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NUCLEAR REGULATORY COMMISSION

Title: Meeting of the Subcommittee on Power Uprates, Advisory Committee on Reactor Safeguards (OPEN SESSION)

Docket Number: (not applicable)

Location: Room T-2B3
Two White Flint North
11545 Rockville Pike
Rockville, Maryland

Date: Wednesday, November 14, 2007

Work Order No.: NRC-1865 Pages 262-292

CLOSED SESSION: Pages 1-261

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NUCLEAR REGULATORY COMMISSION

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ADVISORY COMMITTEE ON REACTOR SAFEGUARDS (ACRS)

MEETING OF THE SUBCOMMITTEE ON POWER UPRATES

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OPEN SESSION

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WEDNESDAY,

NOVEMBER 14, 2007

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The meeting was convened in Room T-2B3 of Two White Flint North, 11545 Rockville Pike, Rockville, Maryland, at 6:30 p.m., Dr. Sanjoy Banerjee, Chairman, presiding.

MEMBERS PRESENT:

SANJOY BANERJEE	Chair
SAID ABDEL-KHALIK	Member
SAM ARMIJO	Member
MARIO BONACA	Member
MICHAEL CORRADINI	Member
OTTO L. MAYNARD	Member

JOHN D. SIEBER Member

NRC STAFF PRESENT:

BENJAMIN PARKS

DIANE JACKSON

PETER YARSKY

JOSE MARCH-LEUBA

ALSO PRESENT:

GRAHAM WALLIS, former ACRS Chairman

CHRIS HOFFMAN

RALPH GRUMMER

DOUG PRUITT

MIKE GARRETT

JAMES WILLIAMS

CHESTER LEHMANN

YOUSEF FARAWILA

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P-R-O-C-E-E-D-I-N-G-S

6:37 p.m.

CHAIR BANERJEE: Okay. Let's do the usual. Jack, why don't we start with your remarks?

MEMBER SIEBER: Well, I think the first few topics went pretty well. Neutronics methods assessment and validation; void fraction correlations; and thermal-mechanical response; bypass voiding, I think we struggled a little bit. I wasn't convinced that we had solid calculational grounds for the kinds of things that we were saying. And on the other hand, there is some question in all of these topics what the staff can do, for example, if you are beyond the design basis like the ATWS situation, that the staff can't bring you under the conditions for design basis and expect you to meet the design basis outcome.

And I think there was a couple of topics that had that aspect to it. You really can't find the right regulation to make a licensee do something. On the other hand, I think, you know, for example, in the bypass voiding, we could have come up with a better explanation.

Overall from the regulatory standpoint, I didn't see anything that happened today that would

prevent the staff from doing that, approving that. On the other hand, I do think that some topics were more precise explanation.

CHAIR BANERJEE: Let me ask you and this is something I think each one of you need to give us some feedback also to Areva. It deals with some of the uncertainties with the gamma scan data, etcetera. The staff and the licensee have agreed on a certain penalty for the SLM CPR. With regard to the void effect, the licensee showed that there were two counter, what do I call it, weight phenomena going on, so that the overall effect on things like OPRM CPR were negligible.

MEMBER SIEBER: The same, yes.

CHAIR BANERJEE: Yes, so it came out as a wash. They have clarified a lot of things, but from a mechanical response, I don't know if we got a clear answer about that or not in transient. That would be something that we need to talk about. And then with bypass voiding, to take care of the uncertainties and the lack of modeling, the licensee and the staff have agreed on an approach where they will put a penalty on the setpoint that triggers the scram using the OPRM signals.

MEMBER SIEBER: It's a good fix as far as -- if the penalty is right.

CHAIR BANERJEE: Yes. So the issue really is to keep it relatively simple, let's discuss, and I think any of you should jump in here, whether you agree with these approaches and with the conclusions, so that we have a coherent story to tell the full Committee that this is going to be sort of the approach that the staff is taking with the SLM CPR to take care of this problem.

We are not going to put anything on the OLM CPR, because we think that counteracting effects which cancel each other and we are convinced that that's true. I don't know if they are not, speak up. Then we are going to say that the thermal-mechanical effects, I still don't know whether -- what the story is going to be there. Bypass voiding, there is going to be a straightforward sort of penalty put, whether we agree with that or not we should say and with ATWS instability a certain disposition has been proposed and we'll talk about that.

So I think if we could just focus and address these issues and give the guidance back, then we can -- so do you agree, Jack, with all these items?

MEMBER SIEBER: I think your discussion of the items and the proposed way to disposition them is accurate. And I don't -- I think that probably that is the best way to dispose of most of these issues. On the other hand, when there is not a calculational basis for statements that are made, I think that should be fortified with some additional work.

CHAIR BANERJEE: Okay. So the areas where more calculation on the basis probably was required seems to me that, at least to me appear to be, perhaps a little bit on the thermal-mechanical response.

MEMBER SIEBER: Right.

CHAIR BANERJEE: Maybe ultimately on bypass voiding, but it wasn't -- with that penalty maybe it wasn't such a big issue right now and the penalty wasn't very big. And then with ATWS. So let's -- we either accept what we have done or not, because there is going to be new calculations done in the short-term.

MEMBER SIEBER: Right.

CHAIR BANERJEE: From what I can see.

MEMBER SIEBER: That doesn't necessarily reflect this plant.

CHAIR BANERJEE: It doesn't reflect.

Okay.

MEMBER ABDEL-KHALIK: I am sort of pleased that the applicant has taken the approach that they are going to go ahead and try to estimate the bypass voiding by doing a calculation. What needs to be done is to sort of think through the process and make sure they are using a single bypass void -- a single bypass calc -- channel will actually produce a bounding estimate for this penalty. And whether that -- you know, any radial distribution vis-a-vis, the average radial value that you will get by using a single bypass channel is going to produce a higher penalty, that's what we need, too. So you just need to convince yourself and convince, you know, people who will understand what you are doing that this will actually give you a bounding estimate for the penalty.

CHAIR BANERJEE: Well, I think that would be one of the things that needs to be made quite convincing to the full Committee then.

MEMBER ABDEL-KHALIK: Right.

CHAIR BANERJEE: I think we have good arguments right now, but they need to be marshaled and delivered in a very short time, very quickly.

MEMBER ABDEL-KHALIK: The second thing is

that, you know, as far as ATWS instability, I am still not very comfortable with heuristic arguments. I do understand that the purpose of the simulated demonstrations was to show that the operators can respond within a reasonable time, but still I would like to see some analysis done if that is at all possible.

CHAIR BANERJEE: Graham?

MR. WALLIS: Well, I think Susquehanna has been responsive to the questions we have and one can always go and ask for more and more and more and more. I mean, convince me yet again some more. And I felt that I was -- the things that I looked into in some detail, like the void effects and so on, I think they did an adequate job. On the bypass voiding, I didn't really study that until I came here enough to know whether it's adequate or not. So I'm a little uncertain about that one.

On the ATWS, I really feel that I'm not competent to judge all this heuristic stuff without having a much better feel for what it all means. So I would have to somehow understand much better these arguments about the friction here and there. It didn't put together an argument that convinced me, but

maybe it convinced -- maybe it's convincing enough when you understand enough about it.

I wouldn't -- if I were the staff, I would be reluctant to say it's okay.

CHAIR BANERJEE: There is another approach and this is something which I would like to just dance around. I mean, there have been heuristic arguments made. We have analyses of ATWS which are available to the staff and to us. It can be that those could be examined to see if these heuristic arguments hold water or not.

MEMBER SIEBER: Right.

CHAIR BANERJEE: Well, that gives us added level of assurance. But let's take that up in a little while. Sam?

MEMBER ARMIJO: Well, I agree with everything that has been said up to now. As far as the ATWS instability, I think the arguments are sound. They are going to take mitigating actions unless there is some reason to believe that you can -- it wouldn't work or you wouldn't have enough time. I don't know what else they can do. I don't know what else staff would require.

All the penalties look reasonable. The

absolute values of those penalties, I think that's really properly the staff's job. In the thermal-mechanical response, my issue is that I think the very narrow view of the threats to the fuel in the event of a whole core transient, not steady-state operation, but I think limiting that to fuel temperature and very large cladding strains is I think just a little just too narrow and it wouldn't -- and I think tools are available where the licensee or the staff could do a quick analysis and say hey, look, this is not much of a threat or they may find there is a threat to having a lot of fuel failures.

And basically, I know it's not regulatory, but I think it would be a great embarrassment to the system, including ourselves if something happened and we failed a lot of fuel and we didn't -- hadn't analyzed for that phenomenon.

CHAIR BANERJEE: Sam, what do you think should be done in time for the full Committee meeting? We're going to have to have a letter from this Committee.

MEMBER ARMIJO: I would have to think about it a little bit more. I know what I would do if it -- if I were a licensee, I would run a code. I

would run a FALCON code or such an event, unless somebody can say hey, look, there is no whole core transient that is ever going to last more than 2 minutes or 3 minutes or 10 minutes, give me a number, without being terminated by a scram. And you know, if that's the case, then I don't have an argument. I'm just happy.

MEMBER SIEBER: But ATWS doesn't happen that way.

MEMBER ARMIJO: Well, there's too many variables.

CHAIR BANERJEE: ATWS is outside this.

MEMBER ARMIJO: Yes, ATWS is outside the design basis. So that's the only part where I'm uncomfortable. I think all the other stuff --

CHAIR BANERJEE: Anticipated transients, if they cause any major issues with the fuel.

MEMBER ARMIJO: That aren't the classic things we analyze all the time.

CHAIR BANERJEE: Yes.

MEMBER ARMIJO: Just don't -- you know, we're trying not to be surprised in this industry and we know there is a failure mechanism out there that is currently under control. I just want to make sure

that somebody keeps an eye on it, so it doesn't come and bite us.

CHAIR BANERJEE: All right. Mario?

MEMBER BONACA: I was pretty close with the thoughts that Graham is expressing and I think that between the penalties they have accepted and some of the work they are planning to do for the void fraction, I think that they have addressed the issues. I don't feel uncomfortable with this application.

For the ATWS, again, I mean, there is no specific regulatory expectation for the outcome of ATWS without operator intervention. I mean, it's simply an unacceptable condition for which there is no expectation, except there is an expectation that you implement certain steps to contain the event and to control it. And, you know, we have had more than other applications where either they are permitted to go back to the simulator or members have gone there, they have looked over what happened. They develop significant confidence in the response ability of the operator.

CHAIR BANERJEE: But you did more than just ATWS, right?

MEMBER BONACA: Yes.

CHAIR BANERJEE: You did other actions. Did you go too?

MEMBER BONACA: No, I didn't. But again, I think that although it would be interesting to see it, but the treatment of the ATWS event and see how similar it would be or different from an ATWS from the current power level. I don't think it's a regulatory requirement that place the burden on the licensee. So I must say that I'm satisfied for what they have.

Insofar as what we should present to the-- well, I think that's the way I would present it also to the Committee, because the Committee is familiar with the previous applications and that's really what the potential has been and I think it be for the licensee here. Insofar as the presentation in general, it would have to be certainly less focused on thermal-hydraulics portion.

CHAIR BANERJEE: Well, we dealt with the other issues. These are the only remaining issues that need to be dealt with at the full Committee meeting.

MEMBER BONACA: Yeah.

CHAIR BANERJEE: I don't know how much time we have scheduled? Do we have that?

MS. ABDULLAHI: Two hours.

CHAIR BANERJEE: Two hours. So I think that is more than enough.

MS. ABDULLAHI: At least I requested two hours.

MEMBER BONACA: Yes, but I'm saying that then this portion here would have to take a much narrower slice of it as well.

MEMBER MAYNARD: Okay. But didn't we meet with the full Committee on the majority of them?

CHAIR BANERJEE: Yes, that's what I'm saying.

MEMBER MAYNARD: So this next Committee should be --

CHAIR BANERJEE: It is only remaining issues on the table.

MEMBER MAYNARD: Yes, okay. Right. You're right.

CHAIR BANERJEE: So we won't revisit the other issues.

MEMBER MAYNARD: You're right.

CHAIR BANERJEE: I think that --

MEMBER SIEBER: Please, don't.

CHAIR BANERJEE: Yes, yes. As far as I'm

concerned, I mean, unless somebody wants to bring it up.

MEMBER MAYNARD: Yes, anything is fair game.

CHAIR BANERJEE: And that will come up when we have the letter in front of us, I think. I'm sure the staff will be there at that point. Okay.

MEMBER BONACA: I had some -- a few questions that are important at this stage and I may raise them during the full Committee meeting actually.

CHAIR BANERJEE: Well, you might want to give them warning.

MEMBER BONACA: One of the issues being, you know, I would have liked to hear about the internals of this plan. I don't believe that -- I believe that probably several internals have cracks in them and yet, when I look at the internal section of the SER, there is no mention of that.

CHAIR BANERJEE: They now have it.

MEMBER BONACA: They do?

CHAIR BANERJEE: Yes, there is --

MEMBER BONACA: Okay.

CHAIR BANERJEE: I think if you really reread it --

MEMBER BONACA: I have read the section.

CHAIR BANERJEE: -- you might find it. Yes.

MEMBER BONACA: Okay.

CHAIR BANERJEE: Some treatment.

MEMBER BONACA: So it's being dealt with already?

CHAIR BANERJEE: Yes. Of course, you are perfectly --

MEMBER BONACA: Well, just because I'm not comfortable in ignoring them. I mean, if you have cracks and you claim that you have stabilized them at the current power level, I would like to hear that going 20 percent power, uprate power maybe will increase vibrations and other effects that they could discuss. The expectation is that the cracks are stabilized. And what is the basis for it?

CHAIR BANERJEE: The SER now has a discussion of this, right, of cracks?

MR. GRUMMER: Specifically --

CHAIR BANERJEE: I thought I read something.

MR. GRUMMER: The version that was provided in this last go-around updates --

CHAIR BANERJEE: But even in the previous version, it had something on it.

MR. GUZMAN: I'm sorry, Rich Guzman.

CHAIR BANERJEE: We can look.

MR. GUZMAN: I don't believe that was the intent in the last update of the SE, but I would have to know exactly which SE you are referring to.

CHAIR BANERJEE: I'm referring to not the current version, but the one which was there when we presented to the full Committee. That SE, I thought, already had stuff on cracks.

MR. GUZMAN: That is correct, yes.

MEMBER BONACA: In general, my point is that this is an older plant. It's not brand new and operating experience should be an element of the evaluation or at least presented as a basis for establishing why in certain cases evaluation only questions original criteria and they are not affected and the margin is supposed to remain there. And why-- and what other things may be affected by the aging of the plant?

There is no mention of it anywhere. You know, if you look at the evaluation, it deals with the plant as it is now.

MEMBER ARMIJO: I think I read and I don't know if it was in the most recent version, there was something in -- related to PP&L adjusting hydrogen water chemistry to provide an appropriate level of protection for the internals in view of the higher power operation and the core.

MEMBER BONACA: Yes, it talks about --

MEMBER ARMIJO: So --

MEMBER BONACA: -- resolution of elements.

MEMBER ARMIJO: Well, you know, it's the expectation that if hydrogen is stopping cracks from growing.

MEMBER BONACA: We get to the point where there is almost a belief that cracks are good, because they stabilize them.

MEMBER ARMIJO: I don't believe that.

MR. WALLIS: They are for you, Sam.

MEMBER ARMIJO: Not me.

MR. WALLIS: What I said there, since you mentioned the SER, I think that not only has the applicant come back and responded to our questions, but the staff has. It didn't say that, but, you know, the SER has changed significantly for the better in certain areas. And I think that's due to the stimulus

that we have -- the Subcommittee gave them.

CHAIR BANERJEE: Maybe.

MR. WALLIS: They have responded well. Otto?

MEMBER MAYNARD: Well, I am kind of afraid to make a qualitative statement.

MEMBER SIEBER: You should be.

CHAIR BANERJEE: You risk it.

MEMBER MAYNARD: But there's no way I could do another analysis and calculation on these issues.

CHAIR BANERJEE: We're going to miss happy hour anyway, so you can take your time.

MEMBER MAYNARD: Well, I agree with many of the comments that have already been made. I believe that both the NRC staff and the PP&L have been very responsive to our questions. We have asked a lot of questions, dug into a lot of issues. I think that they have tried to be very responsive and have done a good job overall of doing that.

I believe that with the license condition and with the additional work that the applicant has agreed to do with the staff, that I believe that that, in addition to what all they have done, does provide

the adequate assurance, you know, remember our challenge is to provide reasonable assurance of adequate health and safety of the public. And I believe that it meets that requirement with the license condition and some of the additional work to be done.

I think that the margins that are being established, while I can't judge whether they are totally adequate or not, my experience has typically been when we have set something like this that we actually provide more margin, than if we went through and spent all of the money, time and effort to do a detailed calculation. Usually, these types of things establish more margin than we would through the far more rigorous analysis for this. So I'm comfortable with that.

Again, on the ATWS, I think we need to keep in mind that that is a beyond design basis accident. I believe that there is adequate justification showing that we end up in the same point. So I think we have to ask ourselves are we really challenging the EPU aspects of this or are we really challenging what the current license is?

Our task is to take a look at the

effective EPU. And I believe that the arguments are there for this EPU, that gets you to the same conditions. And so I personally don't believe that there is a need to require them to do any more analysis. Again, I think MELLLA+ operating in that region is a totally different question and I would not have necessarily the same views with that.

I think all the rest of it has been said. I do think it's important that we, before we leave here tonight, give both the staff and the applicant a good idea of what we really want to talk about at the meeting coming up.

CHAIR BANERJEE: Sure, absolutely. We must do that. Yes?

MEMBER CORRADINI: I think I guess I agree with Otto. I agree with many things he said. Just to go down the list, the neutronics methods assessment and void fraction correlations, I think I would agree with the approach they have taken. And their modifications to their MCPR relative to that.

For the thermal-mechanical response, I guess I was -- I had been listening to what Sam was saying before and I guess if I were in their shoes, that is the applicant, I might do some calculations

and get some information. It's not a safety issue, but it's important relative to the performance of the plant and it benefits them, not necessarily from a safety standpoint, but it could eventually benefit them in other ways.

For the bypass voiding, I guess I feel good given what they have committed to relative to their calculation. So I don't really have anything there.

In the ATWS instability, I went back to read the letter from a previous review just to make sure I've got it right. So I think we gave caution in a past review of this that it had to be manual, some sort of operator actions to do it. And I think that's the key. So I guess if I were to task the staff with something, which is to get a clear picture of what they think relative to the operator time and if the applicant has demonstrated with these conditions, that they can, essentially within a given time, do the actions they need to, essentially, mitigate.

Because without that, no matter what calculation we do, although I might -- calculations always help a little bit. I would think that it still wouldn't be acceptable. As for the meeting in

December when we have to do this, I guess since we have already covered this, I remember discussing it in November, I guess I think the staff ought to go through this in a fashion which, essentially, gets to the bottom line about the licensing conditions that are going to make a change.

CHAIR BANERJEE: Yes.

MEMBER CORRADINI: And then clearly we're going to have discussions, they should be ready. I wouldn't necessarily offer them to make a presentation. They should just be ready, because they will get the questions, particularly relative to the thermal-mechanical response of bypass voiding and the ATWS instability, because others will have questions. And then given that, it probably would proceed in a more efficient manner.

CHAIR BANERJEE: David?

MR. DIAMOND: All right. I will repeat some of the same things that have already been said just to explain what my perspective is. Starting with the neutronic methods, I think that the staff has done an excellent job in their review, something which came out this round and not in the previous round, and I would agree with the approach that they took to impose

a penalty, the particular penalties that they did impose. And also, agree with their thinking behind the quantifying of that penalty. It wasn't -- it certainly was -- an engineering judgment was involved, but I think it was a good engineering judgment. So I think that was a good piece of work by the staff.

Let me skip to the bypass void, which I think will be resolved through the analysis that the licensee will do and also, it sounded as though the staff may also be doing some analysis. And the only thing that I would caution is that although a portion of that analysis has already been identified as being conservative, one has to look at all the assumptions that are going into that analysis, just to make sure that you are not throwing in some non-conservative assumptions.

And Said, I think, has made this point again and again about just the radial distribution of the bypass void being a factor and, you know, what does that bring to the penalty. With regard to ATWS, I would just repeat that I think that the EPU operation and the EPU zone does not change things relative to previous operation of the plant with regard to ATWS instability.

Now, there is this other question of whether we have done the right regulatory things with regard to ATWS instability in the past. And some of that is based on looking at analysis which the ACRS has not looked at and which probably they should look at in the future, because it's a very difficult analysis to do.

And proving that you have core coolability is predicated on making sure that your models are appropriate and that you have sufficient time to take actions. And as I say, that's a separate issue. Maybe the Committee can get into it when it comes up with respect to MELLLA+, because it is certainly more critical when you go to MELLLA+ than it is when you remain on the MELLLA line.

So that I don't think has to do with approval of the EPU, but I think it's something that the Committee, the full Committee should be made aware of that ATWS is something that should be looked at.

CHAIR BANERJEE: Okay. Thanks, David. Let me try to summarize, if I miss anyone of my colleagues, please, call me up. First of all, we want to focus during the full Committee meeting on the issues that were raised.

COURT REPORTER: You need to turn towards the mike I think.

CHAIR BANERJEE: Sorry. Well, I'll speak with my back there. I guess I'm comfortable speaking with my back to you. I think the first thing is that we should limit the discussion at the full Committee meeting to the issues that were on the table today. And we should not revisit any of the issues that we had already dealt with. I think, as far as I'm concerned, we have adequately dealt with them up to now.

Okay. So the points here I would like to sort of consider first is the revisions to the SER with regard to neutronic methods and the associated safety margins and so on that were added, were very well done, I thought. And the staff really did an excellent job with the SE and should be complimented on responding so well.

I think that perhaps a little bit more discussion of the margin that was put on should be probably made at the full Committee meeting, because things were not completely clear. From the point of view that we put a very different SLM CPR margin on Vermont Yankee and I'm sure that there will be Members

of the Committee who will want to know why and maybe that we would have to have that discussion without Areva and without PPL even. But we might have to have that discussion. So I'm sure you have got clear reasons for it, but we should know why that was done.

With regard to the void fraction correlation effects, again, it was nice that both PPL and the staff responded to well to our comments earlier. It seems that there are sort of effects which cancel each other out, so that there are no penalties needed associated with the uncertainties in the void fraction correlation. This is a relatively new finding and I think it needs to be supported a little more completely, because we have, in previous times, put penalties or margins on OLM CPRs and they may not be justified in the light of what we have found out today.

If they are not, then we should certainly revisit that for several other places where we have actually put those margins on. Okay. And the interesting point today was it was done with two codes, but I still have -- I mean, two correlations which were different. I personally still have some reservations about that.

It would be different if you took a single correlation and changed the slip ratio, so that you went from homogeneous to almost separated flow and you got that result. I would buy that. This is a little bit harder to buy. Okay. So I don't know what message that is sending to you, but at least that's the uncomfortableness that I have with that.

Okay. With regard to the thermal-mechanical response, I'm sure this issue will lead to quite a bit of discussion at the Committee, so how one presents it and how one deals with it, I think you will have to figure out. But you know that Sam has significant concerns about this and I think the rest of the Subcommittee also would like to see some sort of acceptable sort of response to this, so that we can feel comfortable going ahead with this with our recommendation.

Bypass voiding, I know this is going to be very difficult to handle and the type of approach you have taken, I think, is the best that can be done right now. And certainly the margin that you have put on appears to be sufficient. So I got the feeling from the Members here that while it would be nice to do the modeling better, I think what has been done is

acceptable. Certainly acceptable right now. And that's what I feel.

With regard to ATWS instability and ATWS, is a little bit of a tougher call, didn't really see any calculations which showed we would end up at the same point. We have heard qualitative arguments as pre-CPPU and post-CPPU. I don't think, however, that you have enough time to make more than any qualitative arguments at the moment. So whatever support you could bring from previous quantitative analyses that are available to you, because this is not the first time that we have done an EPU, maybe with different fuel we have done EPUs, but we have done EPUs.

Again, if the staff wants to close the session to Areva and show us that this is what we have found in previous EPUs, that would be very useful. And I think with our Members having visited Susquehanna and having seen the performance of the operators, this is an added level of assurance that actions can be taken in time, because it's clear that ATWS is unacceptable consequences.

And, therefore, it's going to be how you mitigate these actions that will come up. So from that point of view, if it was presented in a clear

way, so that it was shown that the EPU didn't make such a big difference compared to what we currently license, do we have an acceptable approach there for ATWS?

So I think by and large, it should be fairly smooth sailing. You never know with the full Committee, of course, whether it will be smooth sailing, but my feeling of the sense of the Subcommittee is that the Subcommittee, except for a couple of issues here and there, are satisfied. And these issues really are tough calls right now, because we may not have the tools to do anything, so we're going to have to make a judgment on these.

MR. WALLIS: On your point about the two codes, that they showed with Dix-Findlay are up here and with the other one you are here, so I sort of thought that it's the same thing as twiddling at Dix-Findlay a little bit to make it move sideways. So sensitivity to Dix-Findlay is kind of captured by having the fact that the one code is parallel to it. It's almost the same.

CHAIR BANERJEE: Well, perhaps it is right, but, you know, this slight of hand that baffles the eye in these things a little bit, I like to get

these just really straightforward. They just crank the stiff coefficient and you get -- I'm sure that within Dix-Findlay you can change things.

MR. WALLIS: I can predict a lot of things to crank inducing.

CHAIR BANERJEE: A lot of things to crank. You can crank it, I'm sure. At any rate, so thank you and again, I would like to thank PPL and Areva and the staff for excellent presentations and your responsiveness. Done.

(Whereupon, the meeting was concluded at 7:15 p.m.)