treatment -- and Dr. Ambinder's entitled to an opinion as a cancer expert. I just -- if that was the opinion that Dr. Ambinder gave, I respectfully disagree that the temporality suggests in this case that there was a significant contribution to the deleterious consequences to his heart and to his kidneys from his treatment.

MR. RYAN: Okay. Dr. Felsher,

you've been generous with your time, as with your counsel. So that's all I have for now.

So I wish everyone a good day.

Are you guys going to do a redirect?

MR. LEE: We're done.

THE VIDEOGRAPHER: Keep your mics on for just one more moment.

We have reached the end of today's testimony and are going off the record on July 10, 2025, and the time is 5:01 p.m. Thank you.

(Whereupon, the deposition was concluded.)

CERTIFICATE OF COURT REPORTER

I, MAUREEN O'CONNOR POLLARD, Registered Diplomate Reporter, CSR No. 14449 for the State of California, the officer before whom the foregoing deposition was taken, do hereby certify that the foregoing transcript is a true and correct record of the testimony given; that said testimony was taken by me stenographically and thereafter reduced to typewriting under my direction; and that I am neither counsel for, related to, nor employed by any of the parties to this case and have no interest, financial or otherwise, in its outcome.

Dated this 19th day of July, 2025.

Maureen O. Pollard

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MAUREEN O'CONNOR POLLARD

CSR No. 14449

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Federal Rules of Civil Procedure

Rule 30

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