Canadian Nuclear Safety Commission

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Public Hearing Room
14th floor
280 Slater Street
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via videoconference

Commission Members present

Ms. Rumina Velshi
Ms. Indra Maharaj
Dr. Marcel Lacroix

Secretary:

Mr. Marc Leblanc

Senior General Counsel:

Ms. Lisa Thiele

Commission canadienne de sûreté nucléaire

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280, rue Slater
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par vidéoconférence

Commissaires présents

Mme Rumina Velshi
Mme Indra Maharaj
M. Marcel Lacroix

Secrétaire:

Me Marc Leblanc

Avocate-générale principale :

Me Lisa Thiele

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by videoconference / par videoconference

--- Upon commencing on Tuesday, October 12, 2021 at 11:15 a.m. / L'audience débute le mardi 12 octobre 2021 à 1115

THE PRESIDENT: Good morning, everyone, and thank you for joining us today to help the Commission as it reviews the application in front of us to approve the restart for Pickering 5 if the unit were to shut down and cool down.

And I know we've got folks from OPG here, we've got CNSC Staff, and we've got members from the External Advisory Committee with us today. I do want to thank you all for the submissions that you have made within very short timeframes and, again, thank you for making yourselves available at such short notice.

And the Commission does have some questions and we thought it best that we have this opportunity to ask these questions in this kind of a forum. It will make it much more efficient if we can ask questions and ask follow-up questions if necessary.

And then maybe with those opening

remarks, Marc, unless you have something to add, I was just going to open it up to Commission Members for questions.

Do we need to cover any other formality, Marc?

Marc Leblanc and Lisa Thiele are also here with the Commission today.

MR. LEBLANC: No, I think you covered all the ground, Madam la présidente. I just want to confirm that we have representatives from OPG, Staff and two of the three EAC members that are already linked in.

I think we were will still waiting for a few individuals from OPG to join in. Sara just called me and I see them in the list of participants, so they've been promoted, so we're ready to go.

I'd just like to note that we have StenoTran with us, so this particular proceeding will have transcriptions available to all the participants, and that will be made public for the sake of transparency, as will all of the documentation that has been filed for this proceeding.

Thank you.

THE PRESIDENT: Excellent. Thank you, Marc.

And so Dr. Lacroix, I will turn to you first for your -- if you have any questions, please.

***QUESTIONS**

MEMBER LACROIX: Yes, I do have a number of questions.

Well, first of all, thank you very much for the submissions from staff as well as from OPG.

This is a question for OPG. The burning question is that I've looked at the flaw number P5O05, which is the flaw has a depth larger than 0.15 millimetre, and this flaw was detected -- from the information that I gathered, this flaw was detected in 1999. This flaw has not been reinspected, and it appears that the Heq concentration of a pressure tube has not been measured.

So my question is -- the first question, and the burning question, is that how can you tell that this flaw has not changed in depth and in size or in shape over the last 21 or 22 years since it has not been reinspected? How can you be confident?

THE PRESIDENT: Do we have someone from OPG who can answer that?

MR. CARNEIRO: Yeah, hi. It's Trevor Carneiro here from OPG.

So yes, this flaw was inspected in 1999. It was conservatively assessed as a debris flaw, so conservatively using a sharper radius than was measured in inspections. We've never seen flaws grow in the history of our units. And then in terms of hydrogen equivalent concentration, we did -- we have predicted in end-of-life hydrogen level at approximately 70 ppm, which is an upper bound prediction.

So we do over-estimate our Heq predictions when we do our flaw assessments.

MEMBER LACROIX: Okay. So you confirm that this flaw originate from debris flaw. I was not sure the origin of the flaw itself.

So you confirm that it comes from a debris.

MR. CARNEIRO: So not necessarily.

So we have certain tools and certain

methodologies that we use, so we conservatively assess it as debris because it does have -- so we're able to assume a sharper flaw than it might be. It might be a scratch as well, but we do err on the conservative side and assume a sharper flaw.

MEMBER LACROIX: Okay. In these submissions that you sent to us, number of papers that you sent to us, I've noticed that you do not seem to be so much concerned about the depth of the flaw itself but its shape. And you talk about the nature, blunt flaw versus a sharp flaw -- well, the blunt nature of a flaw.

How do you define "blunt" itself? I understand the word, but is it a qualitative description of the flaw itself or is it a quantitative description of the flaw itself? This is not clear to me.

MR. CARNEIRO: Yeah. So typically, flaws are measured for length, width and depth.

MEMBER LACROIX: Okay.

MR. CARNEIRO: And there is -- so we do measure the radii of a flaw if required --

MEMBER LACROIX: Okay.

MR. CARNEIRO: -- or we overly assume a sharper 15-micron depth. So if we see that the flaw is rather long and wide and it's not very sharp per se, then we will use the assumption of 15 microns. If the flaw requires a replica, we do measure the actual sharpness of a flaw.

MEMBER LACROIX: Okay. So if I come back to this very specific flaw, the P5O05, so in spite of the fact that you have not reinspect this very specific flaw, you are confident that -- from the observation that you've made with other flaws that it will not grow in size or in shape in the next few months or the next few years until Pickering is shut down.

MR. CARNEIRO: Correct. Based on the conservativisms that we put have in place when we originally assessed the flaw, we are confident that it will not grow, as we've never seen growth. And again, this flaw is not very sharp or small per se.

MEMBER LACROIX: Okay, okay. I've also read in one of the submissions that a fitness for service of a flaw has been demonstrated to the planned end of life of 359 ppm for the Heq.

This number, this 359 ppm, does it come from the fracture toughness model that has not been validated yet beyond 120 ppm?

MR. CARNEIRO: No. So the 359 ppm is a sensitivity case, so it is not taken from an actual measurement or a model, but it is overly assumed as a sensitivity to see if we did take on board similar, very high Heq findings, can our assessments handle that. And based on the sensitivity, yes, we are covered if there was some extreme number as 359, but keeping in mind that our actual end-of-life prediction is approximately 75 ppm.

MEMBER LACROIX: Okay. That's good. I understand.

One last specific question. The 0.15 millimetre, this is from a CSA standard, and I was wondering, does it come from an analysis of strength of material or is it a number that -- you know, just a rule of thumb number? Where does it come from, this very specific .15 millimetre?

And don't tell me that it's a small depth. I want to know there is some scientific basis behind this number. Is it?

THE PRESIDENT: Okay. I see Ms. Irvine's got her hand up to answer that.

So over to you, Ms. Irvine.

And when I turn the mic over to you, if you can just introduce yourself and what your role is in your organization, that would be helpful, too. Thank you.

MS. IRVINE: Absolutely. Thank you.

It's Sara Irvine, Manager of Regulatory Affairs for Pickering.

Dr. Lacroix, the 0.15 millimetre depth comes from the CSA standard, and that is the threshold above which a flaw is considered to be unconditionally acceptable, that we don't need to disposition it, so it's pre-analyzed in the CSA standard that a .15 millimetre flaw is structurally sound and fit for service.

MEMBER LACROIX: So you're confirming that it's structurally sound. It means that it comes from a calculation. It's not just a number out of the blue. It comes from scientific base facts.

MS. IRVINE: Sara Irvine, for the record.

Yes, that's correct.

MEMBER LACROIX: Okay. That's good. Okay.

Well, that's it for now.

THE PRESIDENT: Thank you, Dr. Lacroix.

And let me just ask one more quick question on this flaw P5O05IND1.

Did I hear you correctly that the .17 millimetres is an estimate and was not an actual measurement of the depth of the flaw, Ms. Irvine?

MS. IRVINE: So Sara Irvine, for the record.

It is a measurement from Ultrasonics when we inspected that tube. It is .17 millimetres deep.

THE PRESIDENT: Okay. Thank you.

Ms. Maharaj.

MEMBER MAHARAJ: I have a question that's more perhaps theoretical, so I believe maybe the EAC may be the party who might be able to answer best.

What I’m having some difficulty

rationalizing is what are the levers that create concern. So we've heard high Heq is something that's measured, it's in the design basis, but it's actually not that -- that much of a lever to create concern because the fracture toughness isn't just related to Heq. It's also related to the presence of a flaw.

But then we're hearing that the flaw depth, there's a measurement there, .15 in depth, but that's not actually too much of a concern. It's more about the shape of the flaw, whether it's got an angular component to it or a blunt component to it. So it could be deeper, and so the .15 is just -- it's a standard step by CSA where one ought not to be concerned.

My question is, is that regardless of whether or not the Heq is very high and regardless of the shape of the flaw?

I'm just hoping that perhaps you could help me understand how those levers play together because we've heard information that reduces the impact of each of them. And if none of them are the trigger, then I'm not sure what the trigger is.

DR. LUXAT: For the record, John

Luxat, Chair of the EAC.

I'd like to hand this over to Paul Spekkens, Dr. Paul Spekkens, who was our lead reviewer on this issue.

Paul.

DR. SPEKKENS: Thanks, John.

For the record, Paul Spekkens.

I think the way that you can think of this is as a -- it's a series of steps that you go through and when you get to a point that the answer is, it's okay, no matter what else happens, that's what the .15 represents. At .15, it doesn't matter what else is happening. A flaw will not -- will not propagate.

When you get into flaws that are of concern, the main issue is development of a crack. The flaws that we're talking about are in themselves not a structural concern. The tube is much thicker than the size of the flaw. However, if the flaw has sharp features, if the hydrogen is available to go to the flaw tip, then you have to worry about the development of a crack. And that's the -- what the assessments that are done to determine whether a particular flaw is acceptable or not. It's done on the basis of will a crack develop.

And when Trevor was talking, he was describing the -- sort of the most important feature as far as will a flaw -- will a crack develop, is the sharpness, which is defined by the root radius. The smaller the root radius, the sharper the flaw, the greater the risk that it will turn into a crack because there's a very small area that the stress is concentrated in.

That's kind of how the whole thing holds together. I don't know if that answers your question.

MEMBER MAHARAJ: In part.

If I can just ask one more for my own clarification.

So is it then fair to say that your more concerning value is the root radius and whether or not there is the formation of a point where in the presence of high hydrogen equivalent concentration you could initiate a crack rather than the other way around? It's not as much a driver of high concentration of the Heq if there isn't a flaw with a point where the stress could result in the initiation of a crack.

DR. SPEKKENS: For the record, Paul Spekkens.

So if I've understood your question, you're asking whether the thing that is of greatest concern is the sharpness independent of anything else. For flaws that are deeper than .15, yeah, that's the biggest concern. Below -- at .15 or below, it doesn't matter. Nothing matters. And that's why the -- you can categorically state that if it's .15 or less, nothing will happen.

When it's more than .15, then its sharpness depth is important because that kind of defines the way the stress will exist at the crack tip, and hydrogen is important. The material by itself won't crack unless there's hydrogen to go to the crack tip to create hydrides that are then susceptible to cracking, which allows the crack to propagate.

So it's the three things, sharpness, depth and hydrogen. And you need all three of them, really, for anything to happen.

MEMBER MAHARAJ: Thank you very much, Dr. Spekkens.

So then with respect to the flaw that's .34 metres in depth that's from the inspection of the channel P6N04, is that depth getting to a place that's now twice what the .15 standard is and it's also -- it's twice the .17, but it's now getting to be a depth of some concern. Is there anything about that flaw that we should be examining?

We've been very focused on P5O05, but we haven't talked about P6N04. And I'm looking -- just so I can help you with a reference, I'm looking at the document NK30CORR0053108334 at PDF page 4.

It's an OPG response to question number 2 from staff.

DR. SPEKKENS: For the record, Paul Spekkens.

I don't know if Sara Irvine wants to have the first run at this given that it's an OPG assessment that has concluded that it -- that the flaw is acceptable.

Can I do this? Can I hand it off to OPG to talk about that flaw?

THE PRESIDENT: Yes.

And who from OPG wants -- Ms. Irvine.

MS. IRVINE: Sara Irvine, for the record.

So the flaw you're discussing, the P6N4 Indication 9, so this one we discovered in 2001 during a volumetric inspection of that channel. We did replicate that flaw, so we do have the root radius, so that speaks to the sharpness of the flaw that we've been talking about.

So using its length, width, depth, location and sharpness and its estimated hydrogen equivalent concentration at the end of the assessment, we have demonstrated that that flaw is fit for service, so while it is a bit deeper at .34 millimetres deep and double that .15 depth, that just puts us into disposition space where we have to calculate various things about the flaw, if it's susceptible to crack initiation, if it's susceptible to leak before break. All those things have to be assessed and dispositioned.

Above .15, it doesn't necessarily mean that it's not fit for service. And again, in this flaw, we assessed its sensitivity to hydrogen up to 359 parts per million and it is again fit for service even at those hydrogen equivalent concentrations that are consistent with Bruce Power.

And the reason for that is you can really only fit so much hydrogen on the face of that flaw where it is sharp, so once you exceed that threshold of a concentration where you can't fit any more hydrogen on that crack tip, it really becomes impervious to your hydrogen concentration.

Now, hydrogen concentration is important for other types of fitness for service assessments like fracture protection and leak before break, but not necessarily fitness for service of a flaw, unknown flaw, once you've got all the hydrogen you can on that crack tip -- or flaw tip, I should say.

Thank you. End of comment.

THE PRESIDENT: Thank you, Ms. Irvine.

Staff, did you wish to add anything to what you've heard?

DR. VIKTOROV: Alex Viktorov. I'll just start, but I'll ask our technical specialist to contribute.

I will assure the Members of the Commission that all flaws are dispositioned as said by the licensee following the standards in force such as per the licensing basis and staff has independently reviewed those assessments to make sure that the strictest conservative methods are applied to provide assurance, so every flaw is individually examined, assessed and then accepted by staff following the well-agreed upon approaches.

So I don't know if someone at our side would like to provide some details to this.

MR. LAXMAN: Thanks, Alex.

For the record, it is Sankar Laxman here.

Regarding the Unit 6 flaw that is -- that flaw, yes, it actually had a deeper depth. I think the flaw is 2 times the depth of 0.15. But OPG has replicated it and shown that the radius is -- it's not sharp-like, so we have the radius information and in addition, actually, OPG assessed that particular flaw and the Unit 5 flaw also as the sharp-like flaw because as a conservative measure, what they can do is they can use the information, whatever they have, and as perceived as a volumetric flaw or a blant flaw and show they would meet the fitness of service requirements or not. However, OPG assumed it as a sharp flaw and showed they still meet the requirements of N285.8 standard with sufficient margins, so they actually meet it perfectly.

So that is for the -- in regards to these two flaws.

Thank you.

THE PRESIDENT: Thank you very much.

Dr. Lacroix, any additional questions?

MEMBER LACROIX: Yes, I do have additional questions.

This is a question for staff. You have examined the request for restart from Bruce and also from OPG, and I've noticed that both organizations present -- well, they conducted statistical analysis that appeared to me to be different. And I was wondering, could staff tell me, would they reach the same conclusions if they used a different statistical method?

MR. RINKER: Mike Rinker, for the

record. I'm the Director-General for the Assessment and Analysis Division.

So yes, you can be more or less conservative in your approaches. For example, OPG conducted an analysis using 95th percentile bounding calculation.

We reviewed that and critiqued it, and we found that it was -- it was overly conservative in that it didn't take into account many of the mechanistic understandings that we have of how flaws are formed and often during event based as opposed to randomly occurring, which would be captured in a statistical basis.

So you can get different answers depending on your level of conservatism, and the approach that CNSC Staff looked at independently was to look at a best estimate of flaw formation together with an understanding of those flaws that occurred in -- back in time typically during events such as fuel unloading as opposed to randomly occurring from debris.

And so you can come up with different approaches, and we think the approach that is listed in the CMD is supportable for our recommendations.

MEMBER LACROIX: Okay. Thank you very much.

DR. VIKTOROV: I would like to add on this. Unlike other assessment, the statistical method is not really prescribed by standards, so our licensee applies the best science available to select the approach.

Interestingly, again, CNSC Staff is quite versatile with these approaches and we independently performed our assessment and results were consistent. So again, we have confidence with both the Bruce Power and OPG approaches.

MEMBER LACROIX: Okay. That's good.

THE PRESIDENT: So Dr. Viktorov and Mr. Rinker, maybe I'll ask something to help clarify for me around the different statistical analysis.

And I know what's in front of us is a request for Pickering 5, but as I look at the OPG submission of October the 8th, the supplemental one that ends with 22916, Table 1, where they talk about the expected number of dispositionable flaws where for Pickering 5 it's .8, for Darlington it's more than 1 for both Darlington 1 and 4.

And what we have seen with the submissions is it starts with a very conservative estimate, so for Pickering it started with 7 and then, you know, we've got the .8 and we've got the 1.6 and so on. And it just -- and I don't want to say it's pencil sharpening, but it's almost like you take -- you start removing conservatism until you get to the number you think, okay, you know, I've got confidence in it, but it fits in with what I want it -- where I want it to land.

And I’m just wondering, when I look at these Darlington ones, now, when the request comes to us, will there be more pencil sharpening to say, "Let me get to less than 1 because that's what the licensing basis is"?

So what is an acceptable statistical analysis, then, where there's no standard?

MR. RINKER: Mike Rinker, for the record.

Excuse me, Dr. Viktorov.

I think it's important to understand when you're looking at different units and different reactors the population of flaws varies, and applying a same statistical approach to a unit that has very few flaws ends up with a very broad curve and your 95th percentile is quite large compared to something that has a lot of flaws, many data points and your 95 percentile is more accurate.

Also, the units have different design in certain instances that are very important for this consideration. For example, Pickering has -- the end plug is quite large and it covers the entire region of interest, and so it's very difficult for debris to come in there. So you have to look at the manner in which flaws are formed together with some statistical analysis.

THE PRESIDENT: And so before I turn to Mr. Laxman for his comment, when staff reviews, say, the Darlington application, it could be, "Hey, we need you to do more analysis because of" whatever additional considerations. Is that what you're suggesting, that that will happen, be more of an iterative process?

MR. RINKER: Mike Rinker, for the record.

When there's no established methodology and we're at such a time, we do have an iterative process over the course of a week.

THE PRESIDENT: Thank you.

Mr. Laxman?

MR. LAXMAN: Sankar Laxman, for the record.

Just to -- if we see Pickering, for the first 500 millimetre from the outletburnish mark, there are around 15 flaws. Darlington, they have three flaws.

THE PRESIDENT: Right.

MR. LAXMAN: So it's too small in comparison to Bruce Power, which is around 187 flaws. So the fact is statistic is built on what we have there, so that is the way we -- we review what they actually provided, but this is the fact.

THE PRESIDENT: Right.

MR. LAXMAN: Thank you.

THE PRESIDENT: I hear you. Thank you.

Ms. Maharaj.

MEMBER MAHARAJ: Just to divert to a

simple question, perhaps this is for OPG. For that flaw P5O05, it says that the shield plug limits the potential for deeper flaw formation. And I was not sure I understood how that would be covering up the flaw physically so that hydrogen couldn't get underneath it or deposit into whatever potential angularity or point tip there could be. Perhaps you could clarify.

MS. IRVINE: So Sara Irvine, for the record.

What we meant there is there's a limited space between the shield plug and the pressure tube, so that really limits the size of any debris that really could fit between a shield plug and a pressure tube. Therefore, the depth becomes -- of any flaw that forms in there would be limited to the size of debris, really, that can fit in that hole or that annulus between the two, and the shield plug. So really, the likely formation of this flaw is if there was a piece of debris in a bundle as it was pushed out of the channel when the shield plug was not there, it's more of a scratch than a debris fret in that area. So you -- during operation, you really can't get a piece of debris in between that shield plug, which is a -- like a cylinder of metal inside the pressure tube.

So because of that constraint on the geometry, you can't get deeper flaws in there.

I hope that answers your question.

MEMBER MAHARAJ: Yeah, I think so. I just wasn't sure how that would -- what the mechanism for that would be.

Thank you.

THE PRESIDENT: Maybe I can ask, Ms. Irvine, how deep can it really get in a worst-case scenario?

MS. IRVINE: So Sara Irvine, for the record.

Paul Fabian, can you answer that question for us? I believe your team looked at the size of that gap.

Thank you.

MR. FABIAN: Paul Fabian, Manager of Major Components, for the record.

So based on the assessments that we have done to date, .17, in that region, appears to be the maximum depth that we've had. Again, really, you can't have any debris of -- or debris fret of significance form in this area, as Ms. Irvine has explained, so it's really just part of fuel transitioning through the zone and it's not a mechanism that would create a flaw with significant features.

THE PRESIDENT: Thank you very much.

Dr. Lacroix.

MEMBER LACROIX: No, I have no further question.

Thank you very much, OPG and staff. Thank you.

THE PRESIDENT: Ms. Maharaj?

MEMBER MAHARAJ: I just had one more with respect to the request by OPG to reduce the axial length of the region of interest from 75 millimetres to 60 millimetres.

I didn't see that there was any resistance from staff or concern from staff in your submission in this regard. Is that simply a result of your assessment of this particular unit or is there a different basis for saying 75 millimetres inbound from the outer burnish mark is not -- is excessive for some reason?

DR. VIKTOROV: Alex Viktorov again. I will start.

The reason is difference in actual inspection practices. OPG Pickering was able to take hydrogen measurements through scrapes closer to the burnish mark than in the past was able to be done at Bruce, so we have data correct horizon actual -- not predicted, but actual Heq concentration closer to the burnish mark which allowed us to agree with the request to reduce the axial extent of the region of interest.

MEMBER MAHARAJ: Thank you very much. Those are all my questions, Madam Velshi.

THE PRESIDENT: Thanks very much.

I have more a question of clarification, and it's around the Order itself and the two options that are available for the licensee to demonstrate that it can restart, the criteria for restart.

And Option A, which is to demonstrate an understanding of the mechanism leading to the high

Heq concentration and et cetera, this requires, in OPG's case, OPG able to explain why the Bruce 3 and Bruce 6 levels were high, right. It's not for OPG to demonstrate with high confidence that within their units what their Heq levels are. And as I look at staff's submission, it says, well, OPG can't demonstrate that so they don't meet Option A. And yet, as I look at OPG's submissions and the EAC submission, the primary rationale is, look, we've got high confidence that we will not get Heq levels beyond our licensing basis.

So maybe I'll start with staff first just to confirm the Order and expectation, and then maybe get both OPG and EAC to comment on that option in the Order.

Staff?

DR. VIKTOROV: Alex Viktorov.

I don't believe we expect OPG to really assess and explain what happens in Bruce reactors. We would expect that the industry working together will understand the driving mechanism or observations or discovery of unpredicted high elevated Heq concentration in the localized region of interest, but then understanding the driving force for this phenomenon, OPG would model Heq concentration OPG reactors. But the premise or prerequisite for this understanding the mechanistic physical processes that happen in pressure tubes in particular in this location, again, we believe that industry is making strides in this direction, but we have not yet seen an exhaustive proof of what was the reason of the Bruce reactors.

THE PRESIDENT: Thank you, Dr. Viktorov.

Ms. Irvine.

MS. IRVINE: Sara Irvine, for the record.

Yes, as Dr. Viktorov said, OPG will be working with Bruce Power and the rest of industry as they develop their root cause of this phenomenon that they discovered. And once we understand that through our strong OpEx program, we will be evaluating the impact it has on our unit and station-specific hydrogen equivalent models. And as well, we are already working on two-dimensional and three-dimensional hydrogen equivalent concentration models that are applicable to our own reactors.

So we are working in lockstep with Bruce Power as they develop the root cause.

THE PRESIDENT: Thanks very much.

EAC members, did you wish to add anything or comment on that particular provision in the Order?

DR. LUXAT: John Luxat, for the record.

I'll just make one comment, and that is, with respect to different stations, Pickering has -- operates with lower temperatures, lower pressures and also lower neutron flux levels. That -- the link there is to the circumferential creep of the pressure tubes which occurs upstream of the region of interest and exists over the total length of between the two end fittings or rolled joints. And in the case of Pickering, because of the lower temperatures, lower pressures and fluxes, the rate of creep is going to be lower.

Those are the driving forces for circumferential creep and, therefore, at this stage, since the postulated mechanism is the flow bypassing at the top of the pressure tube and creep region, the coolant coming up from upstream to the 12 o'clock position is colder than in the bottom. And that is the postulated mechanism for the redistribution of hydrogen equivalent in the rolled joint region.

We would expect -- and this has got to be, obviously, shown by the work that the industry does -- that this would be -- lead to a lower propensity for this circumferential redistribution towards the 12 o'clock region.

So that's -- in order to get those high concentrations, you have to have some systematic phenomena occurring. It can't be just a random process.

So that is -- as I stated, is our opinion, and it's up to the utilities to -- or industry to demonstrate that that is, indeed, the case.

THE PRESIDENT: Thank you very much.

Okay. Anyone wishing to add anything before we sign off? One last chance.

Okay. No hands up, so again, thank you very much for making yourselves available and for responding to our questions so thoroughly and completely. Very much appreciated.

Thank you, all. Stay well.

--- Upon adjourning at 11:56 a.m. /

L'audience est ajournée à 1156