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UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

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ADVISORY COMMITTEE ON REACTOR SAFEGUARDS (ACRS)

548TH MEETING

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FRIDAY, DECEMBER 7, 2007

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The meeting was convened in Room T-2B3 of
Two White Flint North, 11545 Rockville Pike,
Rockville, Maryland, at 8:30 a.m., Dr. William J.
Shack, Chairman, presiding.

MEMBERS PRESENT:

- WILLIAM J. SHACK Chairman
- MARIO V. BONACA Vice Chairman
- SANJOY BANERJEE Member
- SAID ABDEL-KHALIK Member
- JOHN W. STETKAR Member
- OTTO L. MAYNARD Member
- DENNIS C. BLEY Member
- MICHAEL CORRADINI Member
- GEORGE E. APOSTOLAKIS Member
- DANA A. POWERS Member
- J. SAM ARMIJO Member
- JOHN D. SIEBER ACRS Member-At-Large

1 NRC STAFF PRESENT:

2 SAM DURAISWAMY

3 RICH GUZMAN

4 ZENA ABDULLAHI

5 PETER YARSKY

6 TAI HUANG

7 KAMAL MANOLY

8

9 ALSO PRESENT:

10 RALPH GRUMMER

11 MIKE GARRETT

12 DOUG PRUITT

13 CHET LEHMANN

14 YOUSEF FARAWILA

15 JAMES WILLIAMS

16 PAUL CLIFFORD

17 CHRIS HOFFMAN

18 JOHN JOSEPHS

19 JOHN BARTOS

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C-O-N-T-E-N-T-S

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<u>AGENDA ITEM</u>	<u>PAGE</u>
Opening Remarks by the ACRS Chairman	4
Extended Power Uprate Application for The Susquehanna Nuclear Power Plant Remarks by the Subcommittee Chairman	6
Update on steam dryer	9

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P R O C E E D I N G S

(9:01 a.m.)

OPENING REMARKS BY ACRS CHAIRMAN

CHAIRMAN SHACK: The meeting will now come to order.

This is the second day of the 548th meeting of the Advisory Committee on Reactor Safeguards.

During today's meeting the committee will consider the following: extended power uprate applications for the Susquehanna Nuclear Power plant; a subcommittee report on the ESBWR; future ACRS activities/report of the Planning and Procedures Committee; reconciliation of ACRS comments and recommendations.

We also had election of ACRS officers for calendar year 2008, and preparation of ACRS reports.

The meeting is being conducted in accordance with provision of the Federal Advisory Committee Act. Mr. Tanny Santos is the designated federal official for the initial portion of the meeting.

We have received no written comment or requests for time to make oral statements from members of the public regarding today's session. A transcript

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1 of a portion of the meeting is being kept, and it is
2 requested that speakers use one of the microphones,
3 identify themselves, and speak with sufficient clarity
4 and volume so they can be readily heard.

5 Ms. Janet Riner, a new member has joined
6 the ACRS staff. Ms. Janet Riner joined the ACRS staff
7 as executive secretary on November 13th, 2007. Prior
8 to joining the ACRS she worked for the office of
9 general counsel, rulemaking, in the fuel cycle
10 division - and the fuel cycle division, I assume
11 they're not one.

12 Her responsibilities include assisting the
13 executive director and PMDA director, as well as the
14 chairman of the ACRS and ACNW.

15 Welcome aboard.

16 (Applause)

17 Our first item of business today is the
18 extend power uprate for the Susquehanna Nuclear Power
19 Plant.

20 And Dr. Banerjee, at the very last moment,
21 has made it just in time to lead us through this.

22 EXTENDED POWER UPRATE APPLICATION FOR
23 THE SUSQUEHANNA NUCLEAR POWER PLANT

24 MEMBER BANERJEE: Well, I'm not going to say
25 greetings from Kyoto.

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1 We held a meeting of the subcommittee
2 first on October 9th and 10th, and then on November
3 14th.

4 Right after the October 9th-10th meeting
5 we had a full committee meeting where we discussed a
6 number of the issues which had come up during the
7 subcommittee meeting.

8 And then on November 14th we focused
9 primarily on Aerva methodology application to ESES EPU
10 and discussed a variety of topics, amongst them
11 validation of the Areva neutronics methods, data for
12 the void fraction correlations that are used, thermal
13 mechanical plant response, impact of bypass voiding,
14 ATWS instability, and so on.

15 In any case today the staff and the
16 licensee will summarize the main points that we
17 addressed in this second meeting, so we won't revisit
18 the points unless the committee wants to of course
19 that we brought up in the first meeting.

20 And what we are really trying to do is to
21 discuss some of the thermal mechanical questions that
22 arose, and were brought up actually by Sam during the
23 subcommittee meeting. We expect to hear from PPL and
24 the staff on this, and we close the meeting as
25 required, so we could go ahead with that.

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1 We want to discuss some of the margins
2 that might need to be added, because of application of
3 Areva methods, and we also want to put it into the
4 context of what we did to GE in some sense.

5 So at least we want equity at that point.
6 We may need to close the meeting to Areva and GE at
7 this point, and have the staff address this issue.

8 Finally we want to probably hear a little
9 bit more about the void fraction correlation and how
10 we are propagating the uncertainties in this
11 correlation into the safety analysis, and perhaps
12 we'll hear something about this.

13
14 I think there was some issue that arose
15 with the steam generator in between while I was in
16 Japan, so I haven't got on top of that yet.

17 CHAIRMAN SHACK: You say steam generator;
18 you mean steam dryer.

19 MEMBER BANERJEE: Sorry, steam dryer,
20 sorry. Jet lag. Steam dryer.

21 As far as I know there is no - nothing
22 that we need to be alarmed about right now. But we'll
23 need to hear about this as well.

24 So with that I think we can get on with
25 the meeting.

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1 Who is going to talk to us first here?

2 MEMBER SIEBER: NRC staff.

3 MEMBER BANERJEE: NRC staff? So is it
4 Peter Yarsky? Michael Gorski.

5 MR. GUZMAN: Okay, so this is Rich Guzman.

6 MEMBER BANERJEE: Will PPL start off?

7 MR. GUZMAN: Members can look in their
8 packet. The agenda is part of that. PPL will start.

9 MEMBER BANERJEE: So let's start then with
10 PPL. And PPL will be talking about various neutronics
11 methods, void fraction correlations and so on.

12 We need to close the session right at the
13 moment. So can we close this session, and I guess the
14 transcript should be closed as well. Anybody who
15 shouldn't be here, please.

16 (Whereupon at 8:37 a.m. the
17 proceedings in the above-
18 entitled matter went into
19 closed session to return to
20 open session at 11:30 a.m.)

21 MEMBER BANERJEE: Thank you very much, and
22 we will get an update on the steam dryer now.

23 UPDATE ON STEAM DRYER

24 MR. MANOLY: Hi, This is Kamal Manoly. I'm
25 the branch chief in the NRR for the mechanical and

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1 civil engineering branch. And I assume you are
2 alluding to the latest finding about - in the analysis
3 about PPL discovered there was an error in the model.

4 And we had a conference call with the
5 licensee, and I think GE also was involved there. And
6 basically in the model, in the ANSYS model, they did
7 not restrain the boundary conditions in the analysis
8 that were submitted.

9 I think the restraint came from the water
10 was by the restraint to the dryer, when the water is
11 obviously restrained by the vessel.

12 They did the analysis with the correct
13 boundary conditions, and they found that still - they
14 meet the fatigue limit, that's the understanding, but
15 it was very close to the limits that they opted to
16 provide - to do a modification by providing a bracing
17 near the bottom.

18 MEMBER BANERJEE: The stresses went up?

19 MR. MANOLY: Yes, obviously, because of
20 restraint. But it still, according to what they told
21 us that it was still within the fatigue limits, close,
22 very close to the limit. But they wanted to provide
23 more margin so that they are going to provide a
24 modification by including a brace, so that it monitors
25 the stress at the lug supports.

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1 And based on what they explained to us I
2 didn't really see any -

3 CHAIRMAN SHACK: Does it change the
4 locations where they might want to monitor strains and
5 stresses? I mean did it shift the whole pattern
6 around? Are they going to have to rethink the
7 instrumentation?

8 MR. MANOLY: Well, I haven't received yet
9 the details of the information, but by putting that
10 modification, it lowered the stress.

11 CHAIRMAN SHACK: Yes, the overall stress.
12 It's just a question of whether the patterns change.

13 MR. BARTOS: This is John Bartos from PPL.
14 No, it didn't substantially change the pattern of the
15 stresses. Some of the stresses did move around. Some
16 went up; some obviously - there were some that
17 actually went down.

18 So it just - it moved the stresses around.
19 But we did have one really low margin stress component
20 that GE is addressing.

21 MEMBER BANERJEE: How are we going to leave
22 this matter? You are going to get to review
23 everything once again.

24 MR. MANOLY: Well, this is the as-built
25 that they have indicated from the beginning, and as a

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1 license condition, they are going to do the as-built
2 analysis, and that's part of the as-built analysis.

3 MEMBER MAYNARD: I don't know that we need
4 to do anymore. It is within the license condition.
5 It's data that they've got to provide, and the staff
6 review it.

7 So I think it fits within what we've
8 already -

9 CHAIRMAN SHACK: Yes, I mean it doesn't
10 change any of our conclusions.

11 MEMBER BANERJEE: I'm okay with that.

12 MR. GUZMAN: And this is Rich Guzman. Just
13 to reiterate, our approach originally was to - because
14 these are license conditions, to confirm basically the
15 as-built design.

16 So as part of the license commissions,
17 they were already scheduled to provide us the final
18 as-built stress results, which will capture this
19 error.

20 And obviously we talked in the previous
21 subcommittee about limit curves. Obviously, that is
22 going to give the final confirmation during those
23 holdpoints, as long as they are below the limit curves
24 and margins shown there, staff considered it
25 acceptable.

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1 MEMBER BANERJEE: How did this error arise?
2 Do you have any -

3 MR. MANOLY: I think they just discovered
4 it. I don't know how they discovered it. But someone
5 discovered it.

6 MR. BARTOS: GE discovered it when they
7 went to look at the reaction forces on the lugs. They
8 found that the files were empty. And that kicked off
9 an investigation.

10 The models are correct. There were
11 restraints in the finite model. But ANSYS also has to
12 calculate load step files. And the restraints were
13 also in the load step files.

14 Now there are 2,000 load step files in the
15 - early on in the design GE was looking for a way to
16 streamline the process. So they knew that the
17 restraints were in the ANSYS file itself, the model.
18 So they thought, well, if we could delete them from
19 the load step files, if we made a change to the
20 restraints, that would streamline the process. It
21 would save us time.

22 They went, this was a conscious decision,
23 they went and looked at the document internally in GE,
24 and decided that they could not find anything that
25 would prevent from from doing that.

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1 What they found later, what turns out is
2 when they go to run the ANSIS model it looks a the
3 constraints in the model and it looks at the
4 constraints in the load steps, and if it seems a
5 difference it defaults to the load step constraints,
6 which were removed.

7 So that was the whole nexus of this issue.

8 MEMBER SIEBER: So Quality Assurance
9 actually does work.

10 MEMBER BANERJEE: That is a bit scary,
11 because you wonder what else is there.

12 MR. BARTOS: That's a good question. It's
13 a question we asked GE. And we asked them
14 specifically to go back, did they make any other,
15 quote, process changes, which could result from this.

16 Their response was, they went back and
17 they did take a look at that, and that there were no
18 other process changes that they made.

19 MR. MANOLY: I mean the model was not
20 restrained. You will get singularity, and you know,
21 the free structure. But clearly it was a restraint at
22 some other location. That's why the analysis was
23 involved.

24 MEMBER BANERJEE: Okay, I think Bill's
25 question was really the most relevant that whether it

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1 changes the patterns or not, because we are relying a
2 lot on these measurements, and their correlation with
3 what's happening in the steam lines, you know, the
4 string gauges there.

5 So I mean we are playing by the sort of
6 one step at a time, seat of the pants. And as the
7 stress patterns change, that would be a really big
8 thing. But if it hasn't, that's all right then.
9 Okay.

10 I still can write the same letter; that's
11 important.

12 Thank you very much.

13 Do we have any other questions to put to
14 the licensee or the staff? Are we happy? Can we move
15 on now?

16 And I'm going to hand it back to you, Mr.
17 Chairman. It's in your hands.

18 CHAIRMAN SHACK: Well, I would like to
19 thank the staff and the licensee for a thorough
20 presentation and a rapid response to many of the
21 questions that were raised in the subcommittee. Quite
22 an outstanding effort.

23 I think what we will try to do is to have
24 an ESBWR subcommittee report now, the next item on the
25 agenda.

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1 MEMBER CORRADINI: Okay, Gary is passing
2 out a summary.

3 CHAIRMAN SHACK: We can close the
4 transcript now. We're through.

5 (Whereupon at 11:38 a.m. the
6 proceeding in the above-
7 entitled matter was adjourned.)

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