STATE OF VERMONT
PUBLIC UTILITY COMMISSION

CASE NO. 17-3550-INV

IN RE:
Investigation pursuant to 30 V.S.A. §' 30 and 209 regarding the alleged failure of Vermont Gas Systems, Inc. to comply with the certificate of public good in Docket 7970 by burying the pipeline at less than required depth in New Haven, Vermont --

CASE NO. 18-0395-PET

IN RE:
Notice of Probably Violations of Vermont Gas Systems, Inc. for certain aspects of the construction of the Addison natural gas pipeline --

VOLUME I

D E P O S I T I O N

-of-

GREGORY R. LIEBERT, PE

held on Tuesday, October 12, 2021, via Zoom conferencing platform, commencing at 9:45 a.m.

REPORTED BY: MARILEE JAYE YOUNG, CSR

(Appearances listed on page 2)

half an axle when utilizing the GPTC method?

A. Uh, I won't, you know, I'm sorry I've introduced that half axle, you know. I will say that the GPTC requires a wheel load where the CEPA requires an axle load, and the calculations, obviously internal to that calculator, doubles the wheel loads for the GPTC or I would never get the same answers for stresses imposed by the vehicle.

Q. So do you agree that it's appropriate to utilize a wheel load that represents one half of the axle load when you're calculating using the GPTC method?

A. Correct.

Q. And are you also saying that because the GPTC method and the CEPA methods have similar results that you believe both are calculating a wheel load?

A. No. I'm saying that they're both -- if a wheel load is inputted, inputted into the -- However they calculate it, whether it's one wheel or a full axle, I'm not sure, because I don't -- can't see the equations. But, when you input a wheel load into GPTC and you put an axle load into CEPA, the answers come out

to relatively the same number for your three different hoop stresses. Therefore, how they handle that calculation, whether one takes an axle and cuts it in half, it just does a wheel, or the other one takes a wheel and doubles it, I don't know.

Q. Why don't you know, uh -- Why don't you know?

A. Because I can't see the calculations. This calculator is just you put the inputs in, you know, unlike the API document that I have for how the API does the calculations where they show all of the calculations, which I went through last night, the GPTC and the CEPA I can't find anywhere where the calculations are revealed. So, therefore, I don't know how it's handled, whether it's doubled or halved. But, in my opinion, it doesn't matter, because the answers for that vehicle with an axle weight of, um, thirty-six -- I'm sorry -- with an axle weight of 36,800 pounds will produce relatively the same hoop stress for live load as whether it's one calculator or the other.

Q. Okay. And so is it fair to say that you no longer believe that it was inappropriate for Mott MacDonald to utilize a value of 18,400

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IN RE:
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VOLUME II

D E P O S I T I O N

-of-

GREGORY R. LIEBERT, PE

held on Wednesday, October 20, 2021, via Zoom conferencing platform, commencing at 9:33 a.m.

REPORTED BY: MARILEE JAYE YOUNG, CSR

(Appearances listed on page 2)

did provide as an exhibit for my original testimony but not this document 'cause it's completely different.

Q. So you didn't review the CEPA -- you didn't refer the Surface Loading Calculator User Manual before you performed any of your CEPA calculations?

A. I testified to that numerous times in the first deposition, that I didn't know what the calculations looked like because I did not have a manual, so I've already admitted that in testimony that I did not have this document.

Q. Okay. So that's a Yes, you have not reviewed this document and did not review it before you performed your calculations using the CEPA tool?

A. This particular document I did not review.

Q. Okay.

A. I can't review something if I don't have it.

Q. And did you make any effort to get it?

A. I tried.

Q. Did you ask Mr. Dumont whether he had a copy of it?

ATTORNEY DUMONT: Wait. He

A. All of this --

THE REPORTER: I can't understand you when you're talking at the same time.

A. All right, Owen, I did not do hand calculations. I, like Mott MacDonald, used a calculator. I inputted values, and the calculator did these calculations for me, just as they did for Mott MacDonald. So questioning me on the nuances of the mathematics behind these equations is not relative to what I did, it's not -- it doesn't have anything to do with what I did, which was plug in numbers into a calculator.

Q. And it's not relevant because you don't understand the calculations behind the calculator tools?

ATTORNEY DUMONT: Object to the form.

A. I disagree with you.

Q. So, then, let's -- we're looking at the calculations --

A. I'm not going to answer questions about this, because it's nothing that I did. I didn't depend on these calculations for any of my testimony or opinion. Therefore, I'm not

hoop stress minus the longitudinal stress?
A. I don't know. As I told you, I did not use these equations in any of the work that I did when I put together my testimony. So, to ask me to know exactly what this equation's doing after not seen it for years is a basis for me not answering any questions about it.
Q. Because you're unable to answer because you don't have the knowledge to answer or because you're unwilling to testify about it?
A. Neither of your answers. I'm unwilling to talk about this because it's been years since I've used one of these stress calculations, actually calculated by hand, which is not uncommon. I've been out of school over forty years. And since, and this is the important part, since I did not rely upon these calculations for any of my testimony, I have no reason to be familiar forty-some years after school with these equations, and I can't be any more clear than that.
Q. All right, so you've reviewed Mott MacDonald's June 15, 2021, memorandum, correct?
A. Hold on, please. Oh, yes, I have reviewed that, yeah.

absolute value of the total hoop stress, the absolute value of the longitudinal stress, or the absolute value of the hoop stress minus the longitudinal stress, or some combination?

A. And I'm going to go back to what I said earlier, I'm not going to answer any questions about that equation.

Q. Because you don't know or because you don't aren't willing to testify about it?

A. Owen, I've already answered this question. I said it's because I did not rely on that equation for anything that I testified to; and, therefore, you know, I'm not going to answer any questions, whether I know it or not, because I didn't use it, I didn't run any hand calculations, and I did not rely upon it.

Q. Okay. So you performed CEPA calculations, correct?

A. I plugged numbers into a calculator and looked at the results.

Q. And that calculator relies on this equation, doesn't it?

A. No, it does not. If you look at the exhibits that I submitted, which you've got one right in front of you.

Q. Yeah?
A. It doesn't say anything about Tresca. It says "combined stresses per max stress theory and combined stress per von Mises theory." I don't see the word "Tresca" in here anywhere.
Q. Is the max shear stress theory the same as the Tresca theory?
A. I don't know.
Q. According to the CEPA instruction tools setting forth these two formulas, is it safe to say that the CEPA calculator relies on these equations to perform the total effective stress under either theory?
ATTORNEY DUMONT: Object to the form.
A. I would agree that the calculator that I used, since it specifically says "von Mises theory for equivalent stress," does rely upon Equation 15, and I would say that the calculator that Mott MacDonald used, since it specifically says the "Tresca equation" relies upon Equation 14.
Q. And I think earlier you testified that you always used the max theory because that always produces a higher overall stress, correct?

SMYS. Therefore, I didn't have to get into the nuances of the two different equations, because they both --

Q. Yes, but --

A. You cut me off.

Q. Sorry. Go ahead.

A. Because they both led to, in my opinion, a failure, so it didn't matter to me which one. But, for the purposes of my testimony, I said, as an engineer, I like to be conservative so I took the higher number.

Q. And the reason I think -- I'm not trying to hide the ball here, Greg. The reason I think it's relevant is because I'm trying to figure out why you disagree with Mott MacDonald with respect to the total allowable stress; and, um, Mott MacDonald's contention is that the total allowable stress set forth in B31 is found at paragraph 833.4. And I'll pull that paragraph up here, again, so you can see it. And this is the -- this is the paragraph that they cite in their memo and you don't address this in your testimony, so I want to understand what your opinion about it is.

So on the left, this is 833.4, and it sets

forth two calculations, two methods, for calculating the combined biaxial stress state of the pipeline in the operating mode; and it sets forth two equations for evaluating that. One is the absolute value of the hoop stress minus the longitudinal stress, and the other one is the von Mises theory; correct?

A. Okay, and I'll tell you exactly why I didn't give this any credence, and I think they're totally incorrect.

Q. Okay.

A. Is that, if you look at the sub Hs and the sub Ls, there is no total next to that. If you look at the von Mises and everything you have on your right-hand screen, every one of those signas has a sub H or a sub L underscore total. So I know those equations on your right-hand screen insist that you calculate all of the stresses that are present due to the loading conditions of the pipe before you compare it. This equation, these two equations up here, the absolute value of SH minus SL don't say "total" and neither does the second equation say "total," even though the second equation is the von Mises approach,

but it doesn't say "total." So, if I'm looking at a pipe and the only load on that pipe is the pressure inside the pipe, which is very possible if you have a pipe that's just sitting on top of the ground, it's not going to have any significant other pressures. So the only stresses that are going to go into the Tresca or the von Mises are due to internal pressure, period. So I believe that this equation is strictly addressing the conditions of internal pressure only and not total loads or subsequent stresses on the pipe.

Q. What about the equation makes you think that?

A. I just said --

Q. What about this paragraph?

A. Excuse me?

Q. What about this paragraph makes you think that it's limited to internal pressure on the pipe?

A. Because it doesn't say anywhere calculate all of the hoop stresses, calculate all of the longitudinal stresses and, when you do that, total them and then plug them into the equation. Which this document on the right-hand side, by having sub H, underscore

total, means all of the stresses. And in the case of 833.4 -- uh, if you just give me a minute, I want to pull up that document. Okay. So 833 point -- Owen, I need a minute to look at the -- my ASME document. Okay, be with you in just one second.

Okay, so I do see above that where it does, SL is basically defined as summation, for longitudinal stress, the summation of four different stresses. So I would say I agree, that's a total, it's total.

Q. That the calculations here show total combined stress at 833.4?

A. Well, just the term is "net longitudinal stresses in a restrained pipe," is SL, and it's looking at internal pressure, hoop -- internal pressure, and it's looking at thermal expansion, it's looking at axial loading, and it's looking at bending stresses. But the one thing it does not look at, which is significant, is hoop stresses due to external loads such as soil and dirt. So that's why I don't believe it's applicable to a crossing calculation.

Q. You know, in general, you agree that the same

want to just read back the last question, and then we can go from there.

THE REPORTER: Hang on just a second. I'm going to go back through all the chatter.

ATTORNEY McCLAIN: That's fine, I can just do it. Are you ready, Marilee?

THE REPORTER: I am.

Q. So, Greg, I take it, based on your responses to the discovery we filed, that prior to your September 10 testimony you had never calculated surface loading on a natural gas pipeline before?

A. That is correct.

Q. That's correct. And do you think the fact that you had never performed those calculations before contributed to the mistakes that you made when you submitted your September 10 testimony?

A. It definitely contributed to the one mistake that I made, which was using the wrong wheel loading.

Q. And what were the other mistakes that you made?

A. That was it.

Q. That was the only mistake that you made?
A. Yeah. I entered, for the one calculator, which was the GPTC, I entered the wrong value for wheel loading.
Q. Okay. So there's a couple of questions at the end that I just want to confirm are your admissions. One of them is "Admit that Mr. Liebert has never performed any work as a licensed engineer on a natural gas pipeline"; and it says "Admit," but it's not signed by you. Is that your admission?
A. I admitted that, yeah.
Q. Yeah. And the second one is that "Admit that Mr. Liebert is not qualified to design an AC Mitigation Plan"?
A. I admit to that.
Q. You admit to that. The third one is that "Admit that Mr. Liebert has never conducted any surface loading calculations for a natural gas pipeline prior to preparing the Liebert testimony in this case"; and I think you admitted to that, too, correct?
A. I did.
Q. "Admit that Mr. Liebert is not qualified to provide an opinion about appropriate soil

classifications"; and there you said "Denied." Are you -- Are you a qualified geotechnical engineer?

A. Um, I'm sorry, Owen, did I just say deny and no explanation after that?

Q. There's an explanation after it, but my question is, are you a qualified geotechnical engineer?

A. Absolutely not.

Q. The next admission is, "admit that Mr. Liebert does not know whether a 345-kV line will be proposed or approved in the VELCO right of way in New Haven"; and you admitted that?

A. Correct.

Q. And then, and then we've talked a lot about the design factor. I don't think we need to address that one.

ATTORNEY DUMONT: Owen, let's talk about it for another couple hours.

ATTORNEY McCLAIN: If I thought that Mr. Liebert was going to give better answers, then I think I would, but I think that we've got the knowledge on --

ATTORNEY DUMONT: Better?

ATTORNEY McCLAIN: More

Q. No, I read the document, Greg. I don't need to go through that document. I'm curious about the documents you didn't produce, what they are and what they say?
A. Okay.
Q. Do you want to identify any of them?
A. No. I have no idea. Owen, you know as well as I do that we all skim documents. You know, you do enough research, website research, you skim documents. But, if I'm not going to use that for anything, why would I produce it. It's just skimming.
Q. Well, it -- prior to your testimony about AC mitigation in this case, had you ever -- had you ever worked on any case regarding AC mitigation?
A. No.
Q. And so, in your view, do you think it's relevant for the Commission to understand what the basis of your knowledge is in this case to provide expert testimony about AC mitigation?
A. No.
Q. You don't -- In your view, you don't need to provide any explanation about the basis for you testifying as an expert about AC

mitigation?

A. I did not testify as an expert about AC mitigation. I testified as an expert about the Statutes of Vermont, the professional regulations imposed -- the Statutes covering the practices of licensed engineering in Vermont, that's what I testified to. And you reminded me that I did make a statement about dirt and whether it affected AC mitigation, and I said, Yes, I did say that, and I produced a document that I relied upon for that answer. That's pretty simple, Owen, pretty straightforward.

Q. Do you think, in your opinion, do I have, without being an engineer, the appropriate knowledge and skills to testify about whether depth of cover is a factor in AC mitigation?

A. I think you've got enough common sense that you would know that it does. Anything that provides resistance to electricity reduces voltage. It's a simple equation. I -- It's the Ohm's law: Whenever you increase resistance, you change -- you reduce voltage. Pretty darn straightforward.

Q. And so in this question, in response to 11,

respect to the adequacy of the AC Mitigation Plan in the New Haven area?

A. No.

Q. Did you review any of those other factors and their potential impact on the AC Mitigation Plan that was developed by ARK Engineering?

A. No.

Q. Do you know whether those other factors would have the effect of offsetting any change in the depth of cover such that no changes to the mitigation plan would be needed?

A. No, I'm not qualified to answer that.

Q. And so the only thing you're qualified to do, as far as I understand it here, is to testify about the stamping of the plans and to make a recommendation as to whether or not someone should review those plans again?

A. I think that sums it up pretty perfectly.

Q. Okay. I know this is frustrating, but sometimes the whole purpose is just to narrow the understanding. And, if your testimony is limited to those two things, then that's what it's limited to. Now, you also have this second Question 11 that says, "What's the relevance of less than 3 foot of cover to a

Plan." And then you recommend that the Commission should use an order that VGS cease operation of the ANGP unless, within a specified number of days after the order, VGS submits an AC Mitigation Plan and Cathodic Protection Plan for the as-built ANGP that is signed and sealed by a Vermont-licensed professional engineer." Correct, that's your testimony?

A. That's correct.

Q. Now, I'm -- what I want to ask you about on this point, Greg, is a couple things. One is, I think you testified earlier that you would not be -- you would not have the experience and knowledge necessary to design an AC Mitigation Plan; do we agree on that?

A. We would agree, yes.

Q. And do you -- are you aware of any firm in Vermont that would have the appropriate knowledge and expertise to design an AC Mitigation Plan?

A. No.

Q. You don't know of a single firm that could do that?

A. No, I do not. Not now, I don't.

A. Filling out a form and submitting back-up documentation.
Q. And what back-up documentation did you submit?
A. Time sheets, drawings, statements from Vermont Gas, statements from CHA, letters, emails, you name it.
Q. Now, if someone -- I think that when you did the prior natural gas work that that was a -- you did that work at a point in time when your design firm had design capabilities; is that right?
A. That's correct.
Q. And meaning you had other folks working at the firm?
A. Yes.
Q. And did they have any specific natural gas knowledge?
A. Well, yes, just like I did with, you know, not pipeline but piping and, you know, the use of natural gas through industrial facilities and institutions and so forth, yes.
Q. And, when you had, you know, when Liebert Engineering had design capabilities, if someone came to the firm and asked you to design a 41-mile, 12-inch pipeline,

transmission pipeline, is that the kind of job that you would have taken on, um --

A. Absolutely not.

Q. And why not?

A. Because there are -- First of all, we have no qualifications for designing a 41-mile natural gas pipeline. We weren't big enough. And there are many, many firms around the country who do nothing but oil and gas pipeline. It would be a no brainer. It was not our area.

Q. Now, why wouldn't you have been big enough?

A. Well, I'll tell you what, when I looked at the time sheets for CHA, they probably had -- they had hundreds of people working on the project and charging to the project. So it takes a lot of people to do it, apparently. You know, they got millions of dollars in fees for doing this.

Q. And CHA's role on the project, I take it you weren't satisfied with them stamping the plans at the time that they did stamp the plans?

A. My complaint involved not stamping plans -- So my testimony involved that they failed to stamp issue-for-construction drawings and that, when they did it after the fact, because