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UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION  
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OFFICE OF INVESTIGATIONS  
INTERVIEW

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IN THE MATTER OF :  
INTERVIEW OF : Docket No.  
ERIC A. DeBARBA : 194021  
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Wednesday, November 29, 1995  
  
Fire Training Facility  
Millstone Station  
Rope Ferry Road  
Waterford, Connecticut

The above-entitled interview was conducted at  
1:15 p.m.

BEFORE:  
Senior Investigator Donald D. Driskill  
Investigator John V. Kaufmann

A/1

1 APPEARANCES:

2

3

ON BEHALF OF NORTHEAST UTILITIES:

4

DAVID A. REPKA, ESQ.

5

of: Winston & Strawn

6

1400 L Street, N.W.

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Washington D.C. 2005-3502

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WITNESS:

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ERIC A. DeBARBA

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

2 (1:15 p.m.)

3 SENIOR INVESTIGATOR DRISKILL: For the record,  
4 this is an interview of Eric A. DeBarba, who is employed  
5 by Northeast Utilities Service Company.

6 The location of this interview is at the  
7 Millstone Nuclear Station, Waterford, Connecticut.

8 Present at this interview are Mr. DeBarba,  
9 David Repka with Winston & Strawn, Washington D.C.,  
10 myself, Donald Driskill, with the NRC Office of  
11 Investigations and John Kaufmann with the NRC.

12 This interview is being transcribed by Kathy  
13 Fallon. The subject matter of this interview concerns  
14 historical information relative to refueling Millstone  
15 Unit I and matters associated with refueling outages and a  
16 recent licensee event report relative to that.

17 MR. REPKA: I just want to put on the record  
18 what I said earlier that --

19 SENIOR INVESTIGATOR DRISKILL: Let me swear  
20 him in and then we'll --

21 (Oath taken.)

22 MR. DeBARBA: Yes, I do.

23 SENIOR INVESTIGATOR DRISKILL: Thank you very  
24 much. Dave, do you have something that you'd like to say,  
25 please?

1                   MR. REPKA: Yes. Mr. DeBarba was recently  
2 interviewed by the NRC's Office of Inspector General on  
3 the record on issues similar, if not the same, as we're  
4 here to discuss today.

5                   We have not been given or asked for the  
6 opportunity to review that transcript before appearing  
7 today.

8                   And in the interest of cooperating and in  
9 expediting your investigation into these matters, we've  
10 opted not to do that. But in light of that fact, we would  
11 like to reserve the opportunity if, after the Inspector  
12 General completes its review and issues its report, if  
13 there's any reason for us to clarify something in the  
14 testimony in either transcript, we'd like to have that  
15 opportunity.

16                  SENIOR INVESTIGATOR DRISKILL: And I agreed  
17 with that. That will be fine. Mr. DeBarba, to begin  
18 with, I'd like to ask you what's your current job title?

19                  MR. DeBARBA: My current job title is Vice  
20 President of Engineering Services.

21                  SENIOR INVESTIGATOR DRISKILL: And how long  
22 have you held that position?

23                  MR. DeBARBA: I've held that position for a  
24 period of about a year and a half. I've been Vice  
25 President of various engineering parts of the organization

1 since 1990.

2 SENIOR INVESTIGATOR DRISKILL: Okay.

3 MR. DeBARBA: My titles have changed slightly  
4 over the last couple of years.

5 SENIOR INVESTIGATOR DRISKILL: And prior to  
6 that?

7 MR. DeBARBA: Prior to that, I worked at  
8 Yankee Atomic Power Company for a period of four years --

9 SENIOR INVESTIGATOR DRISKILL: Okay.

10 MR. DeBARBA: -- in two different positions.  
11 One is I was Stations Services Director for a period of  
12 three-plus years, and I was a Plant Manager for a short  
13 period of time.

14 SENIOR INVESTIGATOR DRISKILL: Okay. And had  
15 you been at Millstone at any time prior to 1990?

16 MR. DeBARBA: I had never been permanently  
17 assigned to Millstone, no.

18 SENIOR INVESTIGATOR DRISKILL: And how long  
19 have you worked for Northeast Utilities?

20 MR. DeBARBA: Since 1972.

21 SENIOR INVESTIGATOR DRISKILL: As you're  
22 aware, we currently conducting an investigation related to  
23 the two allegations that have been made, and a recent  
24 2.206 petition that was submitted to the NRC relative to  
25 contentions that Millstone has performed its refueling

1 outages in a manner that's inconsistent with the  
2 description provided the NRC in the FSAR and in various  
3 license amendments submitted subsequent to the approval of  
4 the initial FSAR.

5           And additionally, there were a number of other  
6 allegations that were presented. Just so you know, the  
7 matters relating to the spent fuel pool, the refueling  
8 outages and so on is the primary focus of our  
9 investigation at that time, and these other issues have  
10 basically been set aside for now for further consideration  
11 at a later time.

12           And I don't know whether there will be any  
13 additional investigation related to those.

14           So we may meet again to discuss other issues  
15 associated with the allegations of the 2.206 petition and  
16 so on. And I know that the company has responded, had an  
17 initial response to the 2.206, and also responded to a  
18 supplemental 2.206 which was later submitted sometime in  
19 later -- in August of 1995.

20           MR. DeBARBA: Right.

21           SENIOR INVESTIGATOR DRISKILL: I was told  
22 earlier on in this investigation that you had apparently  
23 looked into the matters associated with the licensing and  
24 the design basis and licensing commitments that were made  
25 relative to this refueling stuff, and essentially that you

1 could probably answer a lot of the questions that we had.

2 So we chose to probably try to talk to you  
3 early on, at least during our interviews.

4 MR. DeBARBA: Okay.

5 SENIOR INVESTIGATOR DRISKILL: Perhaps you can  
6 put some focus on those things and help us understand  
7 Northeast Utilities' position relative to this, expanding  
8 of course on what was provided in response to the 2.206  
9 petition.

10 I would assume that sometime since 1992 when  
11 George Galatis presented -- initially presented his  
12 concerns to the Northeast Utilities Licensing Department,  
13 and subsequent to that an REF was initiated which received  
14 a considerable amount of review prior to the 1993 LER  
15 being submitted.

16 I suppose that somewhere during that period of  
17 time, since you've only been here since 1990, you became  
18 acquainted with this concern, and perhaps looked into it -  
19 -

20 MR. DeBARBA: Yes.

21 SENIOR INVESTIGATOR DRISKILL: -- and asked  
22 some questions and became somewhat familiar with it.

23 MR. DeBARBA: Right.

24 SENIOR INVESTIGATOR DRISKILL: So I guess to  
25 begin with, why don't you just give us an overview of what

1 you perceive to be the problem, the concern, and basically  
2 where you feel that the utility stands relative to all of  
3 that.

4 MR. DeBARBA: Okay, I --

5 SENIOR INVESTIGATOR DRISKILL: Would that be a  
6 fair way to do this?

7 MR. DeBARBA: Sure, I believe so. Just to  
8 make sure I'm answering the question properly, beginning  
9 in about the 1992 time frame? In other words, beginning  
10 with --

11 SENIOR INVESTIGATOR DRISKILL: Well, the  
12 concerns were originally presented in 1992.

13 MR. DeBARBA: Correct.

14 SENIOR INVESTIGATOR DRISKILL: Obviously, you  
15 haven't been here at the site since 1968 or '70 when all  
16 this started.

17 MR. DeBARBA: Yes, right, right.

18 SENIOR INVESTIGATOR DRISKILL: But from what I  
19 understood, you are aware of the concerns that were  
20 submitted and they, in themselves, are alleging  
21 essentially historical non-compliance.

22 MR. DeBARBA: Oh sure.

23 SENIOR INVESTIGATOR DRISKILL: And so I think  
24 that -- and I was told that you could probably address  
25 this whole issue.



1                   So I just thought that perhaps you could --  
2   since you've looked into it and apparently are aware of  
3   this and more or less able to address the company's  
4   position relative to these concerns.

5                   It would a historical overview, I guess, what  
6   is -- as far as you know.

7                   MR. DeBARBA: I can give you a historical view  
8   from my perspective --

9                   SENIOR INVESTIGATOR DRISKILL: Okay, that  
10   would be fine.

11                  MR. DeBARBA: -- on things. And just so it's  
12   accurate, even though I've been assigned from 1972 in the  
13   Berlin Office, then to CY and back to Berlin, and most  
14   recently to Millstone, there were periods of time when I  
15   actually did a fair amount of work at Millstone.

16                  So I was here even though my permanent home  
17   office was at Berlin.

18                  SENIOR INVESTIGATOR DRISKILL: Okay.

19                  MR. DeBARBA: For instance, in the early  
20   1970's time period, I spent some time here during the  
21   refueling outage working with reactor engineers on actual  
22   fuel movement, and also working on a chloride intrusion  
23   incident event that they had back then and the clean up  
24   from that, as well as working on the spent fuel pool when  
25   it was first filled and working on feed water spargers

1 that had lots of problems.

2               So I spent a lot of my time very early on in  
3 my career as an Assistant Engineer working on Millstone I,  
4 typically during refueling outages, but in some other  
5 periods of time.

6               So very early on, I was aware that fuel was  
7 being put in the spent fuel pool, but I really had no -- I  
8 was not in that particular line. I was a mechanical  
9 engineer, and I really had no knowledge of what the  
10 requirements might be for a fuel offload and that type of  
11 thing.

12              But I clearly was aware that we had offload of  
13 the entire core.

14              SENIOR INVESTIGATOR DRISKILL: Right.

15              MR. DeBARBA: I personally was inside the  
16 reactor vessel on one of those occasions, so I knew that  
17 there was no fuel below me. So very early in my career, I  
18 did have that experience.

19              Like I said, I worked in the Corporate Office  
20 up until 1986, and then spent four years at Connecticut  
21 Yankee.

22              And coming back to the Engineering Office in  
23 the home office in Berlin, Connecticut in 1990, I needed  
24 up having organizational responsibilities really for the  
25 design site of the Engineering Organization.

1                   And in the 1991 time frame, we had a  
2 reorganization where we changed some people around and  
3 ended up doing a lot of integration with the Engineering  
4 Organization.

5                   And I became responsible for some new parts of  
6 the organization and some new people. George Galatis was  
7 one of those new people who entered my organization. I  
8 think it was in the middle of 1991.

9                   I understand that George was involved in some  
10 reviews of some spent fuel pool issues, and I'm not sure  
11 exactly what began his review process that led him to the  
12 discovery that he did.

13                   But ultimately, I believe, like is common in  
14 our organization, a process of initiating some sort of a  
15 plan, information report, or something like that, and then  
16 following it to an REF process occurred.

17                   I don't know if there was a PIR on this, but  
18 certainly there was an REF that called for some  
19 engineering evaluation of a particular situation at the  
20 plant.

21                   I was not aware, I don't believe, until the  
22 middle of 1993 of any of the details of what these  
23 concerns were.

24                   But I did have reporting to me at that point  
25 in time a Director of Engineering, Bob Harris, who had

1 been working with Pete Austin, Al Cizel, George Galatis on  
2 a number of different technical topics.

3 One of the topics happened to be this  
4 particular one.

5 And Bob did advise me on occasion that he was  
6 working on some issues having to do with the spent fuel  
7 pool item as I recall, but said he had -- you know, he was  
8 making progress, that type of thing, nothing more than  
9 that.

10 It wasn't until, I think, May or the June time  
11 frame of 1993 that I became concerned that there was an  
12 issue that was of higher significance than I had  
13 previously realized.

14 And I received a call from Cheryl Grise, who  
15 was the Vice President of Human Resources. And she said  
16 that she would -- that we ought to get together and talk  
17 because she was aware that there was an employee in my  
18 organization who appeared to have some concerns, although  
19 she technically is not an expert in this particular area.  
20 She doesn't have a technical background.

21 But she said from the sounds of it, it seemed  
22 like he was quite charged about this and pretty concerned  
23 about it.

24 And so I didn't know who she was talking with.  
25 I did have lunch with her and she told me that it was Mr.

1 Galatis who had some concerns. And she thought it would  
2 be a good idea that perhaps I called him and found out for  
3 myself what the issues were.

4               So I don't know if it was that day or shortly  
5 thereafter I did call Mr. Galatis, and told him I was  
6 aware that he had some issues that were of concern to him,  
7 and told him that I would like to meet with him to find  
8 out what they were and see if I could help to bring those  
9 to some sort of resolution.

10              He did, shortly thereafter -- again, I'm not  
11 sure what the specific days were, but it was a short  
12 period of time and not a long period of time. And he came  
13 up to my office and had a fairly complete folder of lots  
14 of information of things.

15              And I was kind of surprised that he seemed to  
16 have a lot of files pretty organized of things that had  
17 transpired or how he had felt about things.

18              And I think that was probably the first time I  
19 had actually formally met George. I knew the name, but I  
20 -- you know, I had an organization of about 600 people at  
21 that point and didn't know the names and faces,  
22 particularly some of the new ones.

23              And so it was my first real introduction to  
24 George at that time. You know, he explained the issues  
25 that he had been working on, what were some of the things

1 that troubled him.

2           And I asked him a number of questions about  
3 what they were, how it was proceeding. You know, in  
4 general, I know what the REF process is. I didn't know  
5 ever specific REF that was going on in the organization or  
6 all other work assignments.

7           But I asked him quite a few questions about  
8 these types of issues: were they progressing properly in  
9 his mind? What did he see as logical outcomes? You know,  
10 how could we bring these things to resolution?

11           And he had some ideas and thoughts, but it  
12 became apparent to me that on his present course within  
13 the organization, it wasn't going to be dealt with as  
14 timely as it needed to be dealt with.

15           I thought it was more important to do  
16 something at a more senior level.

17           So I told George that I would be in contact  
18 with him again shortly, that I needed to think about this.  
19 But I wanted to have some other people involved. And I  
20 said I think we needed to put a little group together to  
21 give some focused attention to these issues.

22           And so I think -- again we're talking about  
23 the June time frame of 1993. I formed a group that  
24 included not only myself but Bob Harris, who was the  
25 Director, I believe Rick Kacik was involved as the

1 Director of Licensing, as well as George; I believe Peter  
2 Austin who was his manager, as well as Al Cizek were  
3 involved.

4               So we involved a number of people. And  
5 basically we took all the issues that George had discussed  
6 with me and we tried to -- and label them and categorize  
7 them.

8               And we had two columns that we ended up  
9 putting together on this matrix. One was what were the  
10 technical issues that George felt needed to be addressed,  
11 and then we had some others that were more either inter-  
12 personal or I forget how we actually labelled them, or  
13 maybe organizational or something like that.

14              They were things like procedural compliance  
15 might have been an issue, some questions about operator  
16 attitudes, you know, it was some other types of issues.

17              And it was a fairly lengthy list if I recall.  
18 It was maybe 20 items total, ten on each side.

19              And what we tried to do was, number one,  
20 understand what each of the issues was, and then  
21 understand who had the lead responsibility to make sure it  
22 got driven to a logical conclusion.

23              And then we tried to assign some dates as to  
24 when that would happen.

25              And we met periodically as a group to kind of

1 go over this list. We invited some people in as we needed  
2 to and made assignments.

3 Bob Harris was the keeper of the list. That  
4 was the assignment I gave him. And my role was the one  
5 of facilitation to try to help, you know, drive this thing  
6 to conclusion.

7 I thought we had made some pretty progress  
8 actually. I think a number of the items got resolved.  
9 LERs got issued. We had a refueling outage that was  
10 coming up. I believe the refueling outage at Millstone I  
11 was scheduled for late '93. I think it got delayed into  
12 early '94, and we wanted to be prepared for that  
13 particular refueling outage and make sure that we had  
14 taken all this information and applied those lessons to  
15 this upcoming refueling outage, which I believe we did in  
16 the way of a 50.59 and had driven most of those issues to  
17 closure.

18 It became apparent to me that even though we  
19 had closed those items, that the -- at least some of them  
20 were not responded to to George's complete satisfaction in  
21 some way, shape or form. It wasn't 100 percent clear  
22 necessarily why.

23 What we tried to do was engage other people to  
24 see if they could find from an independent way, other than  
25 this task group that we had set up, to see if they might



1 find out as well, is there something that we're missing?  
2 Is there some way that they might communicate with George  
3 to help understand what his feelings or issues are as it  
4 related to this so we could get kind of an independent  
5 view on this and see if there was something we missed so  
6 we could help drive it.

7               So I recall we had ended up engaging Yankee  
8 Atomic to come in and independent review this. And we  
9 engaged a former NRC person, Jim Partlow, to do some  
10 investigations.

11              I believe the Nuclear Review Board conducting  
12 a study somehow surrounding this. I can't remember the  
13 specifics, but I know that there was a report issued there  
14 on the Unit I Review Board.

15              So a number of independent things that were  
16 done as well to try and pin it down.

17              And off and on over that period of time, I did  
18 have some discussions with George to try to understand how  
19 he was doing. Do he feel like we were making the right  
20 progress?

21              And to be honest, at times, it seemed like we  
22 were, and then there were other times it seemed like we  
23 weren't.

24              And you know, I spent a lot of time trying to  
25 figure out myself what we might have done differently.

1 But I'm still not sure myself what that might have been.

2 I think we certainly made several attempts to  
3 try to get at the source of some of the concerns he had.  
4 And I think we addressed everything we could find. At  
5 least we thought we had addressed it, not only to our  
6 satisfaction, but to his.

7 But evidently, we did not.

8 It became -- I realized that for the upcoming  
9 refueling outage that we're in right now on Millstone I,  
10 that we needed to have a more permanent solution to what  
11 we were doing on the full-core offload, and that we needed  
12 to do something to either do a permanent 50.59 evaluation  
13 or get a license amendment document issued.

14 There seemed to be some split feelings in the  
15 organization as to whether a license amendment was  
16 required or whether a 50.59 evaluation itself would be  
17 sufficient to do this.

18 I could see the clock ticking along and us not  
19 coming to a decision process as to what was the right  
20 thing to do.

21 You know, despite the fact that I pressed  
22 people to get going and make a decision so that we could  
23 get off the dime and give the NRC appropriate time to  
24 review a license amendment if that was required. I became  
25 disturbed that we weren't getting there quick enough.

1           So I formed a different task team, this time  
2 including George Galatis, as well as George Bentancourt,  
3 some people from the Nuclear Safety Concerns Program and  
4 some people from the Spent Fuel Project Team that had been  
5 formed to specifically take a look at where we were today  
6 with the overall task objective of bringing clean closure  
7 to all the issue surrounding the Millstone I spent fuel  
8 pool.

9           SENIOR INVESTIGATOR DRISKILL: When was this  
10 group established?

11          MR. DeBARBA: I think it was in May of this  
12 year.

13          SENIOR INVESTIGATOR DRISKILL: Did you have a  
14 name for it or --

15          MR. DeBARBA: Spent Fuel Task Team.

16          SENIOR INVESTIGATOR DRISKILL: Okay.

17          MR. DeBARBA: It was more ad hoc than  
18 anything. And we had a number of issues on there that we  
19 felt we needed to address to reach clean closure.

20          SENIOR INVESTIGATOR DRISKILL: I think Dave  
21 and I discussed that once before. You had a list of the  
22 various topics and --

23          INVESTIGATOR KAUFMANN: I think we've gotten  
24 some of those reports.

25          MR. DeBARBA: Yes, it was one through 44 or

1 something, I don't know. You know, the list expanded and  
2 we have meeting notes that were issued, and I'm sure all  
3 those can be available to you.

4 But one of the issues on there, and it  
5 probably be the critical one, was the license amendment;  
6 were we going to have a license amendment or were we not?

7 And ultimately we decided, I decided, that we  
8 should pursue a license amendment. I felt that it was  
9 important that we do that, if for no other reason to move  
10 it along.

11 It seemed like the most conservative thing we  
12 could do. And I know that the longer we waited, the worse  
13 it was going to be.

14 And I said to let's just do it. We've got to  
15 move this forward.

16 Even at that point, we had plenty of people  
17 who said no, we could do this evaluation on a 50.59. And  
18 perhaps they're right. I don't really know.

19 But we chose the license amendment route. We  
20 engaged in -- and George Galatis was actively involved in  
21 that. He ended up being part of the approval process so  
22 we sent that license amendment out the door.

23 And I think shortly after we issued the  
24 license amendment request, he ended up filing a 2.206  
25 petition.

1                   We had subsequent task force meetings after  
2 that, and we completed, I think, our last task force  
3 meeting a couple of weeks ago and completed that.

4                   The -- I guess your question really is, well  
5 what is the issue?

6                   SENIOR INVESTIGATOR DRISKILL: Well, with  
7 respect to the one issue that we're looking at, and that  
8 has to do with historical compliance relative to the  
9 manner and mode in which fuel offloads have been performed  
10 and the company position relative to -- and your own views  
11 relative to regulatory compliance --

12                  MR. DeBARBA: Sure.


13                  SENIOR INVESTIGATOR DRISKILL: -- with respect  
14 to that.

15                  MR. DeBARBA: And I guess what I'll do is  
16 recite what I've said to legislators, as well as IG as nd  
17 other people relative to the position, as to the best I  
18 know it and understand it and as the company position.

19                  And that is simply this: that is that back  
20 from the time that the plant was built, there were  
21 regulations in place that stated how we had to do analysis  
22 for offloads, full-core offloads.

23                  And basically, those analyses had two  
24 conditions that required evaluation. They changed the  
25 names over a period of time.

1                   Sometimes it was "normal" and "abnormal."  
2   Sometimes it was "normal" and "emergency." And the  
3   conditions may have changed.

4                   Sometimes it was very prescriptive about  
5   single failure, and sometimes it wasn't. But by and  
6   large, all of these surrounded two analytical cases that  
7   were <sup>required</sup>~~reburied~~ to be completed, docketed and approved by   
8   the NRC as it related to heats checks on heat exchangers.  
9   In other words, heat capacity checks to see if our heat  
10   exchangers had the capacity to perform their intended  
11   safety function.

12                  That is how we interpreted the regulation, and  
13   we believe that was how the NRC was interpreting it and  
14   how they were writing their SER.

15                  We believed, having completed those analyses,  
16   submitted them, and received SERs back, that we had  
17   documented and had proved to the NRC that we could meet  
18   both this "normal" and this "abnormal" case. That is, we  
19   could do a partial core offload and meet the safety  
20   limits, and we could do a full-core and meet the safety  
21   limits.

22                  And therefore, both were safe, i.e. a partial  
23   core offload was safe and a full-core offload was safe.

24                  The question then becomes well, what are the  
25   administrative requirements that you might choose to

1 determine when you use which.

2 In looking at that, our license documents are  
3 silent on that topic. They don't say anything about it.  
4 Specifically, our tech specs have nothing in them at all.  
5 All they talk about are, in one spot really, I believe in  
6 Section 5, just the number of fuel bundles that you're  
7 allowed to put in the spent fuel pool.

8 And that's never been in contention. It's not  
9 an issue. What's at issue here are the sub-tier documents  
10 far below the tech specs.

11 And in a safety evaluation that we received  
12 back from NRC, the NRC reflected that we could do a full-  
13 core offload should the offloading of the core be  
14 necessary or desirable because of operational  
15 considerations.

16 And I think this further illustrates to us  
17 that it was really our choice as to how we wanted to  
18 perform or conduct offloads.

19 SENIOR INVESTIGATOR DRISKILL: That statement  
20 was contained somewhere in the approval for Amendment 39?

21 MR. DeBARBA: Yes, that's correct. That's  
22 correct, and that there was no administrative limitation  
23 on it. We had shown that we were safe for both cases.

24 The NRC had reviewed and had come to the same  
25 conclusion. And it then became our choice as to which

1 method we wanted to use.

2 And I think that that represents our position.

3 I think at the time in 1992 when it became apparent to us  
4 that there was a more conservative way of interpreting how  
5 those analyses were preformed, that we looked at that.

6 And our conclusion from that time forward was  
7 yes, you're right. There are more -- there is a move  
8 conservative way of interpreting that, i.e. for this full-  
9 core offload case, we could apply all of the more  
10 conservative assumptions from the partial core offload  
11 case to that case and it would result in a more  
12 conservative approach.

13 It's true, and that's what we did. And from  
14 that point forward, that's exactly what we have applied.

15 In essence, we've now taken the regulations  
16 that used to have two cases, two analytical cases, and we  
17 now have essentially one, and that is the full-core  
18 offload.

19 SENIOR INVESTIGATOR DRISKILL: In summary, I  
20 guess essentially you're saying is the choice was the  
21 Utility's, whether they wanted to perform a full-core or a  
22 quarter-core or a third-core or whatever was prescribed at  
23 those particular points in time. And then bote were  
24 analyzed and both were safe.

25 MR. DeBARBA: Correct.



1                   SENIOR INVESTIGATOR DRISKILL: I guess one of  
2 the problems that exists relative to this, or at least one  
3 of the contentions that exists relative to this is if you  
4 go back to RFO 13, which was governed by, I guess, License  
5 Amendment 40 in some way.

6                   License Amendment 40 also contained the words  
7 that -- that was the pool expansion amendment which  
8 contained in it the reference to fuel offload and said  
9 that they would be performed in -- the types of offloads  
10 that would be performed would be 1) the normal offload,  
11 which would be a third of the core after 150 hours; 2) an  
12 abnormal offload which would be a full-core after 250  
13 hours.

14                   And basically, I think that that description,  
15 at least in License Amendment 40, got carried down into  
16 the design basis, whereas maybe some argument to whether  
17 other previous definitions of those things were actually  
18 in the design basis prior to that.

19                   But just for now, we'll concentrate on this  
20 1988/89 approval of License Amendment 40.

21                   So then essentially what happened is this  
22 design basis requirement, essentially, never got brought  
23 down into the technical specifications or operating  
24 procedures.

25                   And we had a full-core offload in 1991, which

1 would have been RFO 13, which was a full-core offload  
2 after how many hours?

3 MR. DeBARBA: One hundred and fifty.

4 SENIOR INVESTIGATOR DRISKILL: How many hours?

5 MR. DeBARBA: For when?

6 SENIOR INVESTIGATOR DRISKILL: RFO 13?

7 MR. DeBARBA: Oh, when they actually did it?

8 INVESTIGATOR KAUFMANN: It says commencing in  
9 the offload --

10 MR. DeBARBA: About 161 hours.

11 SENIOR INVESTIGATOR DRISKILL: Okay. So we had  
12 a full-core offload after 161 hours, or initiated after  
13 161 hours, which is less than the 250 prescribed by not  
14 only the license amendment, but would be part of the  
15 design basis.

16 So I think in essence, somebody has made the  
17 decision. But then historically, you start going back and  
18 you start looking at these things. And almost without  
19 exception, except for RFO No. 1, the times prescribed for  
20 these offloads have always been exceeded.

21 And so then it gets into I guess an argument  
22 as to whether these were requirements or not requirements,  
23 that they meet these various times and so on and so forth.

24 I think we've had some individuals that have  
25 agreed with the fuss that some people either provides

1 every one of these offloads should have been preceded by a  
2 50.59 to ensure that -- in as much as the time were less  
3 than -- the time limits used were less than the time  
4 limits analyzed and it was -- that it -- and that a 50.59  
5 perhaps should have been done prior to the offload to  
6 ensure that the problem -- and that's without regards for  
7 even for the single failure analysis aspect of it,  
8 whenever that became required.

9 MR. DeBARBA: Right, right.

10 SENIOR INVESTIGATOR DRISKILL: Do you agree  
11 with that?

12 MR. DeBARBA: Yes, I think you're talking  
13 about analytical assumptions here or an analysis base.  
14 And I think that the one thing that you do have to be  
15 careful of is how you lift things that are in an  
16 analytical space into operational restraints or  
17 constraints.

18 And your question surrounds were there some  
19 points where we were outside the design bases?

20 SENIOR INVESTIGATOR DRISKILL: Yes.

21 MR. DeBARBA: What I was suggesting was that  
22 it's easy for me to say how people could look at it and  
23 conclude that since we had submitted analyses that met the  
24 NRC's rule of doing a partial core offload and a full-core  
25 offload, both with acceptable results, that they concluded

1 that both were acceptable without diving into the details  
2 of it.

3 And there are other parallels in business  
4 where we do analytical work, and not all the analytical  
5 assumptions are carried over into operating constraints.

6 Like for instance when we build the plant, we  
7 do fatigue evaluations on all the pipes and all the joints  
8 and that type of thing. And we're required to show that  
9 in no place do our fatigue usage factors get greater than  
10 one, all right?

11 But yes, we don't count every time the pipe  
12 heats up ten degrees and cools down five degrees and  
13 calculate how much usage factor that is and apply it.

14 More recently, we've -- you know, we're  
15 starting to look at some of those things in some other  
16 types of terms working with the NRC.

17 But we don't translate those things literally  
18 and count those types of issues.

19 Now I think there are a lot of things in  
20 design specs where analytical assumptions aren't brought  
21 into operating restrictions or operating limits.

22 I think what you might be talking about is you  
23 got some examples where it shows that some of the  
24 analytical assumptions weren't bounded by what actually  
25 happened and --

1                    SENIOR INVESTIGATOR DRISKILL: Or perhaps what  
2 happened was that outside the bounds of what was analyzed.

3                    MR. DeBARBA: Correct, correct. Yes, I think  
4 it's a different way of saying the same thing.

5                    But what you need to ask is not only that  
6 point, but what were all the other assumptions? In other  
7 words, when you will do a bounding calculation, you bound  
8 it with a whole set of parameters.

9                    So given this refueling outage that happened  
10 for instance in January, what was the ocean water  
11 temperature that was assumed? Was it 75 degrees or was it  
12 the 60 degrees or 50 degrees or what not that ocean was  
13 really sitting at in Long Island Sound at that time?

14                   What about heat exchanger following criteria?  
15 In other words, there's a number of assumptions that tend  
16 to bound these analyses.

17                   The heat load, for instance. It's not only  
18 that heat load in the full-core offload case. You assume  
19 you just had a discharge that occurred 30 days prior, or  
20 some number like that.

21                   So there's a whole different set of  
22 assumptions. And what i'm saying it when you aggregate  
23 all those up, what that says is that there was a test that  
24 the NRC wanted you to perform that shows that you could  
25 take a full-core offload into some fairly extreme manner.

1                   And that once you had documented that, you had  
2   bounded this situation, you now had a choice.

3                   Now you say is that the most conservative  
4   approach they could have taken? No, it was not.

5                   In other words, would it have been more  
6   conservative to wait more time? Sure, it would have been.  
7   And would that have been a more appropriate thing to do?  
8   I think in hindsight, sure, that would have been.

9                   But it's -- what I'm saying is I believe that  
10   you can see how people could make a decision that a  
11   partial core offload and a full-core offload, having been  
12   fully analyzed, were acceptable cases.

13                  And since there were no restrictions in the  
14   license language, that it became our choice as to how they  
15   became used.

16                  SENIOR INVESTIGATOR DRISKILL: Well, with NRC  
17   staff to say this License Amendment 40, which seems to be  
18   the most recent thing we have to work with -- and of  
19   course, you're being asked to provide, you know, these  
20   analyses for, say, the partial core of the normal case and  
21   the abnormal case --

22                  MR. DeBARBA: Right.

23                  SENIOR INVESTIGATOR DRISKILL: -- and perform  
24   failure analysis relative to that and so on and so forth.  
25   And I think -- in my view and the way I understand it is

1 certain aspects of all that bound the activities that are  
2 going to be conducted.

3 And taking a less conservative approach would  
4 be in violation of the design basis.

5 MR. DeBARBA: Well, it think it --

6 SENIOR INVESTIGATOR DRISKILL: I think you're  
7 essentially saying that you're going to wait 150 hours or  
8 250 hours either way. And I think in the license  
9 amendment submittal, you say you will comply with the  
10 provisions of the data that you're submitting.

11 So I think the NRC really expects you to do  
12 something less than that.

13 MR. DeBARBA: I understand your point. And  
14 that's why I said your question really is one of are you  
15 outside the design basis that you set up?

16 And you know, we submitted -- you know, that's  
17 why an REF was done and why we ended up making the  
18 submittals we did in looking at that overall.

19 I'm just stating that I don't think that you  
20 can necessarily just take one analytical parameter  
21 necessarily and conclude that every single analytical  
22 parameter has to be tracked against some operational  
23 constraint.

24 If you did that, our procedures -- you know,  
25 we'd have them multiplied by ten because there are an

1 awful lot of things that are done in the analytical world  
2 that aren't transcribed specifically into operating  
3 restrictions.

4 SENIOR INVESTIGATOR DRISKILL: Would you agree  
5 that certain aspects of that License Amendment 40 should  
6 have been carried over into the technical specifications?

7 MR. DeBARBA: Well, certainly the number of  
8 fuel bundles in the pool, and that was. But I guess I get  
9 back to the actual calculations, and the calculations are  
10 ones that are bounding calculations that say for these  
11 given set of conditions, we have assurance that your heat  
12 exchangers are properly sized to be able to do the job.

13 Our historical records show that, in fact, we  
14 did do the job. In other words, we have gone through 14  
15 or 15 refueling outages now, and all the time our  
16 temperature was maintained properly in the temperatures.

17 That's another indication that that was  
18 correct.

19 What specifically the reactor engineers did  
20 each refueling outage to help convince themselves that  
21 they had the proper heat removal capability, I don't know.  
22 I'm not sure what additional things they may have done.  
23 But they may have done some things.

24 What I'm suggesting to you is why I believe  
25 people believe that they had two fully analyzed,



1 acceptable cases that were bounding: one which was  
2 practical core, one which was full-core.

3 And that people then felt that since you had  
4 those fully analyzed and acceptable cases that were both  
5 safe, then it became our choice to use them -- as to how  
6 to use them.

7 INVESTIGATOR KAUFMANN: I don't understand  
8 when I look at the two cases, the normal case is  
9 historically a much smaller number: 7 million -- around 7  
10 million BTUs per hour. The abnormal case is 18 to 24  
11 million BTUs per hour historically.

12 The first case has single failure criteria and  
13 doesn't use the shut-down cooling heat exchanger.

14 And it's obvious that -- I don't understand  
15 why anyone would have asked for that first case to be  
16 analyzed when the second one was -- if only the second one  
17 applied.

18 It gave three times more room. And I guess I  
19 don't understand why you would analyze the two cases if  
20 only the second one is the one that mattered.

21 And just seeing which language, "normal"  
22 means, in most Websters, this is what we normally do.  
23 "Emergency" is some very unusual, strange, extreme  
24 condition.

25 MR. DeBARBA: Well, I guess my thought on that

1 -- and I was not the author of these documents, so I  
2 really don't know. But I could tell you that the normal  
3 case goes on 24 hours a day, every day of the year.

4 In other words, these spent fuel pool heat  
5 exchangers are designed to operate all the time. That's  
6 the normal case.

7 Our spent fuel pool heat exchangers and the  
8 heat exchange load that is on that, their design limit,  
9 are to basically be able to take care of what goes on  
10 every day.

11 That's why you would apply single failure,  
12 because the probability of having single failures 24 hours  
13 a day, every day a week of the rest of 40 years, is pretty  
14 high.

15 INVESTIGATOR KAUFMANN: So you're saying that  
16 case is kind of the steady state of what's in the pool and  
17 not the short-term outage with the hot fuel in, put most  
18 of it back?

19 MR. DeBARBA: Right. It's in there all the  
20 time. You always have a heat load in your spent fuel  
21 pool.

22 Now you're kind of asking me to speculate  
23 because you said you couldn't understand how that would  
24 be, and I was giving you a hypothetical about how it might  
25 be.

1 I didn't write the regulations, so I don't  
2 really know. But I would say that would be one explanation  
3 that would seem somewhat plausible.

4 The other thing, if you think about it is if  
5 this emergency case or abnormal case is safe and we've  
6 documented the analysis and the NRC reviewed it and said  
7 it was safe, then what is the limit on its use?

8 Is once okay? How about five times? How  
9 about ten times? And recognize, we've only got about 20  
10 shots of doing this, 25 shots over the life of the plant.

11 So if you look at this under a problemistic  
12 scope, does it really make much difference whether it's  
13 five times or two times or ten times given the others?

14 We already said it was safe, so there is no  
15 restriction in the language that you can only use this two  
16 times or five times. What's the safety limit, if you  
17 understand my point on that?

18 So from the speculation as to why these things  
19 were written there, that's what I would think. I think  
20 that the original read the kind of bound -- the various  
21 conditions you might have.

22 One is how you run the plan day in and day out  
23 all the time.

24 You're got some vulnerabilities to have a  
25 single failure during the course of the life of the plant.

1 Maybe you add to those kind of criteria.

2 But for these other situations, what you do --  
3 it's very unusual to have that really high heat load in  
4 there for a period of time. It's only a short window of  
5 opportunity.

6 Perhaps you could relax the standards.

7 Now if you're asking is that at the most  
8 conservative way of interpreting those? Heck no, it's  
9 not.

10 INVESTIGATOR KAUFMANN: Well, when I look at  
11 the assumptions that go into the emergency heat load, I  
12 see that it's three months after the last refueling  
13 outage.

14 That would tell me that the analysis assumed  
15 that there was some kind of a problem, that the run  
16 wasn't for a full cycle, and the core was offloaded.

17 I do know looking at some decay heat curves  
18 that if I have a 12 month or a two-year burn that that's  
19 going to give me significantly more heat than is assumed  
20 by what a three month burn would give me.

21 I know when I look at my decay heat curves too  
22 that if I take one year exposed core, I compare it to  
23 offloading the whole thing after 150 hours compared to 250  
24 hours. The 150 hour case gives me about 30 percent more  
25 decay heat.

1 MR. DeBARBA: One hundred and fifty versus  
2 250?

3 INVESTIGATOR KAUFMANN: Two fifty for a -- for  
4 a --

5 MR. DeBARBA: What percentage did you say?

6 INVESTIGATOR KAUFMANN: About 30 percent.

7 MR. DeBARBA: About 30 percent?

8 INVESTIGATOR KAUFMANN: And --

9 MR. DeBARBA: Of course, the analysis there  
10 assumes, what, assumes that you do -- all of the fuel is  
11 offloaded instantaneously at 150 hours, right?

12 INVESTIGATOR KAUFMANN: I just assumed if I  
13 take one bundle and compare it to another bundle, I assume  
14 it's an integral function. I didn't do an integral  
15 calculation of what each one would --

16 MR. DeBARBA: Right, right.

17 INVESTIGATOR KAUFMANN: But I was trying to  
18 gage the magnitude and it's not a trivial magnitude.

19 And in fact, when I go and I look at a 67 hour  
20 offload, which I've seen was done for RFO 2, I see that  
21 that's a factor of nearly four times more than the heat  
22 load for the 250 hour case.

23 So no, we're not talking trivial differences.

24 MR. DeBARBA: Right, right. And you know,  
25 Dave had mentioned before that we're gong to go back and

1 check the heat loads and what not.

2                   What's not -- I mean, it's not intuitively  
3 obvious that just that fact alone will show that the heat  
4 exchanger doesn't have the capacity to do the job, if you  
5 know what I mean.

6                   MR. DeBARBA: I understand.

7                   INVESTIGATOR KAUFMANN: In other words, you've  
8 got to look at a bunch of factors. It's also obvious, or  
9 I think you'll agree that a buy-on load -- a full-core  
10 compared to a quarter-core, that I will get about four  
11 times more heat out of the full-core and it's roughly  
12 proportional to the number of bundles.

13                  MR. DeBARBA: Yes, that's true. Although the  
14 corollary argument to that point is the heat is the heat.  
15 In other words, you've got 580 bundles somewhere that have  
16 the same amount of heat that you've got to remove.

17                  You've only got so many systems to remove it,  
18 and those systems are spent fuel pool cooling and shut-  
19 down cooling, somehow, someway, in order to move that  
20 heat.

21                  And that's what our operators are focusing on  
22 I'm sure.

23                  Now is it true when they're in the reactor  
24 vessel you also have some ECCS equipment that's available?  
25 Sure.

1                   And depending on tech specs, those are tech  
2 spec systems. Some you can take out and some you can't,  
3 depending on what's going on.

4                   We also have a refueling gate that's wide  
5 open, a pretty big opening, where you can get some  
6 exchange of water, you can get some cooling. You don't  
7 take credit for those things.

8                   There are a lot of things we don't take credit  
9 for in the analysis that are real-world type of  
10 situations.

11                  So again, I guess we're kind of still a little  
12 bit of a speculation mode of what were these normal cases  
13 and these abnormal cases all about, and was it even  
14 reasonable for people to assume that they had the license  
15 to be able to do a full-core offload?

16                  And I guess my point is in looking at this and  
17 how I've looked at this and reviewed this based on the  
18 information I have is I can see how we could come to the  
19 assumption that a full-core offload was an acceptable  
20 thing to do, it was approved, and that we had the ability  
21 to make that choice ourselves.

22                  We didn't have any specific limit that said  
23 you can't do a full-core offload unless you did these  
24 things or you had to gain prior approval to do it. We  
25 didn't have that.

1           MR. REPKA: As long as you're talking about  
2 that, Eric, I'll interject -- I mean, I'll ask you to  
3 speculate about how operations would have been perceived in  
4 addition to the FSAR and what was discussed in the FSAR,  
5 in that historical perspective, that historical context?

6           MR. DeBARBA: Well, I think that the FSAR was  
7 as document that was used on Millstone I and it was a  
8 document that was used as we gained our -- went from our  
9 provisional to our full-term operating license in the  
10 70's, but was a document that was really more in licensing  
11 space and not something that was kept -- thought of as a  
12 real, living, useful design type of tool.

13           I don't think it was until the 80's time frame  
14 that it became clear that using and treating the FSAR as a  
15 real design control-type vehicle became apparent to  
16 people.

17           And I think that the NRC promulgated some  
18 regulation in the -- what was it, the mid-80's time frame  
19 relative to FSARs and what were there requirements to  
20 update FSARs and the type of information that should be in  
21 there na dhow it was to be treated.

22           I think up until that time, it wasn't -- it  
23 wasn't nearly as clear.

24           MR. REPKA: So is it fair to say when you  
25 looked at the issue in 1992, you were applying both a new



1 perspective on the FSAR?

2 MR. DeBARBA: In 1992? Yes, that's true.

3 That's true.

4 SENIOR INVESTIGATOR DRISKILL: You believe the  
5 design basis requirements that are contained in the FSAR  
6 should be put into the technical specifications and  
7 operating procedures to ensure compliance?

8 MR. DeBARBA: No. No, I'm not saying that.

9 I'm saying that the FSAR, you know, today is viewed as a  
10 design resource document, one that contains design basis-  
11 type information that you reconcile with whether you're  
12 doing a 50.59 evaluation or you're writing a plant  
13 procedure or whatever you have to do.

14 It's something that you ought to count on as  
15 being accurate and up to date and controlled.

16 SENIOR INVESTIGATOR DRISKILL: But I'm saying  
17 don't design basis requirements have their place in the  
18 operational procedures of the plant?

19 MR. DeBARBA: Yes, some of them. I'm not so  
20 sure all of them. I think that there are lots of things  
21 in the FSAR that aren't tech specs, for instance.

22 SENIOR INVESTIGATOR DRISKILL: So you don't  
23 believe it was shortcoming in the technical specifications  
24 that certain design basis requirements contained in  
25 License Amendment 40 didn't get into the technical

1 specifications or if, in fact, it's viewed at this 150  
2 hour for the normal and 250 for the abnormal core  
3 offloads, was a design basis requirement as of License  
4 Amendment 40 and the fact that they exceeded that 250 hour  
5 time constraint in RFO 13, you don't believe that that was  
6 a violation of the design basis?

7 MR. DeBARBA: I believe that from a design  
8 analysis standpoint, it was clearly outside the design  
9 analysis assumptions. There's no question about that.

10 SENIOR INVESTIGATOR DRISKILL: Would those  
11 analyses have been part and parcel of the design basis  
12 since the design basis was based on those?

13 MR. DeBARBA: Well again, I think you're  
14 getting into a very specific part of what constitutes the  
15 design basis.

16 What I would say is that the design basis are  
17 those heat exchangers and the heat exchangers were  
18 designed to remove so much heat, all right?


19 And the design basis was to have calculations  
20 to prove they are able to do that. And you know, we  
21 proved that under certain conditions.

22 Now the question is given the fact that at  
23 least one of the conditions was done differently in a  
24 shortly time period than what was assumed in the analysis,  
25 what is the effect of that? Is that outside the design

1 basis?

2           It's clearly outside the analysis, one of the  
3 analysis assumptions. From an overall heat load  
4 standpoint, is that outside the heat load capacity? I  
5 don't know, and I also don't know what somebody might have  
6 done to maybe check to see if it was.

7           In other words, if somebody were to run a  
8 calculation and say that geez, you know, we're going to  
9 maybe shorten this up front, but we know based on other  
10 conditions, that we're still bounded by that calculation -  
11 -

12           SENIOR INVESTIGATOR DRISKILL: Or either  
13 concede to what you're saying or agree with it, based on  
14 what we know wouldn't it still have been more appropriate  
15 than a 50.59 evaluation be performed prior to RFO 13 to   
16 ensure that -- and to document the acceptability of  
17 removing the fuel in the shorter period of time?

18           MR. DeBARBA: Well sure, it certainly would  
19 have been more conservative. And it certainly would have  
20 reduced doubts about some things, no question about it.  
21 It would definitely be a more conservative thing to do.

22           You know, if you ask me was it a matter that  
23 it violated some license condition if it didn't do that?  
24 I don't think so. I don't think, from what I know, that I  
25 would say that.

1 I think we took the prudent course of action  
2 from 1992 when we came to the recognition that clearly  
3 there was a more conservative way of treating this full-  
4 core offload case that we had analyzed.

5 I think we took the more conservative approach  
6 and got the thing sorted out.

7 I think what we're really questioning here is  
8 historical, what happened historically and what should  
9 have been done and what was done. Was it proper or was it  
10 correct?

11 And you know, would it have been made better  
12 by doing certain things?

13 I think you can postulate lots of things that  
14 you could have done that would have made it better.

15 SENIOR INVESTIGATOR DRISKILL: Yes, that's  
16 true. Let me ask you, since you've been involved with  
17 this thing for several years, are you aware of the  
18 question that Mr. Galatis had posed in 1992, that question  
19 ever being asked previously or as, in your discussions  
20 with any of the people here who were knowledgeable  
21 relative to these activities and some of whom had been  
22 around for a number of years say, "Yes, we discussed all  
23 that back in 1981, and we decided this, this and this  
24 about that."?

25 I mean, I'm just asking.

1 MR. DeBARBA: No, I'm really not aware of  
2 that. I'm not aware that there were those discussions.

3 SENIOR INVESTIGATOR DRISKILL: And as far as  
4 you know then, basically, this whole issue came to the  
5 table in 1992 with Mr. Galatis?

6 MR. DeBARBA: Yes. And in fact, one of the  
7 reasons it took as long as it did from 1992 to 1993 when  
8 the LER was rewritten was because I think I  
9 organizationally and internally there were lots of  
10 different opinions on how that ought to be interpreted.

11 George had one set of opinions, which was more  
12 conservative. And there are a number of other people who  
13 felt differently about the issue.

14 So it took some time to get through that  
15 process, to ultimately reach that kind of a conclusion.

16 that right there tells me that you've got  
17 people who have differing professional opinions about  
18 what's right and what's not.

19 SENIOR INVESTIGATOR DRISKILL: Okay. Later  
20 on, you mentioned Mr. Partlow, Jim Partlow, later on came  
21 int. I think he sort of agreed with Galatis that this  
22 activity was perhaps outside of the design basis. Did you  
23 ever have an opportunity to talk to him about that?

24 MR. DeBARBA: I did not.

25 SENIOR INVESTIGATOR DRISKILL: You obviously

1 or apparently, I'm sure, read his letters that he had  
2 written on this.

3 MR. DeBARBA: Sure, I did.

4 SENIOR INVESTIGATOR DRISKILL: And did you  
5 agree or disagree perhaps with his contention? Not that  
6 he's the end-all to --

7 MR. DeBARBA: No.

8 SENIOR INVESTIGATOR DRISKILL: --  
9 interpretation of the regulations certainly, but --

10 MR. DeBARBA: Yes, I clearly can understand  
11 his perspective on it. I clearly do. I understand that  
12 that is a more conservative interpretation on it.

13 SENIOR INVESTIGATOR DRISKILL: And the  
14 Connecticut Yankee interpretation, which I think somewhat  
15 sided with Galatis' view relative to historical, do you  
16 remember that?

17 MR. REPKA: Yankee Atomic.

18 SENIOR INVESTIGATOR DRISKILL: Yankee Atomic,  
19 I'm sorry.

20 MR. DeBARBA: Oh yes, yes. No, I'm familiar  
21 with that as well.

22 INVESTIGATOR KAUFMANN: If we go back  
23 historically, let's talk about the SEP, the standard  
24 review plans, et cetera, where NRC spelled out in an TO  
25 position and what-not how to do the calculations on the

1 heat exchangers.

2                   And my understanding is that those documents  
3 say do it this way. If you do it this way and you get  
4 acceptable answers, we'll approve it.

5                   And my understanding isn't that that was the  
6 way the calculations have to be done, and there are other  
7 options to do it and it can be submitted and reviewed. Is  
8 that --

9                   MR. DeBARBA: I'm not sure I'm quite following  
10 you, John. You're saying the analytical methods can be  
11 different or something from the standard review plan?

12                   INVESTIGATOR KAUFMANN: Right, that's my  
13 question. That is, I believe one way that a licensee can  
14 attempt to addresses that. My understanding is that's not  
15 the only way.

16                   And where I'm headed to is should the normal,  
17 as described, licensee in fact, be what they normally do  
18 or should it be what I'll call a stylized analysis where  
19 the NRC says do it this way, that it has not relationship  
20 to what people really do?

21                   MR. DeBARBA: No, it should not have no  
22 relationship to what people do. It really ought to bound  
23 what people do.

24                   And that's why I say in calculations space,  
25 whether you're doing an earthquake analysis or fatigue

1 analysis or heat exchanger analysis, that type of thing,  
2 the NRC regulations are typically written to bound what  
3 you would expect, so that you don't have to get into a  
4 situation of specifically monitoring every single  
5 operational parameter.

6                   And if you have good bounding analysis, that's  
7 the case.

8                   I think you've got a situation right here that  
9 is more borderline. Does this, in fact, really bound --  
10 you know, when somebody offloads it in a manner that  
11 begins quicker than their start time, does that really  
12 bound the analytical assumptions that were made in that  
13 heat exchanger calculation?

14                   INVESTIGATOR KAUFMANN: So that's conservative  
15 on the surface, and I guess I would --

16                   MR. DeBARBA: Right.

17                   INVESTIGATOR KAUFMANN: -- my opinion would be  
18 that therefore I ought to do a calculation analysis,  
19 something that shows it's okay before I do it?

20                   MR. DeBARBA: I think today, that's exactly  
21 what we would do. I think back in time I'm less certain  
22 because of how people interpreted the regulations on that.

23                   And I'm also less certain as to whether that  
24 really is a license requirement to do it. In the  
25 aggregate, are you really bounded or not bounded?



1                   And again, it goes back to the necessity to,  
2 on an individual basis, bound all the analytical  
3 assumptions that you have.

4                   For instance, in LOCA's space, I think it's  
5 annually we are required by regulation to make submittals  
6 on our LOCA codes and where we find differences in the  
7 pluses and minuses and that type of thing.

8                   There are some very detailed analytical  
9 assumptions in there. Are people looking at that? Yes,  
10 they're looking at some of those details.

11                   But those are things that are documented on an  
12 annual basis. I guess I would say that if it was that  
13 reburied, then why would you do it on an annual basis?  
14 Why wouldn't you do it the second that that particular  
15 discrepancy was identified?

16                   So I don't think it's quite fair to say that  
17 all analytical assumptions ought to be translated into an  
18 operational spec. And I'm concerned that you would have  
19 an analogy which says analytical assumption: 150 hours in  
20 the analytical space. Therefore, it ought to be as if it  
21 were in tech specs of 150 hours.

22                   In other words, that's the connection that's  
23 made. And you're treating that analytical assumption as  
24 if it stood right there in the tech specs that says "Thou  
25 shalt not do anything different than 150 hours."

1                   And I don't think it's fair to make that  
2 assumption. I don't think that in the analytical space  
3 that you make those kinds of assumptions.

4                   Now I do believe that this is a bit of a gray  
5 issue. And I think we do have the obligation to make sure  
6 our case is bounded. So in that case, yes. Might we be  
7 outside our design basis? We might be.

8                   If we, you know, take a look at it and  
9 conclude that our heat load was not bounded by that  
10 analytical assumption; in other words, we go back and  
11 looked at the actual case, which is what we're doing now  
12 and the supplement on the LER.

13                   We go back and look at that. Was that -- if  
14 those original analyses did not bound what actually  
15 happened, then we're outside our design basis, clearly  
16 outside.

17                   Our design basis said those heat exchangers  
18 with that heat load will maintain the temperature below  
19 some number, whether it was 140 or 150. The question is,  
20 did we do that or didn't we? That's the design basis.

21                   INVESTIGATOR KAUFMANN: Well, I think I can  
22 give you the answer. And you told us before that you  
23 maintained temperatures and there -- and so are we going  
24 to assume single failures in the next go-around that's  
25 being dine?

1           MR. DeBARBA: What I'm saying is that based on  
2 what the design assumptions were -- in other words, we had  
3 a set of calculations that said here, this is what you  
4 need to do. You run these calculations with these sets of  
5 assumptions and it produces acceptable results.

6           Now if we got some other assumptions that  
7 actually occurred, like the hold time was different, plug  
8 those in and see what the results are, all right?

9           And if, in fact, we are outside that design  
10 basis envelope, yes, then we're outside our design basis.  
11 But I don't think you can just take one parameter all by  
12 itself and say ah ha, therefore, you're outside your  
13 design basis.

14           I think the design basis is a little broader  
15 than one assumption.

16           SENIOR INVESTIGATOR DRISKILL: Okay, but what  
17 was submitted to the NRC in support of those cases,  
18 assumes heat exchanger fouling, -- water temperatures,  
19 certain computer codes for how decay heat was calculated?

20           And I know one of the submittals talks about  
21 they want to change how decay heat is calculated and  
22 change analytical methods. Therefore, it needed to be a  
23 license amendment and go to the NRC.

24           This strikes me as we're changing analytical  
25 methods from a worse-case to an actual case. And no

1 offense to -- I have an engineer title, but I don't really  
2 consider myself an engineer.

3 I was an operator. And no offense to  
4 engineers, but we don't need 600 engineers if the test is  
5 to put fuel in there. And if you can cool it and  
6 everything is okay, I don't understand why my office would  
7 have a branch reviewing these issues.

8 I don't understand why there would be heat  
9 people here worried about it. If the test acceptance  
10 criteria is with the heat exchangers I have, I throw the  
11 fuel in, with the actual water temperatures I have, I can  
12 cool it, and I don't have to assume a single failure and  
13 everything is okay. I don't need a lot of engineers. I  
14 can just turn the operators loose.

15 MR. DeBARBA: No, don't misinterpret what I'm  
16 saying. I'm not saying that that is the right thing to  
17 do. I think that -- you know, I think that people should  
18 be looking at FSARs and looking at that kind of  
19 information in making those judgements, all right?

20 What I'm saying is that I wouldn't be as quick  
21 to say thought historically what was done was outside of  
22 the design basis.

23 Does that put you in a little different space?  
24 And I'm not so sure that it is outside of the design  
25 basis.

1           You're saying from a practical standpoint,  
2   should they have done something differently? Would it  
3   have been better if they had waited the 150 hours? Sure.

4           SENIOR INVESTIGATOR DRISKILL: The simple  
5   question is, is this anyway to run a railroad, to do  
6   things less conservative that are analyzed without showing  
7   it's okay ahead of time?

8           MR. DeBARBA: No, no. They should have done  
9   that. That would have been better if they had done that,  
10   clearly. There's no question about that.

11           But to say that that put them outside the  
12   design basis, I don't know. I don't know if it was  
13   outside the design basis or not.

14           You've got to do some work in order to make  
15   that kind of a determination.

16           INVESTIGATOR KAUFMANN: Well then, the  
17   question obviously leads one to a reasonable assurance,  
18   some things are submitted to the NRC; they were approved  
19   based on information, the assumptions given to the NRC;  
20   and then different things are done and nobody can say if  
21   that's right or wrong.

22           That seems like it should be a little more  
23   black and white than that, but --

24           SENIOR INVESTIGATOR DRISKILL: Well, how do  
25   you reconcile the matter in which RFO 13 was conducted

1 without a 50.59 without and the way RFO 13 was conducted  
2 with a 50.59?

3 MR. DeBARBA: Well, RFO 14, when we realized  
4 that a more conservative approach would be to take all the  
5 assumptions from the abnormal case and from the normal  
6 case and apply it to the full-core offload, that's what we  
7 did. And we looked at it and said, "Well, is there a way  
8 to improve the plant?"

9 Because we were looking at applying single  
10 failure criteria to a shut-down cooling system that did  
11 not have a full cross-tie capability hydraulically.

12 And we said, "Yes, there are some things that  
13 we need to do. It's going to take us a little bit of time  
14 to do that. Let's structure this into a more conservative  
15 approach." That's the way to run a railroad, using your  
16 words.

17 I mean, that was the right thing to do upon  
18 discovery that that was where we found ourselves. And  
19 there's no question about that.

20 And now your question is well, shouldn't we  
21 have done that in RFO 13, not having discovered that we  
22 had this discrepancy?

23 And now I'm in speculation land. I really  
24 don't know. You know, I don't know. It's hard to do a  
25 50.59 on something that you don't know about.

1                    SENIOR INVESTIGATOR DRISKILL: Well, I just  
2 find it difficult to believe that people are taking the  
3 license with these hours and shortening the time for  
4 unloading which is putting additional heat in there  
5 without doing any kind of analysis at all and not ever  
6 understanding what the FSAR says about it, or essentially  
7 says are the hours that should be associated with these  
8 different kinds of offload scenarios.

9                    MR. DeBARBA: Right. Well like I said, I  
10 don't know what the reactor engineers or the people might  
11 have done at each of those refueling outages.

12                   Perhaps they did do some calculations. I  
13 don't know.

14                   INVESTIGATOR KAUFMANN: Well, we know for some  
15 of the early outages, -- back of the envelope calculations  
16 were done and there really weren't mechanisms put in place  
17 that if this one came out and the ocean heated up to stop  
18 putting in bundles.

19                   MR. DeBARBA: Right, right. You know, you're  
20 saying, is it the right thing to do? No, it's not the  
21 right thing to do.

22                   Was it outside their design basis envelope? I  
23 don't know. It might be. It might not be. If it's  
24 outside their design basis envelope, yes, that violates  
25 one of the rules.

1                   Is there a better way to do it? Yes, there  
2 is. That's what we're doing now. I think that's how I'm  
3 trying to characterize it. Maybe I'm not making it clear.

4                   SENIOR INVESTIGATOR DRISKILL: Of course, you  
5 understand what Galatis' contention was. And trying to  
6 restate that basically as I understood it was you've got  
7 the normal offload criteria and you've got the abnormal  
8 offload criteria.

9                   And it's his contention then, and he was  
10 right, that the abnormal was the normal, and that the same  
11 constraints both for analysis and time were not being  
12 considered for what was being used as the normal as the  
13 NRC requirements imposed on the licensee.

14                  In other words, he was saying that you were  
15 using the abnormal, which essentially existed as an  
16 emergency remedy for some problem. That was being used as  
17 the normal offload manner and it was not as safe, and it  
18 was not analyzed and so on and so forth.

19                  Because the NRC basically didn't expect it to  
20 be used but once or twice during the lifetime of the  
21 plant.

22                  Based on the presentation that Northeast  
23 Utilities made to the Nuclear Regulatory Commission in  
24 application for the provisional operating license, later  
25 on their operating license, and the license amendments



1 that they submitted that addressed that particular thing.

2 I think that's basically where Galatis is  
3 coming from. And on the face, it looks like he's right.

4 But of course, I guess you've got to get in a  
5 lot of these definitions of why and all that other stuff,  
6 and that's why --

7 MR. DeBARBA: And that's why I'm not taking  
8 issue with George and the issues that he raised. I think  
9 that from that 1992 time frame going forward, I think  
10 we've listened very intently to what he had to say and did  
11 the things we felt we needed to do to improve the plant's  
12 performance and make sure that we carried that forward  
13 into how we run those plant systems.

14 I think what he really brought to bear was the  
15 fact that spent fuel pool cooling systems and shut-down  
16 cooling systems for the plant were -- had not been given  
17 the same type of treatment that perhaps other safety  
18 systems in the plant.

19 And that the degree to which -- the degree of  
20 rigor that had been applied could be improved and brought  
21 up to a higher level of standard. And that's what we've  
22 done.

23 SENIOR INVESTIGATOR DRISKILL: We're going to  
24 go off the record for just a minute.

25 (Whereupon, the proceedings went off the

1 record at 2:30 p.m. and resumed at 2:35.)

2 SENIOR INVESTIGATOR DRISKILL: Back on the  
3 record. The time is 2:35 p.m. We're with Mr. Eric  
4 DeBarba. Prior to this interview, we were informed that  
5 Mr. DeBarba would have a couple of hours to spend with us,  
6 and that he needed to leave somewhere approximately three  
7 o'clock this afternoon.

8 And I think there's been a considerable amount  
9 of time discussing some of the historical issues relative  
10 to the refueling outages and offloading procedures and so  
11 on.

12 And I think we've kind of run into a point now  
13 where we've got several other issues that we wanted to  
14 discuss which we're not going to have time to discuss. So  
15 we're going to briefly discuss a couple more things here  
16 and allow Mr. DeBarba to leave and make his other  
17 scheduled appointments this afternoon.

18 INVESTIGATOR KAUFMANN: Eric, as a result of  
19 all of the follow-up to the REF 92.73 and the LER, as we  
20 detailed in the last hour or so, changes were made in the  
21 way the refueling outages were conducted.

22 I know that the REF process was looked at and  
23 changes made. Can you just outline for us if you will the  
24 lessons learned for your organization in handling this  
25 event and what kind of improvements, changes you've made

1 to your processes if you will?

2 MR. DeBARBA: Sure. The REF process and how  
3 it related to the PIR process was revamped considerably.  
4 In fact, we now have what we call an adverse condition  
5 report. We've reduced the threshold on that significantly  
6 so that practically anything that we see out of the  
7 ordinary ends up becoming an adverse condition report.

8 And within a very short period of time, I  
9 believe it's 24 hours, it ends up going to the shift  
10 supervisor and ends up being discussed at the morning  
11 meeting, and ultimately kicking off into some other areas.

12 It could be determinations of operability of  
13 plant equipment and that type of thing.

14 We no longer have an REF process, but we do  
15 have a process that causes us to review things for  
16 operability. And we now have a requirement, really I set  
17 this requirement, to have the preliminary operability  
18 judgement made in a 24 hour period of time.

19 So that regardless of what the issue happens  
20 to be, and you get some pretty complex technical issues at  
21 times, that we have to reach an initial operability  
22 determination in no more than 24 hours.

23 Basically it means if people are working on  
24 something, they don't go home until they come to some  
25 conclusion.

1                   And we think that that's been a significant  
2 improvement for us to do that, and to not allow these  
3 judgements and decisions go for a long period of time.  
4 Until we've got ever "i" dotted and ever "t" crossed to  
5 every single calculation, we think that we've got a  
6 responsibility to make those judgements a lot more quickly  
7 in the interest of the plant operators.

8                   The other thing we've been working on is the  
9 one that we make sure that we understand messages that we  
10 receive from our employees. And we're working on that and  
11 will continue to work on that.

12                   And we are really driving that from a  
13 standpoint of accountability and increased accountability  
14 on everybody's part.

15                   We've run a program called Managing for  
16 Nuclear Safety Concerns where all our supervisors  
17 basically go through a training program, at least two or  
18 three programs. It's a fairly comprehensive program  
19 anyway.

20                   And there's a testing component in there where  
21 they talk about how well they're doing in terms of  
22 relating to their employees and dealing with the people  
23 who may have questions or issues on their minds.  
24 Sometimes safety concerns, but sometimes maybe just some  
25 other inter-personal type matters.

1           I think that's been fairly effective. The  
2 corollary is Partnership 2000 where all our employees  
3 basically go through a training session.

4           Typically, a person like myself kicks off that  
5 session and talks to the group for about an hour or two  
6 about expectations and accountability. And the employees  
7 are asked to sign a form. And it's a form that basically  
8 talks about their role and responsibility as it relates to  
9 safety concerns and being able to communicate and converse  
10 with their supervisors.

11           What we're trying to do is build good two-way  
12 communications back and forth and we think that that is at  
13 the root of a really good safety concern program.

14           And it doesn't matter whether you're talking  
15 about nuclear safety or you're talking about how  
16 somebody's child is doing in school. I mean, they're all  
17 very important types of things in terms of building good  
18 relationships.

19           And usually it's that caring and empathy that  
20 really go a long ways in helping people having good  
21 conversations very early on in the game, and not get to a  
22 point where things become polarized and structured to the  
23 point where you can't have a real good dialogue.

24           And it takes a lot of time to break down walls  
25 and barriers and really get at the source of it.

1 Sometimes those sources go beyond just what is technically  
2 there.

3 It's feelings and it's hurt and it's pain.  
4 And those things are very hard to get over. Sometimes,  
5 you just can't. And those are some of the lessons we  
6 learned.

7 We feel that people have to be accountable in  
8 two ways. If you are a receiver of a message, typically a  
9 supervisor or somebody else in the organization, you have  
10 100 percent accountability to receive that message and act  
11 on it.

12 If you're a sender, you have 100 percent  
13 accountability to send the message and make sure it's  
14 understood. And we're looking at really driving this  
15 point of 200 percent accountability at the interfaces and  
16 trying to drive this sender/receiver message. It's one  
17 that's important.

18 So those are a couple of the things that --

19 SENIOR INVESTIGATOR DRISKILL: Okay.

20 As you talked, the operations regarding the spent fuel  
21 pool where evaluations were done, the way it's operated  
22 now is more conservative, design changes made to the shut-  
23 down cooling system.

24 MR. DeBARBA: Right.

25 SENIOR INVESTIGATOR DRISKILL: And for want of

1 a better thing, we'll say because maybe the design basis  
2 are fuzzy, have you gone and looked at design basis for  
3 other systems, activities, with a view toward maybe their  
4 bases are fuzzy and could be cleared up and maybe we could  
5 operate the system's activity more conservatively?

6 Has there been a global look?

7 MR. DeBARBA: Yes. In fact, we've looked  
8 across our units. But what has stood out really is Unit  
9 I. And Unit I's design bases are -- I would characterize  
10 as the weakest of all the units.

11 We had a formal evaluation team end up looking  
12 at that over the last several months, headed up by a  
13 fellow named John Blisedale, who is the Manager of the  
14 Nuclear Safety Engineering Group reporting to the  
15 oversight function.

16 And they ended up looking in detail at some of  
17 the design bases issues, the design change process, the  
18 design basis reconciliation activities, the FSAR itself,  
19 and ended up providing a report on what we needed to do to  
20 correct that.

21 As a result of that work and some other work  
22 there's a couple of things that we're doing. One is we're  
23 going back and sampling some additional design changes  
24 that have occurred over the last ten years, particularly  
25 in the electrical area.

1                   We think that there's some identified  
2 weaknesses there.

3                   But more specifically, we have put a project  
4 in place, and we're going to have a dedicated team  
5 starting the first of the year, just as soon as this  
6 outage is over, that is going to look at the Millstone I  
7 design bases, the FSAR and improved standard tech specs,  
8 all as a package to be completed by the end of the year.

9                   That's something that Bill Riffer, the Unit  
10 Director, is totally supportive of, as is the Engineering  
11 Organization. And it's going to be a major effort for us,  
12 but one that we think is very important to undertake.

13                   We do believe that the tech specs on Millstone  
14 I are very difficult to use. They're not very user  
15 friendly.

16                   And we think that some of the improve standard  
17 tech spec features will provide us tremendous clarity,  
18 tremendous improvement in clarity on what the requirements  
19 are all about.

20                   INVESTIGATOR KAUFMANN: That's all I have.  
21 Don, do you have more questions?

22                   SENIOR INVESTIGATOR DRISKILL: No, I don't  
23 have any more questions today. Mr. DeBarba, we appreciate  
24 the time you've taken with us, and we want you know that  
25 we'll probably be trying to schedule something for several



1 weeks from now, perhaps another couple of hours that we  
2 can finish this thing up.

3 MR. DeBARBA: Okay.

4 SENIOR INVESTIGATOR DRISKILL: We want you to  
5 know we appreciate your meeting with us on a short term  
~~6 notice.~~

7 MR. DeBARBA: Okay.

8 SENIOR INVESTIGATOR DRISKILL: I'd like to ask  
9 you if you feel that you've been threatened in any manner  
10 or offered any rewards in return for your statement?

11 MR. DeBARBA: No.

12 SENIOR INVESTIGATOR DRISKILL: Has this  
13 statement been given freely and voluntarily?

14 MR. DeBARBA: Yes, it has.

15 SENIOR INVESTIGATOR DRISKILL: We'll close the  
16 record now. Thank you very much.

17 (Whereupon, the interview of ERIC A. DeBARBA  
18 was concluded at 3:45 p.m.)

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