

May 1, 2006

UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of	)	
	)	
ENTERGY NUCLEAR VERMONT YANKEE,	)	Docket No. 50-271-OLA
LLC and ENTERGY NUCLEAR	)	
OPERATIONS, INC.	)	ASLBP No. 04-832-02-OLA
	)	
(Vermont Yankee Nuclear Power Station)	)	

NRC STAFF'S ANSWER TO NEW ENGLAND COALITION'S  
REQUEST FOR LEAVE TO FILE NEW CONTENTIONS

ATTACHMENT 1

Official Transcript of Proceedings **ACRSF-3331**

**NUCLEAR REGULATORY COMMISSION**

**Title:** Advisory Committee on Reactor Safeguards  
Subcommittee on Power Upgrades

**Docket Number:** (not applicable)

PROCESS USING ADAMS  
TEMPLATE: ACRS/ACNW-005

SISP - REVIEW COMPLETE

**Location:** Brattleboro, Vermont

**Date:** Wednesday, November 16, 2005

**Work Order No.:** NRC-730

Pages 1-374

NEAL R. GROSS AND CO., INC.  
Court Reporters and Transcribers  
1323 Rhode Island Avenue, N.W.  
Washington, D.C. 20005  
(202) 234-4433

**ACRS OFFICE COPY**  
**RETAIN FOR THE LIFE OF THE COMMITTEE**

TROY

ORIGINAL

UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

+ + + + +

ADVISORY COMMITTEE ON REACTOR SAFEGUARDS  
SUBCOMMITTEE ON POWER UPDATES

+ + + + +

WEDNESDAY,

NOVEMBER 16, 2005

+ + + + +

The meeting came to order at 8:28 a.m. at the  
Quality Inn and Suites, in Brattleboro, Vermont. Dr.  
Richard Denning, Chairman, presiding.

PRESENT:

RICHARD DENNING, Ph. D., CHAIRMAN

MARIO BONACA, Ph. D., MEMBER

THOMAS KRESS, MEMBER

VICTOR RANSOM, Ph. D., MEMBER

JOHN SIEBER, MEMBER

GRAHAM WALLIS, Ph. D., MEMBER

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

(202) 234-4433

[www.nealrgross.com](http://www.nealrgross.com)

1 Would someone object if while we're setting this up  
2 perhaps Mr. Blanch came and --

3 MR. BLANCH: No. I'm Mr. Blanch.

4 CHAIRMAN DENNING: Oh, you're Paul Blanch.  
5 I'm sorry. I forgot. What about Jane Newton? Would  
6 she be willing to speak at this time? Do you think  
7 we've got it all set?

8 MS. NEWTON: I'm Jane Newton.

9 CHAIRMAN DENNING: Hold on just a second.  
10 Do you think we've got it or -- in that case, why  
11 don't you just have a seat here for a moment? I think  
12 we're pretty close to having it set up. Sit that  
13 right there for a moment, and I'll introduce you.

14 MR. HOPPENFELD: My name is Joe  
15 Hoppenfeld. I was asked by the coalition to help  
16 them. I was asked by the New England Coalition to  
17 help them with the evaluation of the NRC SER.

18 By way of introduction, I have a Ph.D.  
19 degree from the University of California at UCLA. I  
20 have 40 years of experience in nuclear engineering,  
21 including private industry, AEC, DOE, and NRC. I  
22 published more than 15 papers in peer-reviewed  
23 journals. I own eight to ten patents. I can't  
24 remember how many.

25 The first time I made a presentation

1 power. What you want to know is what is going to  
2 happen to that dryer when the non-loads are generated  
3 when a steam line break, for example, breaks outside  
4 the containment.

5 In conclusion, the uncertainty is that two  
6 models are not sufficient to rely on it and the  
7 ascension to power does not really give you more  
8 confidence in the ability of predicting what happens  
9 to those vibrations and whether the dryer will fail or  
10 not.

11 Next, please. The recently discovered  
12 cracks, 62 cracks, and those that were discovered a  
13 year ago are significant. Now, if there are  
14 manufactured defects, that's fine. You can forget  
15 about that. And that's not that important.

16 But if those arose as a result of stresses  
17 which exceed design stresses, they are very, very  
18 significant because now when you increase the  
19 vibration of the amplitude of the vibration on that --

20 MEMBER WALLIS: I think that can be moved  
21 so that it fits the screen. It seems to have left  
22 from one side to the other. Can't you just --

23 CHAIRMAN DENNING: There is some  
24 incompatibility.

25 MEMBER WALLIS: Can't you just twist

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

(202) 234-4433

[www.nealrgross.com](http://www.nealrgross.com)

1 MR. HOPPENFELD: We don't have experience  
2 with many dryer failures, especially catastrophic  
3 failures, but the experience at Quad Cities is a very  
4 important data point because they had a similar  
5 design. They increased the power by 20 percent, which  
6 increased the flow-induced vibrations. And they have  
7 experienced a severe fragmentation of the dryer and  
8 migration of the fragments to the steam line and to  
9 the core, top of the core.

10 MEMBER WALLIS: How do they get shed down  
11 onto the fuel?

12 MR. HOPPENFELD: I'm sorry?

13 MEMBER WALLIS: I can imagine them going  
14 down on the steam line, but how do they get to the  
15 fuel? I'm sorry. You claim that they get to the fuel  
16 and --

17 MR. HOPPENFELD: To the top of the core.  
18 They do not -- I didn't say the fuel -- I understand  
19 they came down on the top of the core, where the  
20 surges were. One or two were found there. Is that --

21 MEMBER WALLIS: Okay.

22 CHAIRMAN DENNING: One second. Please go  
23 to a mike.

24 MR. SHADIS: I'm sorry. If I could just  
25 interject, the event reports for the Quad Cities

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 incidents related that portions of the steam dryer had  
2 fallen on top of the reactor.

3 MEMBER WALLIS: Okay. Thank you.

4 MR. SHADIS: Yes.

5 MR. HOPPENFELD: I misspoke if I said  
6 entered the fuel. It came on the top. So you really  
7 should look at that thing as a near miss. Now, really  
8 the question is, what happens under, say, a LOCA  
9 accident like the MSIV, where the loads, the dynamic  
10 loads, which could cause excitation of the resonant  
11 frequency of the dryer and basically a catastrophic  
12 failure, on all of these chunks flying around in the  
13 team line? Are you going to have the MSIV when you  
14 need it? You've got two of them, but are you going to  
15 have them?

16 That issue is not being addressed. That  
17 is an important issue. You can't just forget about  
18 these components, even though the dryer is not a  
19 safety-related component. They must go somewhere.

20 MEMBER WALLIS: So what you are worried  
21 about is the failure to close the MSIV, rather than  
22 blockage of the line?

23 MR. HOPPENFELD: As a result of the  
24 dynamic loads, not your normal condition. Now, under  
25 normal condition, you probably increased the

1 probability. You increased the crack propagation.  
2 You've got have more.

3 Potentially they're going to be larger,  
4 but the issue is and the question is, what is going to  
5 happen on the dynamic loads? And that I have not seen  
6 addressed. And it is required to be addressed because  
7 it does affect the delta CFE.

8 Can I have the next slide? I don't  
9 believe, although that was viewed as a new phenomena,  
10 the failure of Quad Cities, I don't believe that, even  
11 -- I don't believe that after two years, our  
12 understanding has really significantly been improved  
13 or the SER does not reflect an increase in  
14 understanding. That statement was made by the  
15 industry two or three years ago. And I don't think in  
16 the last three years there has been a significant  
17 improvement in this area.

18 Next, please. Now, the requirements are  
19 very, very specific. If you are coming and requesting  
20 EPU or you are changing the tech specs, that's what  
21 you've got to do. And I don't see that in that SER  
22 that that was done, that these requirements are met.

23 I heard a lot of statements about  
24 conservatism, and I would like to talk about that a  
25 little bit more because maybe it's there, but it's not

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

(202) 234-4433

[www.nealrgross.com](http://www.nealrgross.com)



1 clear. The calculation doesn't show that. Let me  
2 discuss that.

3 The main uncertainty with whether you are  
4 going to have enough pressure of the inlet to the  
5 pump, really there are a lot of uncertainties. The  
6 whole issue of containment pressure, flow, delta T max  
7 in the pool, they're all interrelated.

8 The equations are all coupled. So you  
9 really can't talk about one without talking about the  
10 other. And the issue here is what are the  
11 uncertainties. There are many. And because of  
12 complexity, you have to make a lot of assumptions.

13 But the one that I'm bothered by the most  
14 is where the pressure drops across the screen. The  
15 reason for that is because it relates to the  
16 interaction between the debris and the sludge and the  
17 crud and the corrosion product that you have in the  
18 coolant following the LOCA.

19 There is inconsistency in the report  
20 itself, in the SER evaluation. On one side, VY states  
21 that the EPU will not increase the source term for the  
22 debris. The EPU is not going to detect the amount of  
23 debris that you are going to have there. They state  
24 that.

25 On the other part of the report, they

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

(202) 234-4433

[www.nealrgross.com](http://www.nealrgross.com)

1 said, "No. We've got another one. We're going to  
2 have more because we're going to have flow-induced  
3 corrosion. The conductivity is going to check, which  
4 means the pH is going to be changing."

5 You change the pH. You change the  
6 chemistry. And you change the mechanism of how the  
7 screen or not the screen itself, the fiber degree  
8 material that is going to be deposited on that screen,  
9 and then plug it up.

10 If you were sitting here and starting from  
11 scratch, you ask yourself, first thing, what kind of  
12 part was that? What is the distribution? There is  
13 nothing here. They are not even discussing that. But  
14 we are here from the NRC, we are here from VY. We  
15 have got plenty of conservatism. If there is one,  
16 just please show me where it is. It's just not there,  
17 just ain't there.

18 Now, when you see inconsistency within the  
19 report and you see that that has been reviewed, now,  
20 it's a very valid question how you even go and  
21 calculate your delta CDF when you can't even rely on  
22 the analysis?

23 The last subject or I believe it's the  
24 last subject -- and here I will be preaching to the  
25 choir. That has to do with the iodine release because

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

(202) 234-4433

[www.nealrgross.com](http://www.nealrgross.com)

1 there are two or three ACRS meetings discussing this  
2 issue. And I think that we will be all in agreement  
3 here around this table that the NRC, not necessarily  
4 the NRC, that we don't understand the mechanism that  
5 governs that.

6 Well, I can say one thing. The fact that  
7 you are going to be running at a higher flow rate, you  
8 are going to -- the concentration of iodine in the  
9 coolant will be lower. It's also true that the  
10 concentration in the gap in the fuel is going to be  
11 higher or there will be more effusion products.

12 But what is not true, the fact that I am  
13 going to have more efficient products in the fuel and  
14 a lower concentration, they cancel each other. And I  
15 can go home and sleep well. That's just not true. It  
16 doesn't make any sense. There's no correlation  
17 between the initial concentration of the coolant of  
18 iodine and the amount of appearance that you have or  
19 I've looked for it. It's not there. So you can't  
20 make that statement.

21 So what the bottom line of all of this is  
22 that -- and this is not a safety issue in the sense  
23 like a core mill, but we do have requirements. And  
24 they are listed here, 10 CFR 15, which relates to the  
25 control room radiation of those is in 10 CFR across

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

(202) 234-4433

[www.nealrgross.com](http://www.nealrgross.com)

1 the fence and GDC 19, requires you to meet those dust  
2 releases.

3 There is nowhere in this report besides  
4 the statement that we meet those. You ask yourself,  
5 how can they say they meet those dose releases where  
6 they have just started a new generic issue to resolve  
7 what the issues are.

8 So you have a generic GSI. I think it's  
9 197 they just started to rely on these iodine  
10 releases, iodine spikes. And I'm not a chemist. So  
11 I don't really understand it. I do know I have seen  
12 the data and I didn't bring the curve, but you can --  
13 I guess everybody around the table is familiar with  
14 it. I'm showing the order of magnitude or more  
15 increase in the iodine release as you lower the  
16 initial concentration. So if they lower the initial  
17 concentration, they're going to have increase.

18 In addition to this, I didn't see in the  
19 SER any references to increasing -- to using iodine,  
20 concurrent iodine. By doing that six seconds before  
21 that MSIV shut down, you're going to have a big  
22 pressure change. I haven't seen anything there.

23 Now, if you have orders of magnitude of  
24 safety there between what the -- I believe it's like  
25 5 rem from the control room and I think it's 25 across

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 the fence. I don't remember the number, but if you  
2 have plenty of room there, well, that's fine. And I  
3 don't know whether it's from rewire, but I've seen it  
4 on similar reactors because it depends on the weather  
5 around here.

6 If you have plenty of leeway, then it's  
7 fine. You've got plenty of safety. But I think  
8 they're very, very close to the limit as it is. So  
9 when you neglect all of these mechanisms, there's a  
10 lot of uncertainty in there. Now, you know, it's up  
11 to the local cop who lets you drive 65 miles an hour.  
12 That's fine. But that's what this is.

13 To summarize, the main issue is the dryer.

14 CHAIRMAN DENNING: Thank you very much,  
15 Dr. Hoppenfeld.

16 (Applause.)

17 CHAIRMAN DENNING: I would like to have  
18 Jane Newton go next if she'll move up into this area  
19 right here.

20 Did you leave us a copy of your  
21 presentation or you can mail it to us? We've got it.  
22 I'm sorry.

23 MR. NEWTON: I think this is going to be  
24 very different because I am going to talk mostly about  
25 fears and the people who live around here. I'm going

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

(202) 234-4433

[www.nealrgross.com](http://www.nealrgross.com)