

**Official Transcript of Proceedings**  
**NUCLEAR REGULATORY COMMISSION**

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                              with Southern California Edison Company  
                              DVD 2/4

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UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

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AUGMENTED INSPECTION TEAM EXIT MEETING WITH SOUTHERN

CALIFORNIA EDISON COMPANY

+ + + + +

MONDAY

JUNE 18, 2012

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SAN JUAN CAPISTRANO, CALIFORNIA

DVD 2/4

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The meeting convened in the Community Hall at the San Juan Capistrano Community Center at 25925 Camino Del Avion, San Juan Capistrano, California, at 6:00 p.m., Richard Daniel, presiding.

NRC STAFF PRESENT:

RICHARD DANIEL, Facilitator

THOMAS BLOUNT

ELMO COLLINS

GEORGE CRAVER

EMMETT MURPHY

JOHN REYNOSO

JOEL RIVERA-ORTIZ

GREGORY WARNICK

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PRESENT: (CONTINUED)

GREGORY WERNER

ALSO PRESENT:

PETER DIETRICH, Southern California Edison Co.

DOUGLAS BAUDER, Southern California Edison Co.

THOMAS PALMISANO, Southern California Edison Co.

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

(11:20 a.m.)

FACILITATOR DANIEL: (Joins during progress) ready for the question and comment period, what you all have come for. For those of you that may not have been here for the first two-thirds, my name is Rick Daniel. I will be the facilitator here.

And this is the way we are going to try to work this tonight, folks. The job, my job is to try to provide -- be fair and balanced. I'm going to be moving about. I am going to be approaching folks that have questions.

If you have a question, you raise your hand.

I will come to you. Not yet. I will come to you. If you can make your way to the aisle, you can make your comment, ask your question and the appropriate NRC person will address you.

We have our first question. Just a minute. Folks, we will limit questions and comments to two minutes. Okay.

I'll be right with you.

Keep in mind what I said earlier about our focus. It's about the steam tubes on the steam generators. I hope we can stick to that. If we can't, I'll help refocus us. Keep in mind, you always have

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1 the option of filling out the NRC form out there on the  
2 table. Okay.

3 So we have our first question. Just a  
4 minute. Thank you. Folks, we're going to limit the  
5 questions and comments to two minutes, okay? I'll be  
6 right with you. Go ahead.

7 Why don't you give us your name, if you like,  
8 and go ahead.

9 MR. STONE: I'm Gene Stone from Residents  
10 Organized for a Safe Environment. On April 6, I had  
11 a personal meeting with Chairman Jaczko, as many of our  
12 local coalition did, and he promised us, as much as he  
13 could, that this meeting would be open for people to  
14 speak because at the last April meeting in San Juan  
15 Capistrano, the lights were turned off at 8:30 and we  
16 had to leave.

17 Now I understand, and I agree, that the  
18 steam generator issue is very important, and we should  
19 talk about this issue, and I agree with that for that  
20 tonight.

21 I would officially ask Elmo for the next  
22 meeting to be a category 3 meeting so that we can actually  
23 discuss everything that the public wants to discuss with  
24 no limited time on that meeting.

25 (Applause)

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1 MR. STONE: If Elmo can tell me how to do  
2 that legally, publicly, or whatever it takes to get that  
3 done with the NRC, I'll leave you my email.

4 So my question is how is it that 39 design  
5 changes did not trigger a complete review by the NRC  
6 and complete public hearings as is required by law?  
7 Has the law been broken by either California Edison,  
8 Mitsubishi or the NRC? Thank you.

9 FACILITATOR DANIEL: Thank you, Gene. Greg?

10 MR. WERNER: Well, the 50.59 process is the  
11 regulation and by regulation, they were -- they were  
12 allowed to do what they did. Now, to say that it wasn't  
13 reviewed, portions were reviewed by the NRC. Actually,  
14 there were two changes that did require License  
15 Amendments that were reviewed by the NRC.

16 The NRC did do reviews of part of the design  
17 before the change integers were installed were, as well  
18 as the Augmented Inspection Team also looked at the  
19 design.

20 As I said earlier, we are continuing our  
21 review, and we did identify those two issues for -- I  
22 mean the one issue, with the 50.59, associated with the  
23 two changes to the code of record that was used, as  
24 follow-up plans we have to look at.

25 FACILITATOR DANIELS: Elmo.

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1 MR. COLLINS: I'd like to add to that, to  
2 that response to your question. It's an outstanding  
3 question. It's one we have got ourselves. Because of  
4 what was in the plant while the plant was operating,  
5 we had to be absolutely clear, you know, what happened  
6 here, and how did these steam generators get in the plant,  
7 what were the NRC's review processes, what are our  
8 regulations, to make sure that this went the way that  
9 we wanted.

10 And we are still looking at that. We  
11 haven't reached our final conclusion. But we had that  
12 question, as well. And so we indicated in the  
13 presentation -- and this is part of the augmented team  
14 inspection procedure -- that we would look for these  
15 conditions, look at ourselves, ask ourselves what else  
16 do we need to do. And so that's a question we are trying  
17 to answer, as well. I think your question is right on  
18 the money.

19 With respect to the category 3 meetings,  
20 I have got to tell you, we have been knocking our brains  
21 out, you know, how to do these meetings as best we could.

22 And on this one, we really, we would have  
23 preferred to have gone that route. We just didn't quite,  
24 couldn't quite get to it with the information we wanted  
25 to present to you.

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1 But that is actually a question for our next  
2 meetings or the series of meetings, which one of those  
3 would be appropriate. And we want to have those meetings  
4 so we can have a better, I think, exchange of information,  
5 a better dialogue with you here in California. So,  
6 thanks for raising that.

7 MR. STONE: Respectfully, we demand that  
8 type of meeting.

9 MR. COLLINS: All right, thank you.

10 FACILITATOR DANIEL: Thank you, gentlemen.  
11 I'm going to come to this lady over here. Excuse me.  
12 Give us your name.

13 MS. BECKER: Rochelle Becker, Executive  
14 Director of the Alliance for Nuclear Responsibility.  
15 I have two questions, and I thought I saw Mr. Craver  
16 here earlier. Is he here?

17  
18 MR. CRAVER: Yes, I am.

19 MS. BECKER: Okay. Hello, Mr. Craver.  
20 I have a question for you. Could you just stand up,  
21 because I think the whole audience would like to hear  
22 the answer.

23 My question is, is there a number, is there  
24 an amount of money -- we know that there is no amount  
25 of safety before you reopen -- but is there an amount

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1 of money before you reopen? How much money do you expect  
2 your ratepayers to pay before this plant re-operates?

3 Is there a break-off point in which Edison decides this  
4 is just too much?

5 FACILITATOR DANIEL: Coming right to you.  
6 I'll get back to you.

7 MR. CRAVER: At this point all of our focus  
8 has been on trying to understand the technical aspects  
9 and what exactly is taking place here, what the mechanism  
10 of wear is, what the causes of wear are and how we are  
11 going to actually address those.

12 As we get through the final evaluation of  
13 what the final fixes are, what those will look like,  
14 are those the same fixes for the near term as they are  
15 for the long term, then I think we will have a better  
16 idea of what those cost components are.

17 But I think it is actually really important  
18 for us not to get the financial piece into this at this  
19 point, for us to just focus primarily on the safety issues  
20 and primarily on what we are going to be able to do to  
21 fix it.

22 FACILITATOR DANIEL: Thank you. Hang on,  
23 folks. Hang on. We are going to try to keep the  
24 questions oriented towards the steam tubes. Is this  
25 a question on the steam tubes?

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1 MS. BECKER: Okay. This is to the NRC.  
2 We have just been told that you spent 1300 man-hours  
3 or 1500 man-hours, or whatever, for this review.  
4 However, you didn't spend this amount of time before  
5 you approved it and the State of California invested  
6 in these steam generators.

7 Is the federal government going to help in  
8 any way with the ratepayer cost of this, or are we  
9 supposed to pay for your mistakes, as well as Edison's  
10 mistakes? Thank you.

11 (Applause)

12 FACILITATOR DANIEL: Okay.

13 MR. BLOUNT: The agency had -- and you are  
14 asking for us -- how are we going to handle our regulatory  
15 responsibilities. We have an obligation to review the  
16 safety of these facilities and how they are operated.  
17 We will do that as we are mandated to do.

18 When situations arise, that's why we have  
19 reactive inspections, and so we address those as they  
20 come up. I guess I'm not sure how I would address that  
21 much beyond that. Please.

22 MR. COLLINS: Thanks, Rochelle. Good to  
23 see you hear tonight. It's been a while. I think we  
24 have already indicated we need to go back and look.  
25 You know, wid we follow the -- did NRC follow our

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1 processes, which are implementing our regulations, and  
2 was the right implementation of inspection programs that  
3 were put in place to look at this very thing.

4 And our accountability, I think, goes to  
5 the oversight committees we answer to in Congress  
6 ultimately -- and we have some representatives here -  
7 that hold us to that, to make sure we follow our  
8 processes.

9 I mean, that's all I can do is follow my  
10 process from the regional office. And we are doing our  
11 best to make that happen. So, if we're not, we want  
12 to be the first to fix it.

13 But also, we are going to take a look at  
14 these processes and see if they need to be improved  
15 because of what's going on here.

16 This is a very difficult, technical issue,  
17 and to be quite honest with you, it has not been seen  
18 before. That doesn't give anyone any comfort. But we  
19 need to be smarter, up-front about these types of changes  
20 in nuclear power plants. I'll acknowledge that.

21 FACILITATOR DANIEL: Thank you, Elmo.  
22 This gentleman, you have a question. Can you stand up,  
23 please.

24 MR. CUMMINGS: My name is Jim Cummings  
25 (phonetic), retired Southern California Edison

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1 employee, Unit 1. I have a question in regards to why  
2 the design was changed on the steam generators from the  
3 initial construction to where we fabricated something  
4 out of the -- maybe different from what the final  
5 engineering report would have had you do. That seems  
6 like there's been a major deviation right there as far  
7 as the steam generator design.

8 MR. WERNER: Yes, I'll take that question.

9 Of course the steam generators were different than what  
10 was originally put in because the original steam  
11 generators had to be replaced. So they had issues with  
12 the original generators across the industry, and from  
13 a lessons learned standpoint, with the numerous changes  
14 that have been incorporated in the new generators.

15 FACILITATOR DANIEL: We'll get to you.  
16 Steam tube generators.

17 MR. HOLTZMAN: Staying on focus -- Joe  
18 Holtzman, Mission Viejo -- my question is one question.

19 I would like to direct it to the NRC, Greg, perhaps  
20 you can take it and maybe Mr. Dietrich could take it.

21 Was there a failure mode effect analysis  
22 done on these designs before construction was started?

23 (Pause)

24 MR. HOLTZMAN: The silence is deafening.

25 MR. WARNICK: Like Greg said, as part of

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1 the inspection process, we have a procedure that we  
2 implement for replacement of steam generators. We  
3 reviewed in part the 50.59s associated with the  
4 replacement steam generators.

5 We did not review it to the level of detail  
6 to determine if the failure mode analysis was done.  
7 Beyond that, Edison, if they choose to reply, they can  
8 shed some light on that.

9 MR. DIETRICH: Thank you. The steam  
10 generators were replaced using an engineering design  
11 change package which does look at potential modes of  
12 failure of the steam generators and it looks for  
13 understood or anticipated modes of failure.

14 Included in our technical specification  
15 changes were two License Amendments to change the  
16 plugging limits on the new steam generators compared  
17 to the old steam generators, to move to a lower percentage  
18 of through-wall wear to plug the steam generator tube.

19 So we did look at and analyze the potential  
20 for wear affecting our steam generators. That was  
21 documented in our engineering change package. A failure  
22 modes and effects analysis is traditionally done in our  
23 business associated with looking at a new occurring  
24 problem.

25 So specifically to answer your question,

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1 there was not an FMEA, a failure modes effect analysis  
2 done per se. We are working through that as part of  
3 our solution set and problem-solving situation.

4 FACILITATOR DANIEL: Thank you. I'll get  
5 back to you. Okay?

6 PARTICIPANT: (Name inaudible). Why is it  
7 that Mitsubishi is not present at this meeting and the  
8 same for AREVA and Westinghouse?

9 MR. BLOUNT: In this particular case for  
10 this meeting, this meeting, the Augmented Inspection  
11 Team results, it was as the NRC providing our response  
12 to the licensee on what we have found.

13 Mitsubishi, AREVA, others, are vendors to  
14 that licensee. They are not the ones that we look to  
15 for responsibility associated with that facility. So  
16 if they were here, they would be here in an advisory  
17 capacity to the licensee.

18 FACILITATOR DANIEL: Thank you, Tom.  
19 Steam tubes.

20 MS. RUSCH: My name is Emily. I am a  
21 concerned citizen and the director of the California  
22 Public Interest Research Group, a statewide consumer  
23 advocacy group, and like Rochelle, I am concerned first  
24 and foremost about safety, but I am also concerned about  
25 cost to ratepayers who are already paying for the steam

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1 generators that are now not operating.

2 And I'm wondering if Southern California  
3 Edison can commit to not asking ratepayers to pay for  
4 those steam generators again, should they need to be  
5 replaced.

6 MR. COLLINS: I'll start. I appreciate  
7 your question. We all know this is, on the face of it  
8 a costly -- the plant has been shut down, not generating,  
9 for a number of months.

10 Just from the NRC's perspective, we are  
11 primarily interested in safety. And so I know I can't  
12 put myself in your shoes as a California ratepayer, so  
13 I really don't understand how you're feeling, but I would  
14 ask you to look at us and say we are going to take a  
15 look at safety first and see where it goes.

16 And now I'm going to see if you want to -- if  
17 Pete might add to that answer for you, since they do  
18 think about cost.

19 MR. DIETRICH: Yes, thank you. You know  
20 tonight we came out to talk about specifically the  
21 augmentation team results and to talk specifically about  
22 what our learnings are up to this point.

23 I will share with you the concerns of our  
24 stakeholders, the concerns of our customers are very  
25 important to us and we are mindful of that as we go

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1 forward.

2 All of our discussions regarding costs or  
3 cost issues are ahead of us types of discussions. We  
4 will have opportunities to continue to discuss that and  
5 it will play out very openly in front of the California  
6 Public Utility Commission.

7 So, we are committed to providing that  
8 visibility to the situation going forward. But I think  
9 tonight it's important to talk about the technical  
10 situation and how we move forward over the next few  
11 months. Thank you.

12 FACILITATOR DANIEL: I'm just going to move  
13 over here. I'm coming, folks.

14 MR. COLLINS: I hope some of you have  
15 questions. I've got a technical team sitting here in  
16 the front row. They're just dying to answer your  
17 questions.

18 MR. LUTZ: Okay, Okay. Ray Lutz with  
19 Citizens Oversight. Now you mentioned that the  
20 unexpected tube-to-tube wear was due to excessive steam  
21 velocity. The question is -- and you said your  
22 simulation simulated it to be three to four times higher  
23 than the other simulation.

24 And my first question is, did you actually  
25 measure the velocity of the steam to find out if either

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1 of those simulations is any good? Did you measure the  
2 velocity in the actual steam generator? Number 1.

3 And number 2, why is the steam at a higher  
4 velocity? That is not the root cause. You need to jump  
5 back and say why is it going faster? Is it because  
6 Southern California Edison modified these steam  
7 generators by adding 370 additional tubes and  
8 subtracting the certain supports and so fourth? Is that  
9 the reason?

10 Is it -- what is the reason? Because you  
11 guys came in here saying you came to the cause of this  
12 and you gave us no cause. This is not the cause.

13 So I want to know the answer. What is the  
14 cause of the excessive steam velocity? If you tell me  
15 it is because of something that happened somewhere else,  
16 then you have to ask why did that happen?

17 And you're stopping just after one thing  
18 -- oh, excessive tube-to-tube wear, that's why the leak  
19 started. Why did that happen, excessive steam velocity,  
20 why did that happen?

21 So, please go down that trail. And I want  
22 to know, did you measure the steam velocity?

23 MR. WERNER: Actually, that question is  
24 outstanding. We have to understand and SONGS owes us  
25 that answer as far as what specifically in the design

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1 change in the steam generator causing the higher than  
2 expected velocity, and as they talked about steam void  
3 fractions.

4 So they still owe us that. That's been  
5 something that we've discussed since we have been on  
6 site. I'm sorry. What was the other question?

7 Oh, they do not measure steam flows within  
8 the steam generators. There is not that capability.  
9 The modeling is done based upon experimental data, as  
10 well as empirical data.

11 FACILITATOR DANIEL: Okay. Another  
12 question about steam tubes. Yes, ma'am.

13 MS. STONE: Karen Stone from Laguna Hills.

14 I wanted to know just how much radiation was released  
15 from 3 having its problem. You are saying it's minimal,  
16 but how much was it? We need to know.

17 FACILITATOR DANIEL: Thank you, Karen.

18 MR. WARNICK: Thank you for the question.  
19 As I told you before, I was on site. I responded to  
20 the event. Full time, when I'm on the site, I wear a  
21 radiation badge that measures my radiation. So I'm  
22 monitored.

23 We independently verified and quantified  
24 how much release there was. The amount was 5.2 E to  
25 the minus 5 millirem.

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1 Now, what that means, essentially is it was  
2 more than 10,000 times below what you would receive from,  
3 say, an x-ray of the arm or what each of us receives  
4 daily from naturally occurring background radiation,  
5 which is about one millirem. So, it was 10,000 times  
6 below that amount.

7 FACILITATOR DANIEL: Okay. Thank you.

8 MR. WARNICK: Essentially, on my radiation  
9 badge that I wear every day, that measures my radiation,  
10 it was negligible. It wasn't picked up at all.

11 FACILITATOR DANIEL: Thank you. Okay.  
12 Question to Gary Headrick.

13 MR. HEADRICK: My name is Gary Headrick,  
14 representing San Clemente Green, about 1500 citizens.

15 And I'd like to share a more general observation that  
16 will cover the steam generator issue indirectly. But  
17 if you would please indulge me while I read.

18 This is an intervention. The people that  
19 you are sworn to protect, the ones that you ultimately  
20 serve, are speaking up in a strong and forceful way  
21 because you are blindly following a path that has become  
22 a habitual routine.

23 Unfortunately, it eventually will lead to  
24 the destruction of everyone and everything for miles  
25 around if allowed to continue indefinitely. We can't

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1 simply let this situation continue any longer. We have  
2 been extremely lucky so far.

3 The reckless behavior of Edison that has  
4 been exhibiting over the years has got to stop. Edison's  
5 insatiable appetite for gambling continues to escalate,  
6 when losing, it is virtually impossible thanks to the  
7 Price-Anderson Act, and winning is practically  
8 guaranteed simply by staying in the game.

9 This situation would be an irresistible  
10 temptation for even the most timid gambler. Having  
11 never lost, the obsession becomes even stronger. Yet  
12 the longer one goes on a winning streak, the more likely  
13 it is that luck will run out.

14 The Nuclear Regulatory Commission is  
15 equally responsible for this situation reaching such  
16 an intolerable condition. Your good intentions aiming  
17 to make sure that the power we need is delivered in a  
18 safe manner has an inherent conflict of interest that  
19 can't be avoided.

20 You either have to put safety first or  
21 follow your loyalty to the industry from which you came.

22 You have become the enabler in this relationship, a  
23 codependent partner torn between what is best for those  
24 you work closely with and the public at large.

25 It is with concern for the good of all that

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1 we must step in as interveners, reminding you that you  
2 must act responsibly and remember your original  
3 obligations to the people and the environment.

4 FACILITATOR DANIEL: All right, Gary.  
5 Hang on a second. Is this going to result in a question  
6 about the steam tubes? Another minute.

7 MR. HEADRICK: It's for a lot of people.  
8 The plain truth is that we don't need to gamble our  
9 families and our possessions in order to get the power  
10 we need for the comfortable lifestyles we are accustomed  
11 to. The last four months have been living proof of that  
12 fact.

13 The cost of continuing to support this aging  
14 nuclear power plant is not necessary. All of the  
15 consternation over evacuation routes and sheltering in  
16 place to escape radiation has vanished with this recent  
17 revelation.

18 The only responsible action to take is for  
19 Edison to transition to truly sustainable and safe  
20 alternatives before the competition gets too far ahead,  
21 and for the NRC to recognize that it is time to retire  
22 this old racehorse and deal with the extremely toxic  
23 waste that has been piling up in the stall for more than  
24 30 years now.

25 FACILITATOR DANIEL: All right, Gary. Okay.

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1 Thank you. Thank you.

2 (Applause)

3 FACILITATOR DANIEL: We'll get back to you,  
4 Gary. We'll get back to you.

5 MR. WERNER: Yes, I'd like to respond to  
6 that. I think it's important to understand that at the  
7 NRC safety is first. We do not have a schedule for  
8 restart. No decision has been made.

9 And again, the units are not running because  
10 currently it is not safe to restart, until they go ahead  
11 and do actions to prevent tube degradation due to  
12 vibration.

13 The NRC does not rely on luck, nor does the  
14 nuclear industry. The steam generators of the reactor  
15 itself, the design, actually incorporated looking at  
16 a steam generator tube rupture. So that was part of  
17 the design that the plant could respond to.

18 As Greg Warnick indicated earlier, they  
19 have detection equipment that rapidly detects small  
20 leaks. Operators are trained. They go to training,  
21 extensive training. They are able to respond to the  
22 leak, isolate it, minimizes the leak, as well as multiple  
23 \*\*\*11:45:21 (inaudible) in place.

24 So again, the plant design, the training  
25 and the construction of the plant are specifically

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1 designed to combat accidents, including steam generator  
2 tube rupture. So there is no luck involved with that.

3 MR. HEADRICK: Can I finish one paragraph?

4 FACILITATOR DANIEL: Gary, Gary, I'll tell  
5 you what, as time permits, we will get back to you for  
6 the last paragraph. Okay. We're not going to forget  
7 you. Okay? I promise. We're going to get back to you.

8 Sir.

9 MR. WEISS: My name is Rick Weiss and I have  
10 two questions I think are germane to this issue. They  
11 concern the tubes. And I wanted to know a little bit  
12 more about the details of the tubes. I understand that  
13 they're three-quarter of an inch diameter. I want to  
14 know what they are made of, how thick the walls are and  
15 how they have been tested to withstand -- we have been  
16 talking about vibrations -- how they have been tested  
17 to withstand the earthquakes that we have around here.

18 That's a concern for me.

19 And the other question is, in the event that  
20 they need to be replaced or something, what happens to  
21 them? I mean, where did they go, what plans do you have  
22 to dispose of them or store them. Or actually, what  
23 are your plans to -- that was a good question about the  
24 nuclear waste piling up, for the past 30 years it has  
25 been piling up and we have been looking for solutions,

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1 waiting for solutions. And are there any new solutions  
2 that you have for that?

3 FACILITATOR DANIEL: Thank you, Rick.

4 MR. WERNER: I'm going to let Emmett answer  
5 the question about the steam generator tubes, right there  
6 in front. He's part of the Augmented Inspection Team,  
7 30 plus years' experience looking at team generators.  
8 Go ahead, Emmett.

9 MR. MURPHY: Okay, I believe one of the  
10 questions was what are the tubes made of. They are made  
11 out of INCONEL 690, a thermally treated  
12 nickel-chromium-iron alloy, very corrosion, stress  
13 corrosion, crack resistant, compared to the INCONEL 600  
14 tubing used in the original steam generators. I'm sure  
15 I'm missing part of your question.

16 FACILITATOR DANIEL: The seismic -- the  
17 seismic --

18 MR. MURPHY: The diameter -- the diameter  
19 of these tubes is three-quarters inch. The  
20 thickness -- the wall thickness is 0.043 inches, 43 mils.  
21 The steam generators were designed for seismic  
22 conditions to stay within stress limits required by the  
23 code, the ASME, or American Society of Mechanical  
24 Engineering, section 3, code stress limits.

25 (Off-mic question)

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1 MR. MURPHY: The tubes? Each of the tubes  
2 is welded at the tube ends to the tube sheet and in  
3 addition, they are hydraulically expanded for the full  
4 thickness of the tube sheet.

5 FACILITATOR DANIEL: Okay. Thank you.

6 MR. WARNICK: I can't answer how far apart  
7 each tube is. Maybe you can get that information from  
8 Emmett and we can add that additionally.

9 MR. MURPHY: The tube pitch is one-quarter  
10 inch. In other words, the closest nominal dimension  
11 between the tubes is 0.25 inches.

12 FACILITATOR DANIEL: Thanks, Emmett.

13 MR. WARNICK: Your second question is what  
14 do they do with these steam generators when you replace  
15 them. That was actually part of our inspection, when  
16 they replaced the old steam generators with the new steam  
17 generators.

18 The old steam generators are essentially  
19 decontaminated best they can. The cleaned portion is  
20 cut up and you know Edison, whatever they choose -- I  
21 think they sold most of the metal that they had for scrap,  
22 that was clean.

23 There is a portion that is radioactive on  
24 the primary side in the tubes, and that's shipped to  
25 low level waste facilities that are located throughout

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1 the country.

2 As far as the bigger waste question, as  
3 you're probably aware, that's something that is being  
4 debated in Congress now. There was a Blue Ribbon  
5 Commission that gave a report recently and that's  
6 something that's being determined at the energy policy  
7 level.

8 MR. MURPHY: Just one brief -- a correction  
9 to what I said -- that the minimum gap between the tubes  
10 is one-quarter inch. The pitch is one inch, plus  
11 diameter equals pitch.

12 FACILITATOR DANIEL: Thank you, Emmett.

13 (Off-mic question)

14 FACILITATOR DANIEL: That was answered by  
15 Emmett. All right. Ma'am, do you have a question?

16 PARTICIPANT: Specifically what are the low  
17 level -- where is the low level waste being -- places  
18 around the country?

19 FACILITATOR DANIEL: Well, you know, that's  
20 outside the scope of this meeting. That's something  
21 for another meeting. But you can put it on the feedback  
22 form and submit it and somebody will try to answer it  
23 for you. We are going to focus on the steam generators  
24 and the tubes, have questions about the tubes. Utah.

25 MR. WARNICK: Utah.

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1 PARTICIPANT: Yes. I know that the nuclear  
2 regulatory agency has a lot of channel at its disposal.  
3 I assume also that there is independence. I would like  
4 to know, as there is among really trained professionals,  
5 if there is a minority report.

6 I know that that's considered to be a little  
7 difficult. The NRC has been under criticism because  
8 of the fact that there has been dissent and it's led  
9 to people saying well, you're not playing the game right.

10 And we've had a recent hearing before Congress about  
11 all of this.

12 We want independent professional opinion,  
13 if there is a majority view and if there is a minority  
14 view, about the safety of this, because safety is  
15 supposedly your number 1 concern and for that safety,  
16 you are responsible to us.

17 FACILITATOR DANIEL: All right. Thank  
18 you. Your question is, is there a minority report  
19 related to the steam tubes?

20 PARTICIPANT: Other than just the line that  
21 has been given to us here, as universal opinions.

22 FACILITATOR DANIEL: Okay. Do you  
23 understand that question?

24 MR. COLLINS: Yes. First of all, I want  
25 to say I couldn't agree with you more in your comment

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1 and even to put a finer point on that, when you do have  
2 opposing views or differing views, that drives us to  
3 even a better conclusion when they're considered  
4 evaluated, understood.

5 My definition of objectivity is I  
6 understand the opposing view. I might not agree with  
7 it, but I need to understand it when I make a decision.

8 That's when I can look at myself and say I'm close to  
9 making an objective decision.

10 I've been watching this team work for a  
11 number of months now, and I mean, if there is a minority  
12 report or non-concurrence, it will be documented in  
13 writing and it will available in publicly.

14 But I have got to tell you right now, I am  
15 not hearing any. So far the team is fairly well  
16 consistent and it converged on what you've heard here  
17 tonight. So I think what -- this is really a team view.

18 So --

19 MR. BLOUNT: If I can just add to that  
20 discussion slightly. One of the things that we were  
21 concerned with is that we would develop a mindset that  
22 said we're headed down this path and that was the answer  
23 and we'd put blinders on to this particular issue.

24 So we took the opportunity to bring two  
25 separate individuals that are outside the agency as

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1 experts to look at what it was that it was that this  
2 team was putting together, and we handled them as  
3 separate and distinct, much like a challenge board, to  
4 look at what the team did and what their findings were  
5 and how they went about doing their business to make  
6 sure that we got the best insight that we could.

7 With that, then, we were -- we did make the  
8 determination that the team did do the inspection that  
9 we expected of them and we did reach the appropriate  
10 identification of issues.

11 FACILITATOR DANIEL: So in answer to this  
12 gentleman's question, Tom?

13 MR. BLOUNT: At the end of the day, we will,  
14 once the report is crafted, once we have finalized the  
15 report, it will be a publicly available document and  
16 it will be available on the NRC website.

17 MR. COLLINS: Just to be clear. That's two  
18 reports. There's this team's report and then there's  
19 this report that was prepared by the other engineers  
20 that we brought in to challenge us on our conclusions.

21 So --

22 FACILITATOR DANIEL: Okay. Steam tubes.  
23 Steam tubes.

24 MS. STEMKE: My name is Janesa Stemke and  
25 I live in Riverside. The last I heard before tonight

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1 about the radiation leaks, I heard, "We don't have  
2 statistics on that. We need time. We want to take  
3 accurate measurements and these things take time."

4 That was the last I heard and that was back  
5 in February or something. We need timely and accurate  
6 radiation reports, released and made available to the  
7 public immediately. And if that cannot be provided,  
8 then you did not have the right to operate a nuclear  
9 power plant in this vicinity or any vicinity because  
10 the public needs to know this information.

11 And is there a radiation monitoring system  
12 made available to the public for this purpose and if  
13 not, it makes me wonder if the Nuclear Regulatory  
14 Commission is actually paid on commission to keep nuclear  
15 power plants operating. Thank you.

16 FACILITATOR DANIEL: Thank you.

17 MR. WERNER: Actually, the NRC does get  
18 information, an annual effluent report is published.  
19 But it is important to note that the utility did measure  
20 the amount of radiation, as Greg Warnick said. They  
21 have detectors on the secondary side, the steam side,  
22 so they picked up the amount of radioactivity and they  
23 analyzed that and came up with the release phase. A  
24 couple of weeks after we actually had a radiation  
25 detection team from the Region 4 office out here. They

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1 actually looked at it and looked at the values and  
2 confirmed the numbers.

3 MR. COLLINS: Yes, this is Elmo. I'd like  
4 to add to that response. Actually I really appreciate  
5 the question. Actually, I heard three questions in  
6 there.

7 One was what about the specific event on  
8 January 31st. I think we've talked about. There are  
9 actual measurements and a computation was made.

10 Then I heard about the NRC's annual report  
11 that by regulation Edison has to publish. The question  
12 with that is that doesn't seem very timely. What good  
13 is that? Every year, how is that being done?

14 I do think we're in the process of taking  
15 a look at that to see as an agency if there is anything  
16 we can do to speed that up. I don't want to speak and  
17 say more than I know. But I believe we haven't had that  
18 question before, and I appreciate it.

19 The last point is on maybe some radiation  
20 detectors off-site. I tell you one of the -- and I have  
21 been with the NRC almost 25 years -- one of the hardest  
22 things we have to do is -- one of the hardest things  
23 I have to do was stand in front of you and tell you that  
24 there is little to no radiation being released from San  
25 Onofre, because how are you going to believe me? You

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1 can't feel it. You can't taste it. You can't touch  
2 it. Right? There is no way you can intuitively tell  
3 whether or not you can believe what I'm saying. I  
4 understand that.

5 And so one answer to that might be -- and  
6 I don't know how we would get there -- but to have  
7 detectors off-site so that they can be available for  
8 you.

9 (Applause)

10 MR. COLLINS: I understand why you want  
11 that. The regulations don't require it, but there may  
12 be something, you know, a solution there.

13 FACILITATOR DANIEL: All right. Thank  
14 you, Elmo.

15 MR. MARLOWE: Rick Marlowe (phonetic), out  
16 of Ramona, California. A couple of things. Realtime  
17 reporting over the internet, the emissions would be  
18 greatly appreciated by, I'm sure, by most of the people  
19 in this room.

20 My concerns about the tubes are Mitsubishi  
21 has been making these stem generators for quite a long  
22 time. They have been putting all kinds of plants across  
23 the United States and there may be some design changes,  
24 but the basic geometry and flow in and flow out are  
25 probably pretty consistent amongst all these generators.

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1 I can't imagine that their simulations are  
2 three to four times off, and if so, how can that be?  
3 And if they are that far off, how come we haven't had  
4 these problems in other places and why is it showing  
5 up now?

6 FACILITATOR DANIEL: All right. Thank  
7 you, Rick. Greg?

8 MR. WERNER: Yes. And actually, Mitsubishi  
9 has only had two generators that are currently designed  
10 and operating in the United States. One is -- well,  
11 both the units that are at SONGS and at Fort Calhoun  
12 located outside Omaha, Nebraska.

13 Those steam generators are similar  
14 designed, but they are much, much smaller. And actually  
15 we had the same concern with the wider thermal hydraulic  
16 model, underpredicted the flows. And again, that's  
17 another area that we were asking what caused -- what  
18 was it in their model that caused those thermal hydraulic  
19 conditions to be underpredicted.

20 So we have already asked for that also.

21 FACILITATOR DANIEL: No. I told you, we'll  
22 try to get back to you. No. No. We will try to get  
23 back to you Gary. Just a minute.

24 PARTICIPANT: So you guys want timely  
25 information. Go to the internet. We have our own

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1 sources. If you would like them, you can come and see  
2 me later.

3 Show of hands, how many people here are here  
4 because they do not want any nuclear power?

5 We're here on a post mortem. So why are  
6 these things not reviewed upon delivery? I was  
7 listening to the earlier part of it and there were  
8 accelerometers that had been put off and showed that  
9 there could be damage to these things.

10 Now, if I was a clerk at Ralph's and I  
11 accepted a shipment like that, I would -- it would come  
12 out of my paycheck. So why is it not going to come out  
13 of your paycheck?

14 How many of these -- oh, you actually  
15 answered this question. The models were off by three  
16 to four times. The confidence interval there is  
17 straight off the normal curve.

18 So, here is one about how long has an  
19 investigation of this sort had to have -- how many -- how  
20 long has it taken for an investigation of this sort to  
21 have come to a conclusion in the past?

22 FACILITATOR DANIEL: All right, Zeke.  
23 Thank you. Greg?

24 MR. WERNER: Well, to answer the question  
25 about accelerometers, they were actually evaluated by

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1 SONGS. We just had a concern as we looked at them to  
2 make sure they were properly evaluated.

3 So, they just weren't blown off. They were  
4 actually reviewed. We wanted to make sure that we  
5 understood, to make sure they were actually evaluated  
6 in accordance with their procedures.

7 So, the other thing, again, about the model,  
8 again, we feel the same way as far as being  
9 underpredicted. I mean, we don't understand it and  
10 that's the kind of situation we're in right now.

11 FACILITATOR DANIEL: All right. Who had  
12 some question about steam tubes. Stand up please and  
13 come on out here.

14 MR. HARRIS: Harris, (phonetic) building  
15 contractor, North San Diego County. I have got a  
16 question for Greg. These steam tubes, did I hear you  
17 right? Because the statistic were flying so fast. 128  
18 tubes were tested, pressure tested?

19 MR. WERNER: 129.

20 MR. HARRIS: 129. Eight of them failed?

21 MR. WERNER: Yes.

22 MR. HARRIS: Were they randomly tested  
23 throughout the entire amount of tubes?

24 MR. WERNER: No. Actually, if you go back,  
25 all approximately 40,000 tubes had inspections completed

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1 on them, and then numerous tubes were reinspected beyond  
2 what was required.

3 The tubes that were selected for in situ  
4 pressure testing were actually based upon the ones that  
5 had the extensive tube wear.

6 MR. HARRIS: So there was no random test  
7 of the entire 19,450 tubes in Unit 3?

8 MR. WERNER: That is correct, as far as the  
9 in situ pressure testing.

10 MR. HARRIS: With a failure rate of 0.06  
11 percent, you might have 1,167 bad tubes.

12 MR. WERNER: I'll let Emmett help me out  
13 on this also. But the way the tubes are selected, again,  
14 we're looking once the 80 current testings have  
15 identified those tubes that would be susceptible to  
16 failure, they go in and test them, because they don't  
17 have information to analytically say they're okay.

18 So the idea is to go in and physically test  
19 them to make sure they will or will not hold. And of  
20 course, those eight tubes did not hold, and we suspected  
21 that a number of tubes would fail. That was not beyond  
22 what we did not expect to happen.

23 So, we expected a number of tubes.  
24 Actually, I was surprised more didn't fail.

25 PARTICIPANT: But they only tested 148?

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1 FACILITATOR DANIEL: Hang on.

2 MR. COLLINS: We need some explanation here.

3 There is a misunderstanding of what we know about the  
4 tubes. So, Emmett.

5 MR. MURPHY: Okay. Every time a plant  
6 conducts a steam generator inspection, one of the  
7 purposes is such to find tubes that are -- that are  
8 damaged beyond accepted limits and those tubes are  
9 removed from service.

10 The second question a steam generator  
11 inspection is intended to address, is whether or not  
12 the plant or the utility was successful in maintaining  
13 adequate safety margins in all of the tubes during the  
14 last cycle of operation since the last inspection.

15 Normally, that assessment is performed  
16 through analysis of the inspection or any current test  
17 data of each of the tubes. They measure the depth and  
18 length of the cracks.

19 They take into account measurement error.

20 They utilize standard equations for predicting girth  
21 strength of the tubing as a function of the length and  
22 depth of the flaw.

23 And then they, based on all that  
24 information, they determine whether or not they have  
25 maintained factors of safety against failure consistent

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1 with the requirement.

2           These analyses tend to be very conservative  
3 because a lot of the input parameters have a lot of  
4 uncertainty, and so sometimes you predict through these  
5 analyses that tubes don't have sufficient strength.  
6 But it is a very conservative analysis.

7           So, in situ pressure tests, then, are a way  
8 to then more realistically establish the amount of safety  
9 margin or confirm that you have the appropriate safety  
10 margin.

11           So based on your earlier analyses done by  
12 Southern California, the eddy current inspection data,  
13 they identified a significant number of tubes where their  
14 analyses indicated they didn't have the appropriate  
15 margin.

16           But these were conservative analyses.  
17 That's why we did the pressure tests to determine for  
18 sure whether or not they had the appropriate margins.

19           The rest of the tubes that were not tested, it was very  
20 clear, upon the eddy current inspection data, that they  
21 had the appropriate safety margins.

22           So, it's just the ones -- they just test  
23 the ones where there was some question as to whether  
24 or not they had appropriate the safety margin. Thank  
25 you.

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1 MR. WERNER: I'd like to add to that also,  
2 even before the steam generators were brought here to  
3 site, that each steam generator, at least one time, if  
4 not multiple times, was pressurized, the entire steam  
5 generator, to 125 percent of design pressure.

6 So every steam generator tube was  
7 pressurized to 125 percent of design pressure.

8 (Off-mic question)

9 MR. WERNER: No, the -- again, you go in  
10 from the primary side, so we'll go approximately 2000  
11 pounds, so add another, you know, 2500 pounds, and add  
12 another 500 pounds. So they're all pressurized to 2500  
13 pounds, the entire steam generators. It just wasn't  
14 the tubes. It was entire structure.

15 MR. COLLINS: I want to make sure we -- this  
16 is a very important point that's made by the gentleman,  
17 understand, what's been done at the steam generators  
18 and what the condition of the tubes are today. I need  
19 the team to tell me. I wasn't on the team, so I could  
20 have a misunderstanding.

21 One hundred percent of the tubes, almost  
22 20,000 of them, had the tube thickness measured, I think,  
23 for the full length, right? So we know the thickness  
24 and have data on every tube, almost 20,000 on the steam  
25 generator, and it was only those that I think Emmett,

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1 as Emmett described, that had the most wear that received  
2 the in situ pressure testing. So, we know what's out  
3 there with these tubes.

4 MR. WERNER: It's also important to  
5 understand that the tubes will wear during the normal  
6 operation. So, as part of the inspection program, they  
7 go and look at them to make sure even if they don't have  
8 a leak, they inspect so many tubes as required by tech  
9 specs. Again, the first outage they inspect 100 percent  
10 of all the tubes.

11 FACILITATOR DANIEL: Okay. Steam tubes.

12 MR. TEASLEY: Hi, I'm Russ Teasley, local  
13 resident, with the Earth/Ocean Society. My question  
14 is did the NRC or any of the investigators involved do  
15 specific analysis of the presence or absence of the stay  
16 cylinder, the primary stabilization element of the steam  
17 generator?

18 MR. WERNER: I'm going to let Joel answer  
19 that question. Joel Rivera-Ortiz was on the team. He  
20 actually looked at the design changes associated with  
21 the --

22 MR. RIVERA: This is Joe Rivera, NRC,  
23 Region 2. As part of the AIT, we looked at many of the  
24 design changes that were made from the regional to the  
25 new steam generators, and we looked at how the stay

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1 cylinder was changed from the regional to the new steam  
2 generator.

3 We reviewed the design basis of the steam  
4 generators and how the regional steam generators rely  
5 on the stay cylinder to perform their function, which  
6 formed the basis for operating licensing, operating  
7 license of the facility.

8 And we determined that the final safety  
9 analysis report of the facility did not rely specifically  
10 on the stay cylinder for the safety functions of the  
11 steam generator.

12 FACILITATOR DANIEL: Thank you, Joel. All  
13 right. I've got to go to this lady in the green shirt  
14 before her arm falls off. You had a question about steam  
15 tubes? Right? Okay.

16 PARTICIPANT: Thank you so much. This  
17 event that happened on January 31st, correct? Okay.  
18 What would the tubes' strength be on January 30th if  
19 we had had a serious seismic challenge to that plant?  
20 What would it take?

21 They certainly were damaged the day before,  
22 but they only broke on the 31st. Now maybe they were  
23 damaged on the 20th or the 21st. What do we know about  
24 how strong these were prior to? Aren't we just gambling  
25 here? Aren't we just taking our chances? We are not

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1 a test facility here, a nuclear test facility. We are  
2 families. We are a community. And we deserve better.

3 (Applause)

4 MR. WERNER: Thank you. I'd like to answer  
5 that question. Of course, the steam generators, the  
6 design, take into consideration the seismic. As part  
7 of the in situ pressure testing, again, they selected  
8 those 129 tubes, as Emmett described.

9 Now, all those tubes were  
10 pressurized -- attempted to pressurize up to 5200 psi,  
11 which is, again, essentially almost three times higher  
12 than normal pressure.

13 So three of the tubes failed around what  
14 we call the main steam line pressure, which was -- I  
15 think the test was 3300 psi. And those are the tubes  
16 that we were concerned with from a safety standpoint,  
17 because they failed at the lower pressure and then the  
18 other tubes failed almost at or near the 5200 psi. The  
19 rest of the tubes maintained the pressure and they had  
20 full strength and showed the integrity that they needed.

21 FACILITATOR DANIEL: Okay. Go ahead, Elmo.

22 MR. COLLINS: Let me re-ask that question.  
23 Do we think the tube degradation, the as-found  
24 conditions of the tubes, had a significant impact on  
25 the ability of the steam generators to withstand the

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1 seismic event? That might have been one of the questions  
2 I heard there.

3 FACILITATOR DANIEL: That's right.

4 MR. COLLINS: What -- and did we look at  
5 that? Do we have an assessment? And do we think seismic  
6 qualification was significantly impacted? I hate to put  
7 my team on the spot, but that was the question we got,  
8 I think.

9 FACILITATOR DANIEL: Go ahead, Emmett.

10 MR. MURPHY: Well --

11 MR. COLLINS: Okay, we had the team leader.  
12 Now we need the expert to speak, so --

13 MR. MURPHY: The pressure tests -- the test  
14 procedure calls for considering not only the  
15 differential pressures that are at work during normal  
16 operation and during the accident conditions, the safety  
17 margin, but for the section that you're testing, section  
18 of the tube that you're testing, you must adjust the  
19 test pressure to the extent that loading from a seismic  
20 event or a local rarefaction wave or some other  
21 hypothetical event, if that could affect the pressure  
22 capability of the tube, that should be reflected in the  
23 test pressure that the in situ pressure test was  
24 conducted.

25 It was my understanding during discussions

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1 that I had with personnel during the time that the tests  
2 were done that at the sections that they were testing  
3 that no -- that the loading conditions for size  
4 differential pressure did not impact the failure  
5 pressures.

6 MR. WERNER: Thank you, Emmett. That's  
7 why I have people like him on the team. A lot smarter  
8 than I am.

9 FACILITATOR DANIEL: Well, what does that  
10 mean? Okay. Clarification.

11 MR. COLLINS: Let me restate it. Emmett,  
12 you check me to make sure that I say this in plain language  
13 accurately.

14 (Off-mic question)

15 MR. COLLINS: It would be the ground  
16 acceleration for the design basis earthquake at San  
17 Onofre, point 6 gs. But I think I heard Emmett say -- I'm  
18 looking at him carefully -- is that based on those  
19 stresses alone, the tubes would have retained their  
20 structure. Is that what you said? No? Emmett is going  
21 to clarify.

22 MR. COLLINS: The test pressure, test  
23 pressures at which the in situ test was conducted should  
24 reflect any seismic that is occurring.

25 I think maybe the point of confusion was,

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1 you know, is how much does seismic affect the failure  
2 pressure for the conditions that we had at San Onofre.

3 It affected it -- it affected it in a negligible manner.

4 In other words, it was differential pressure that  
5 controlled the structural margins for this situation.

6 (Off-mic question)

7 MR. MURPHY: Whatever magnitude they were  
8 required to consider. I don't know that -- that's  
9 not -- I don't know the answer to your question.

10 FACILITATOR DANIEL: All right. Thank  
11 you, Emmett.

12 MR. COLLINS: I think we all understand  
13 that it's not the magnitude. It's the magnitude and  
14 how close it is to the plant. So, what the plant has  
15 to be built to is what is the maximum ground acceleration  
16 at the site, and then it's doubled.

17 Then that acceleration is doubled. And for  
18 San Onofre that's 0.67 gs that constitutes the design.

19 That's the ground acceleration at the site that the  
20 plant has to withstand.

21 (Off-mic question)

22 FACILITATOR DANIEL: Is that horizontal and  
23 vertical?

24 MR. WARNICK: There are components,  
25 horizontal and vertical. I don't know the numbers of

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1 exactly the horizontal and vertical, but yes that is  
2 considered.

3 FACILITATOR DANIEL: Okay. We have a  
4 gentleman here who has a question about steam generators.

5 MR. STEINMETZ: Thank you. My name is Jeff  
6 Steinmetz. I've got concerns concerning some of the  
7 changes regarding the generators and steam tubes.  
8 Previously, you stated that you did not -- that you only  
9 considered two changes to be under the 50.90 rule.

10 This I'm confused by because it's my  
11 understanding that you guys removed the stay cylinder.

12 This should have fallen under the 50.90 rule. The  
13 changed tube sheet, the thickness of the -- excuse  
14 me -- the change tube sheet was changed. This should  
15 have fallen under the 50.90 rule. The tube alloy change.

16 This was the only, as I understand it, thing that was  
17 clear to the NRC that was changed that SCE notified  
18 you guys of.

19 The additional tubes, 370 tubes per  
20 generator, this should have fallen under the 50.59 rule.

21 The changed tube supports should have fallen --

22 (Whereupon, at 12:18 p.m., DVD 2 ended)

23

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