

COPY

May 10, 2000

Gordon Thompson, Ph.D.

New London, Connecticut

304

1

1  
2  
3  
4  
5  
6  
7  
8  
9  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25

UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND  
LICENSING BOARD

----- x	
In the matter of:	Docket No. 50-423-LA-3
NORTHEAST NUCLEAR ENERGY COMPANY	ASLBP No. 00-771-01-LA
(Millstone Nuclear Power Station, Unit No. 3)	
----- x	

-----  
DEPOSITION OF: GORDON THOMPSON, PhD  
-----

Taken before Robin L. Balletto, Registered  
Professional Reporter, a Notary Public in and for the  
State of Connecticut, at the Holiday Inn, New London,  
Connecticut, on May 10, 2000, commencing at 11:10 a.m.



1 contention submitted in the Harris case. The wording of  
2 the basis is quite different.

3 Q The wording of the admitted Contention 6 in  
4 this case is the same as what is considered to be TC-2  
5 basis one in the Harris case, do you agree with that?

6 A No. I believe the contentions themselves are,  
7 as best I recall, virtually identical. The admitted bases  
8 are quite different, they read very differently, and they  
9 have different contentions.

10 Q Can you tell me where you perceive the  
11 different contentions in this case to rely? What is it  
12 you will address that is different in this case from that  
13 case?

14 A There are some fine points of law at issue in  
15 Contention 6, and I speak as a person whose profession is  
16 not law, so the ultimate arbiter of the Coalition's brief  
17 on matters of law will be Attorney Burton, and the legal  
18 position that the Coalition eventually puts forth will  
19 rely to a considerable extent on interpretation of the  
20 intent underlying general design criteria in 62, and my  
21 contribution to the Coalition's brief is to provide an  
22 interpretation of what the intent was of the parameters of  
23 that criteria and the significance of criticality issues  
24 that would be pertinent to determining their intent, and  
25 that pertains to Coalition's Contention 6, and as I stated

1 earlier, I'm expecting to have some role in formulating a  
2 brief in Contention 4.

3 Q We'll come back to 4, but let me stick to 6 for  
4 just a moment. You said your role would be to provide  
5 input on interpreting what the intent was in GDC62, number  
6 one, and number two to discuss the significance of  
7 criticality issues.

8 A Correct, including the potential for  
9 criticality to occur, the consequences if it does occur.

10 Q Now, is that contribution, those two issues any  
11 different from what you did at Shearon Harris?

12 A That is essentially the contribution I made.

13 Q For contention TC-2?

14 A In-house case, that's correct.

15 Q Let me take the first. Will you provide input  
16 on what the intent of GDC62 was? Were you involved in the  
17 framing of GDC62?

18 A No, I was not.

19 Q Did you comment on GDC62?

20 A No, I have not.

21 Q Have you commented on GDC62 in the years since?

22 A No.

23 Q Have you ever petitioned for a rule making on  
24 GDC62 to clarify it?

25 A No.

1 Q Have you ever raised in any forum other than  
2 this case and the Shearon Harris case with the Commission  
3 the language and requirements of GDC62?

4 A No.

5 Q Do you intend to do that?

6 A I have no personal contention in doing that nor  
7 does the institution that employs me. Typically we get  
8 involved in activities like this working with an entity  
9 such as a local government or in this case the Citizens  
10 Coalition, and it would be very unusual for us to petition  
11 the NRC independently.

12 Q I believe in the prehearing conference in this  
13 case at one point in response to the board's questions you  
14 made some statements to the board, and you talked about  
15 that you would provide a history of GDC62 and also what  
16 the intent was, a detailed history of what you were  
17 working on, do you recollect that discussion with the  
18 board?

19 A I believe that statement was made prior to  
20 filing in the Harris case. What I would have been  
21 referring to is the historical section of the Harris  
22 matter.

23 Q On page 140 of the prehearing transcript you  
24 talked about Our research for the development of GDC62  
25 under the Atomic Energy Commission shows that very

1 clearly, and then you go on to discuss that, and you talk  
2 about administrative measures being excluded, so there you  
3 were referring to what would be subsequently developed in  
4 the Shearon Harris context?

5 A Right, yes.

6 Q So would I be correct in assuming that now that  
7 I've seen the Shearon Harris Orange County filing I have  
8 the results of your research and analysis of the history  
9 of GDC62?

10 A The underlying documents that we relied upon in  
11 this proceeding will be the same. It is possible that  
12 we'll make some different interpretations, and I'm not the  
13 sole contributor by any means to our brief, and in this  
14 case the attorney is a different attorney and the  
15 intervenor is a different intervenor.

16 Q So it may be argued differently?

17 A Yes.

18 Q And you're not a lawyer, you've already said  
19 that.

20 A Correct.

21 Q You said the second thing you would contribute  
22 on this contention would relate to the significance of  
23 criticality issues.

24 A Yes.

25 Q Could you amplify on that what you mean by

1 that?

2 A In crude terms, why does all this matter, and  
3 Mr. Lochbaum in his preceding deposition alluded to the  
4 fact that it does matter. There is the potential for a  
5 criticality incident in a spent fuel pool, and this is a  
6 neglected issue in NRC safety research, and the  
7 preliminary analysis that I've done on this issue suggests  
8 that the consequences could include significant adverse  
9 health effects to employees or to the site personnel, and  
10 potentially some significant outside consequences as well.

11 Q So that you've done an analysis of the  
12 consequences of a criticality --

13 A What I've done is a preliminary qualitative  
14 analysis which is described in one of the appendices of  
15 the Harris brief. There is no -- to the best of my  
16 knowledge, there is not anywhere in the world an analysis  
17 as far as the probability and consequences of a  
18 criticality incident in a live water reactive spent fuel  
19 pool, and therefore, in the absence of such a detailed  
20 analysis, and given the limited resources available to me,  
21 up to this point I've provided a preliminary qualitative  
22 discussion.

23 Q Could you point to that preliminary qualitative  
24 discussion in the Shearon Harris brief?

25 A It appears in Appendix C titled Assessing the

1 Probability and Consequences of Criticality Events in Fuel  
2 Pools. This has, I believe, one or two appendices.

3 Q Now, in that document, that analysis, did you  
4 look at the probability and consequences of criticality as  
5 a result of fuel mishandling events, or was it more broad  
6 than that?

7 A That discussion focused on fuel mishandling and  
8 boron dilution, and there are other mechanisms that could  
9 cause criticality events, for instance, the dropping of a  
10 heavy object, for example, but that is mentioned in  
11 Appendix C in a fairly cursory way.

12 Q Have you ever been involved in moving fuel in a  
13 nuclear power plant?

14 A No.

15 Q Have you ever reviewed procedures related to  
16 fuel movements?

17 A Not in a professional capacity in the nuclear  
18 industry. I will be reviewing the procedures that have  
19 been supplied to us in this case.

20 Q But you haven't done that to date?

21 A That's correct.

22 Q Have you ever done criticality calculations  
23 related to determining, for example, K effective?

24 A No.

25 Q Have you reviewed the analyses that Northeast

1 Utilities submitted in conjunction with this license  
2 amendment application, the criticality analyses prepared  
3 by Holtech?

4 A I've done an initial review of the license  
5 application and will be doing a detailed review in the  
6 course of preparing a brief. I should say that for the  
7 purpose of this proceeding I do not expect to challenge  
8 the calculated results on K effective provided by Holtech,  
9 but will focus on whether the assumptions underlying those  
10 calculations are appropriate to cover all of the scenarios  
11 that should be faced.

12 Q So if they calculated for a scenario X  
13 involving boron one mishandling or whatever, you would  
14 accept the result they came up with, the number?

15 A For the purpose of this, yes, I would accept  
16 it.

17 Q Have you reviewed the licensing board's  
18 decision in the Shearon Harris case since it was issued?

19 A Not yet.

20 Q So far we've talked this morning about what you  
21 would contribute to Contention 6, which is the GDC62  
22 contention, and you said you would also contribute to  
23 Contention 4. Can you describe for me where and what it  
24 is you will contribute to Contention 4?

25 A Contention 6 is framed as a legal matter.

1 Underlying this legal question is what you might describe  
2 as more of an engineer's perspective than a lawyer's  
3 perspective, and the applicant's proposed course of action  
4 reduce the level of safety or increase the level of risk,  
5 and the underlying technical issues are really the same,  
6 just that in one case it's phrased from a lawyer's point  
7 of view and the other from an engineer's point of view.

8 Q Contention 6 is the proposal of a legal, and  
9 Contention 4, if I might characterize it as, is it is as  
10 good as it needs to be from an engineering perspective?

11 A That's a fair accusation.

12 Q So the focus of Contention 4 would be on the  
13 complexity, I gather, and do you have an opinion as to the  
14 complexity to the proposal as it currently exists?

15 A My general opinion about criticality in fuel  
16 pools is that there should be no reliance on burn-up, fuel  
17 aging or soluble boron under normal or accident  
18 conditions. I believe that reliance should be placed on  
19 spacing and on fixed boron or other fixed neutron  
20 absorber, and that any criticality arrangement in the fuel  
21 pool that relies to any extent on the credit for burn-up,  
22 soluble boron or aging is in my view a mistake from an  
23 engineering point of view, quite aside from whether it is  
24 legal.

25 Q That's what I was going to ask you. Contention

