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UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

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ADVISORY COMMITTEE ON REACTOR SAFEGUARDS

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MEETING ON THERMAL-HYDRAULIC PHENOMENA

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TUESDAY,

MARCH 14, 2006

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The Committee met in The Baccarat Suite of the Hyatt Regency Bethesda, One Bethesda Metro Center, Bethesda, Maryland, at 10:25 a.m., Graham B. Wallis, Chair, presiding.

MEMBERS PRESENT:

- GRAHAM B. WALLIS ACRS Chairman
- JOHN D. SIEBER ACRS Member
- RICHARD S. DENNING ACRS Member
- THOMAS S. KRESS ACRS Member
- RALPH CARUSO ACRS Staff

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P R O C E E D I N G S

(10:23 a.m.)

CHAIRMAN WALLIS: I'm sorry to delay the meeting. We had some two phase atmospheric phenomena which were rather impenetrable yesterday.

The meeting will now come to order.

This is a meeting of the Advisory Committee on Reactor Safeguards, Subcommittee on Thermal-Hydraulic Phenomena.

I am Graham Wallis, Chairman of the subcommittee. The subcommittee members in attendance are Tom Kress, Jack Sieber, and Rich Denning.

The purpose of this meeting is to review the analytical methods to be used to evaluate stability scenarios for the economic and simplified boiling water reactor. The subcommittee will hear presentations by and hold discussions with representatives of the NRC staff, General Electric Nuclear Energy, and other interested persons regarding this matter.

The subcommittee will gather information, analyze relevant issues and facts, and formally propose positions and actions as appropriate for deliberation by the full Committee.

Ralph Caruso is the designated federal

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1 official for this meeting.

2 The rules for participation in today's
3 meeting have been announced as part of the notice of
4 this meeting previously published in the Federal
5 Register on March 3, 2006. Portions of this meeting
6 will be closed for the discussion of proprietary
7 information.

8 A transcript of the meeting is being kept
9 and will be made available as stated in the Federal
10 Register notice. It is requested that speakers first
11 identify themselves and speak with sufficient clarity
12 and volume so that they can be readily heard.

13 We have received no requests from any
14 members of the public to make any statements.

15 Now, we got a late start, but I think if
16 everyone is well prepared we can get things done
17 pretty effectively.

18 The ESBWR differs in some ways from
19 previous BWRs, and I would hope that we could focus on
20 those differences and how well those are modeled by
21 TRACG, and we don't need too many reiterations of how
22 well TRACG does on conventional BRWs. We're
23 interested in the differences and if they are properly
24 appreciated.

25 And the problem we have is that, as far as

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1 I know, there are no experimental results. So the
2 case has to be made very, very clearly that what is
3 being modeled is really realistic. We don't have
4 something to compare it with as far as I know as a
5 reality check.

6 That is why I and some of my colleagues
7 have asked for details of the model to be explored
8 with some thoroughness so that we can convince that it
9 is doing the right sort of thing.

10 I have a grade sheet which records how
11 well you do on those matters.

12 Well, now, Amy Cabbage has been dying to
13 give a talk and get things going. I will call on you,
14 please, to get us started, Amy.

15 MS. CUBBAGE: I don't have any prepared
16 remarks this morning. I would like to in the interest
17 of time introduce Mr. David Hinds of GE who will
18 provide some information.

19 MR. HINDS: Okay. Thank you.

20 This is David Hinds with GE, ESBWR
21 engineering manager.

22 We'll have two presentations here by the
23 GE staff lead-off with Jens Andersen with the TRACG
24 qualification and then with Wayne Marquino discussing
25 some other stability related issues, and backed up by

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1 Lev Klebanov here.

2 So without further ado, we'll go ahead and
3 kick off with Jens' presentation.

4 CHAIRMAN WALLIS: We are going to close
5 the session.

6 (Whereupon, the foregoing matter went off
7 the record at 10:28 a.m. and went back on
8 the record at 4:47 p.m.)

9 CHAIRMAN WALLIS: So I'd like to ask the
10 subcommittee members to give an opinion as to whether
11 they think things have moved along enough that we
12 should go to the full Committee and then we can talk
13 about what needs to be presented there.

14 So, Tom, would you like to start.

15 DR. KRESS: You want to start on my end
16 first?

17 CHAIRMAN WALLIS: Yes.

18 DR. KRESS: I certain am convinced that
19 they're ready, and I think they provided very good
20 answers to our questions, and it's a matter of what we
21 want to choose out of this to present to the full
22 Committee, but I think definitely we're ready to go to
23 the full Committee now.

24 I would omit all of the background stuff
25 that we heard because the Committee already knows

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1 that, and I would stick to the general questions we
2 asked. I certainly liked the presentations by Jens
3 and by Jose March-Leuba. I don't know if we can get
4 him back again. I guess we can, but they were very --

5 MR. MARCH-LEUBA: I'm flying to Moscow
6 that day.

7 DR. KRESS: Okay. Well, maybe the staff
8 can fill in the void, but I think we're ready.

9 DR. DENNING: Yes. I absolutely agree,
10 and certainly I'd like to commend GE and also the
11 staff and their consultants. I think they've done a
12 very good job of presenting to us today, and the
13 information gives a consistent story.

14 CHAIRMAN WALLIS: Jack.

15 MR. SIEBER: Well, it's unfortunate that
16 I missed the meeting where supposedly not quite as
17 good a job was done. I probably would have enjoyed
18 it, but the question is really is the work that's been
19 done adequate for the purpose and based on the
20 information that was provided today plus all of the
21 stuff that you mail us all the time, I think that it
22 is and I think that we're ready for a full Committee
23 presentation.

24 I think it will be difficult because there
25 are a lot of issues that you've worked very hard to

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1 verify. It's going to be difficult to pare this down
2 to a smaller amount of time, and I don't have
3 suggestions on that. I would have to study that more
4 thoroughly, and I might rely on our Chairman and the
5 staff for that function.

6 But I think overall the work that has been
7 done has been good.

8 CHAIRMAN WALLIS: So this is a good story,
9 I think. This is more sort of a pleasant play like
10 "All's Well that Ends Well," rather than "Hamlet,
11 Prince of Denmark," or something like that.

12 I think you folks on both sides were
13 really responsive to the subcommittee. That's what we
14 hope to see when we meet with you, and in this case,
15 I think this is a good story.

16 I was a bit apprehensive before because I
17 wasn't sure what was going to come out of this, and I
18 think you may need to rewrite that second SER that we
19 saw in light of what we heard today because if you
20 just read the document, it doesn't seem to be much of
21 an improvement over what we saw last time.

22 Now, regarding the presentation before the
23 full committee, I don't think you need to go over all
24 the old ground about how TRAC worked so well and all
25 of the past issues. The question is there are some

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1 new features of ESBWR. It doesn't have pumps. It has
2 circulation. It has a chimney. Because of that we
3 had to consider could TRAC measure or model these
4 phenomena, and have a list of them. These are the
5 things that make ESBWR different, and this is how we
6 went about verifying that, yes, indeed, it could do
7 it, and here's the evidence. That was what I -- and
8 if you just take the part of your presentation today
9 which was in those areas, I think that that would do.

10 I mean, it didn't take us that long today
11 when we actually got down to the meat of it. That's
12 what you need to present to the full committee. Is
13 that what my colleagues would agree to?

14 I mean, we've all seen, I think we've
15 probably all of us seen TRAC do the kind of job it did
16 before on these old stories, and that has been
17 accepted before. So the real thing was was it up to
18 the challenges of this new reactor, and because we
19 don't have prototypes, data and so on, I think you
20 have to say something about CRIEPI or the tests which
21 in some way are like ESBWR and how you can model them.
22 And if you could perhaps show a bit more of the direct
23 comparison between data and prediction there, all on
24 the same page, not on different pages or something,
25 and then maybe the start-up thing -- they were on

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1 different pages the way you presented them today --
2 that would help.

3 So I think you've got the right material.
4 We need maybe about a quarter or something of what you
5 presented today, but the real meat of it and I think
6 that we should be able to have a happy ending because
7 I never know what other questions the Committee is
8 going to ask.

9 Personally, I'm pleased. I mean, I came
10 down here prepared to tell you guys that you haven't
11 performed, but you know, it's nice to see that as far
12 as I can tell unless you hoodwinked me entirely, you
13 did.

14 MR. SIEBER: (Speaking from an unmiked
15 location.)

16 CHAIRMAN WALLIS: Well, it's a pleasure
17 because sometimes you get into sort of a stubborn
18 mode, and this group is not like that at all, but you
19 get some folks who come before ACRS and we ask them
20 questions, and they get into the stubborn mode where
21 they're not going to respond, and I don't think we saw
22 any of that. It was very open and professional and
23 very pleasant.

24 PARTICIPANTS: Thank you.

25 CHAIRMAN WALLIS: Thank you.

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1 Are you ready to finish up? I'm just
2 trying to say something nice before five o'clock, as
3 I always do, of course.

4 (Laughter.)

5 CHAIRMAN WALLIS: So I'm very happy to
6 adjourn ahead of time. Thank you all, and we'll see
7 you again, or at least some of you, in a few weeks.

8 Thanks.

9 (Whereupon, at 4:52 p.m., the meeting in
10 the above-entitled matter was concluded.)

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