

# **Official Transcript of Proceedings**

## **NUCLEAR REGULATORY COMMISSION**

Title:                   Augmented Inspection Team Exit Meeting  
                              with Southern California Edison Company  
                              DVD 2/4

Docket Number:   (n/a)

Location:               San Juan Capistrano, California

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1 UNITED STATES OF AMERICA

2 NUCLEAR REGULATORY COMMISSION

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4 AUGMENTED INSPECTION TEAM EXIT MEETING WITH SOUTHERN

5 CALIFORNIA EDISON COMPANY

6 + + + + +

7 MONDAY

8 JUNE 18, 2012

9 + + + + +

10 SAN JUAN CAPISTRANO, CALIFORNIA

11 DVD 2/4

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13 The meeting convened in the Community Hall  
14 at the San Juan Capistrano Community Center at 25925  
15 Camino Del Avion, San Juan Capistrano, California, at  
16 6:00 p.m., Richard Daniel, presiding.

17 NRC STAFF PRESENT:

18 RICHARD DANIEL, Facilitator

19 THOMAS BLOUNT

20 ELMO COLLINS

21 GEORGE CRAVER

22 EMMETT MURPHY

23 JOHN REYNOSO

24 JOEL RIVERA-ORTIZ

25 GREGORY WARNICK

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1 PRESENT: (CONTINUED)

2 GREGORY WERNER

3  
4 ALSO PRESENT:

5 PETER DIETRICH, Southern California Edison Co.

6 DOUGLAS BAUDER, Southern California Edison Co.

7 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.  
10 Greg?

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

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

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

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1 FACILITATOR DANIELS: Elmo.

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

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

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

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

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1 we wanted to present to you.

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

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

10 MR. COLLINS: All right, thank you.

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

14 MS. BECKER: Rochelle Becker, Executive  
15 Director of the Alliance for Nuclear Responsibility.

16 I have two questions, and I thought I saw Mr. Craver  
17 here earlier. Is he here?

18  
19 MR. CRAVER: Yes, I am.

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

24 My question is, is there a number, is there  
25 an amount of money -- we know that there is no amount

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1 of safety before you reopen -- but is there an amount  
2 of money before you reopen? How much money do you expect  
3 your ratepayers to pay before this plant re-operates?

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

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

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

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

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

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

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1 a question on the steam tubes?

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

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

12 (Applause)

13 FACILITATOR DANIEL: Okay.

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

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

23 MR. COLLINS: Thanks, Rochelle. Good to  
24 see you hear tonight. It's been a while. I think we  
25 have already indicated we need to go back and look.

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1 You know, wid we follow the -- did NRC follow our  
2 processes, which are implementing our regulations, and  
3 was the right implementation of inspection programs that  
4 were put in place to look at this very thing.

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

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

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

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

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

25 MR. CUMMINGS: My name is Jim Cummings

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

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

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

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

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

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

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

24 (Pause)

25 MR. HOLTZMAN: The silence is deafening.

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1 MR. WARNICK: Like Greg said, as part of  
2 the inspection process, we have a procedure that we  
3 implement for replacement of steam generators. We  
4 reviewed in part the 50.59s associated with the  
5 replacement steam generators.

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

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

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

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

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1 occurring problem.

2 So specifically to answer your question,  
3 there was not an FMEA, a failure modes effect analysis  
4 done per se. We are working through that as part of  
5 our solution set and problem-solving situation.

6 FACILITATOR DANIEL: Thank you. I'll get  
7 back to you. Okay?

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

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

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

20 FACILITATOR DANIEL: Thank you, Tom.  
21 Steam tubes.

22 MS. RUSCH: My name is Emily. I am a  
23 concerned citizen and the director of the California  
24 Public Interest Research Group, a statewide consumer  
25 advocacy group, and like Rochelle, I am concerned first

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1 and foremost about safety, but I am also concerned about  
2 cost to ratepayers who are already paying for the steam  
3 generators that are now not operating.

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

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

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

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

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

25 I will share with you the concerns of our

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1 stakeholders, the concerns of our customers are very  
2 important to us and we are mindful of that as we go  
3 forward.

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

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

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

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

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

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1 And my first question is, did you actually  
2 measure the velocity of the steam to find out if either  
3 of those simulations is any good? Did you measure the  
4 velocity in the actual steam generator? Number 1.

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

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

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

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

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

25 MR. WERNER: Actually, that question is

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1 outstanding. We have to understand and SONGS owes us  
2 that answer as far as what specifically in the design  
3 change in the steam generator causing the higher than  
4 expected velocity, and as they talked about steam void  
5 fractions.

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

9 Oh, they do not measure steam flows within  
10 the steam generators. There is not that capability.

11 The modeling is done based upon experimental data, as  
12 well as empirical data.

13 FACILITATOR DANIEL: Okay. Another  
14 question about steam tubes. Yes, ma'am.

15 MS. STONE: Karen Stone from Laguna Hills.  
16 I wanted to know just how much radiation was released  
17 from 3 having its problem. You are saying it's minimal,  
18 but how much was it? We need to know.

19 FACILITATOR DANIEL: Thank you, Karen.

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

25 We independently verified and quantified

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1 how much release there was. The amount was 5.2 E to  
2 the minus 5 millirem.

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

9 FACILITATOR DANIEL: Okay. Thank you.

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

13 FACILITATOR DANIEL: Thank you. Okay.  
14 Question to Gary Headrick.

15 MR. HEADRICK: My name is Gary Headrick,  
16 representing San Clemente Green, about 1500 citizens.  
17 And I'd like to share a more general observation that  
18 will cover the steam generator issue indirectly. But  
19 if you would please indulge me while I read.

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

25 Unfortunately, it eventually will lead to

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1 the destruction of everyone and everything for miles  
2 around if allowed to continue indefinitely. We can't  
3 simply let this situation continue any longer. We have  
4 been extremely lucky so far.

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

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

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

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

24 You have become the enabler in this relationship, a  
25 codependent partner torn between what is best for those

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1 you work closely with and the public at large.

2 It is with concern for the good of all that  
3 we must step in as interveners, reminding you that you  
4 must act responsibly and remember your original  
5 obligations to the people and the environment.

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

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

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

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

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1 30 years now.

2 FACILITATOR DANIEL: All right, Gary.  
3 Okay. Thank you. Thank you.

4 (Applause)

5 FACILITATOR DANIEL: We'll get back to you,  
6 Gary. We'll get back to you.

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

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

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

20 As Greg Warnick indicated earlier, they  
21 have detection equipment that rapidly detects small  
22 leaks. Operators are trained. They go to training,  
23 extensive training. They are able to respond to the  
24 leak, isolate it, minimizes the leak, as well as multiple  
25 \*\*\*11:45:21 (inaudible) in place.

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1           So again, the plant design, the training  
2           and the construction of the plant are specifically  
3           designed to combat accidents, including steam generator  
4           tube rupture. So there is no luck involved with that.

5           MR. HEADRICK: Can I finish one paragraph?

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

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

21          And the other question is, in the event that  
22          they need to be replaced or something, what happens to  
23          them? I mean, where did they go, what plans do you have  
24          to dispose of them or store them. Or actually, what  
25          are your plans to -- that was a good question about the

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1 nuclear waste piling up, for the past 30 years it has  
2 been piling up and we have been looking for solutions,  
3 waiting for solutions. And are there any new solutions  
4 that you have for that?

5 FACILITATOR DANIEL: Thank you, Rick.

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

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

18 FACILITATOR DANIEL: The seismic -- the  
19 seismic --

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

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1 Engineering, section 3, code stress limits.

2 (Off-mic question)

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

7 FACILITATOR DANIEL: Okay. Thank you.

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

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

14 FACILITATOR DANIEL: Thanks, Emmett.

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

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

25 There is a portion that is radioactive on

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1 the primary side in the tubes, and that's shipped to  
2 low level waste facilities that are located throughout  
3 the country.

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

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

14 FACILITATOR DANIEL: Thank you, Emmett.

15 (Off-mic question)

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

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

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

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1 generators and the tubes, have questions about the  
2 tubes. Utah.

3 MR. WARNICK: Utah.

4 PARTICIPANT: Yes. I know that the  
5 nuclear regulatory agency has a lot of channel at its  
6 disposal. I assume also that there is independence.

7 I would like to know, as there is among really trained  
8 professionals, if there is a minority report.

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

13 And we've had a recent hearing before Congress about  
14 all of this.

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

20 FACILITATOR DANIEL: All right. Thank  
21 you. Your question is, is there a minority report  
22 related to the steam tubes?

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

25 FACILITATOR DANIEL: Okay. Do you

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1 understand that question?

2 MR. COLLINS: Yes. First of all, I want  
3 to say I couldn't agree with you more in your comment  
4 and even to put a finer point on that, when you do have  
5 opposing views or differing views, that drives us to  
6 even a better conclusion when they're considered  
7 evaluated, understood.

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

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

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

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

21 So --

22 MR. BLOUNT: If I can just add to that  
23 discussion slightly. One of the things that we were  
24 concerned with is that we would develop a mindset that  
25 said we're headed down this path and that was the answer

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1 and we'd put blinders on to this particular issue.

2 So we took the opportunity to bring two  
3 separate individuals that are outside the agency as  
4 experts to look at what it was that it was that this  
5 team was putting together, and we handled them as  
6 separate and distinct, much like a challenge board, to  
7 look at what the team did and what their findings were  
8 and how they went about doing their business to make  
9 sure that we got the best insight that we could.

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

14 FACILITATOR DANIEL: So in answer to this  
15 gentleman's question, Tom?

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

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

24 So --

25 FACILITATOR DANIEL: Okay. Steam tubes.

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1 Steam tubes.

2 MS. STEMKE: My name is Janesa Stemke and  
3 I live in Riverside. The last I heard before tonight  
4 about the radiation leaks, I heard, "We don't have  
5 statistics on that. We need time. We want to take  
6 accurate measurements and these things take time."

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

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

19 FACILITATOR DANIEL: Thank you.

20 MR. WERNER: Actually, the NRC does get  
21 information, an annual effluent report is published.

22 But it is important to note that the utility did measure  
23 the amount of radiation, as Greg Warnick said. They  
24 have detectors on the secondary side, the steam side,  
25 so they picked up the amount of radioactivity and they

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1 analyzed that and came up with the release phase. A  
2 couple of weeks after we actually had a radiation  
3 detection team from the Region 4 office out here. They  
4 actually looked at it and looked at the values and  
5 confirmed the numbers.

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

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

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

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

22 The last point is on maybe some radiation  
23 detectors off-site. I tell you one of the -- and I have  
24 been with the NRC almost 25 years -- one of the hardest  
25 things we have to do is -- one of the hardest things

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1 I have to do was stand in front of you and tell you that  
2 there is little to no radiation being released from San  
3 Onofre, because how are you going to believe me? You  
4 can't feel it. You can't taste it. You can't touch  
5 it. Right? There is no way you can intuitively tell  
6 whether or not you can believe what I'm saying. I  
7 understand that.

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

12 (Applause)

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

16 FACILITATOR DANIEL: All right. Thank  
17 you, Elmo.

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

23 My concerns about the tubes are Mitsubishi  
24 has been making these stem generators for quite a long  
25 time. They have been putting all kinds of plants across

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1 the United States and there may be some design changes,  
2 but the basic geometry and flow in and flow out are  
3 probably pretty consistent amongst all these  
4 generators.

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

10 FACILITATOR DANIEL: All right. Thank  
11 you, Rick. Greg?

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

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

24 So we have already asked for that also.

25 FACILITATOR DANIEL: No. I told you, we'll

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1 try to get back to you. No. No. We will try to get  
2 back to you Gary. Just a minute.

3 PARTICIPANT: So you guys want timely  
4 information. Go to the internet. We have our own  
5 sources. If you would like them, you can come and see  
6 me later.

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

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

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

18 How many of these -- oh, you actually  
19 answered this question. The models were off by three  
20 to four times. The confidence interval there is  
21 straight off the normal curve.

22 So, here is one about how long has an  
23 investigation of this sort had to have -- how many -- how  
24 long has it taken for an investigation of this sort to  
25 have come to a conclusion in the past?

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1 FACILITATOR DANIEL: All right, Zeke.  
2 Thank you. Greg?

3 MR. WERNER: Well, to answer the question  
4 about accelerometers, they were actually evaluated by  
5 SONGS. We just had a concern as we looked at them to  
6 make sure they were properly evaluated.

7 So, they just weren't blown off. They were  
8 actually reviewed. We wanted to make sure that we  
9 understood, to make sure they were actually evaluated  
10 in accordance with their procedures.

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

15 FACILITATOR DANIEL: All right. Who had  
16 some question about steam tubes. Stand up please and  
17 come on out here.

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

23 MR. WERNER: 129.

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

25 MR. WERNER: Yes.

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1 MR. HARRIS: Were they randomly tested  
2 throughout the entire amount of tubes?

3 MR. WERNER: No. Actually, if you go back,  
4 all approximately 40,000 tubes had inspections  
5 completed on them, and then numerous tubes were  
6 reinspected beyond what was required.

7 The tubes that were selected for in situ  
8 pressure testing were actually based upon the ones that  
9 had the extensive tube wear.

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

12 MR. WERNER: That is correct, as far as the  
13 in situ pressure testing.

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

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

22 So the idea is to go in and physically test  
23 them to make sure they will or will not hold. And of  
24 course, those eight tubes did not hold, and we suspected  
25 that a number of tubes would fail. That was not beyond

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1 what we did not expect to happen.

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

4 PARTICIPANT: But they only tested 148?

5 FACILITATOR DANIEL: Hang on.

6 MR. COLLINS: We need some explanation here.

7 There is a misunderstanding of what we know about the  
8 tubes. So, Emmett.

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

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

19 Normally, that assessment is performed  
20 through analysis of the inspection or any current test  
21 data of each of the tubes. They measure the depth and  
22 length of the cracks.

23 They take into account measurement error.

24 They utilize standard equations for predicting girth  
25 strength of the tubing as a function of the length and

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1 depth of the flaw.

2 And then they, based on all that  
3 information, they determine whether or not they have  
4 maintained factors of safety against failure consistent  
5 with the requirement.

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

11 So, in situ pressure tests, then, are a way  
12 to then more realistically establish the amount of  
13 safety margin or confirm that you have the appropriate  
14 safety margin.

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

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

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

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1           So, it's just the ones -- they just test  
2           the ones where there was some question as to whether  
3           or not they had appropriate the safety margin. Thank  
4           you.

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

10          So every steam generator tube was  
11          pressurized to 125 percent of design pressure.

12          (Off-mic question)

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

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

25          One hundred percent of the tubes, almost

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1 20,000 of them, had the tube thickness measured, I think,  
2 for the full length, right? So we know the thickness  
3 and have data on every tube, almost 20,000 on the steam  
4 generator, and it was only those that I think Emmett,  
5 as Emmett described, that had the most wear that received  
6 the in situ pressure testing. So, we know what's out  
7 there with these tubes.

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

15 FACILITATOR DANIEL: Okay. Steam tubes.

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

22 MR. WERNER: I'm going to let Joel answer  
23 that question. Joel Rivera-Ortiz was on the team. He  
24 actually looked at the design changes associated with  
25 the --

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1 MR. RIVERA: This is Joe Rivera, NRC,  
2 Region 2. As part of the AIT, we looked at many of the  
3 design changes that were made from the regional to the  
4 new steam generators, and we looked at how the stay  
5 cylinder was changed from the regional to the new steam  
6 generator.

7 We reviewed the design basis of the steam  
8 generators and how the regional steam generators rely  
9 on the stay cylinder to perform their function, which  
10 formed the basis for operating licensing, operating  
11 license of the facility.

12 And we determined that the final safety  
13 analysis report of the facility did not rely  
14 specifically on the stay cylinder for the safety  
15 functions of the steam generator.

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

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

25 They certainly were damaged the day before,

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1 but they only broke on the 31st. Now maybe they were  
2 damaged on the 20th or the 21st. What do we know about  
3 how strong these were prior to? Aren't we just gambling  
4 here? Aren't we just taking our chances? We are not  
5 a test facility here, a nuclear test facility. We are  
6 families. We are a community. And we deserve better.

7 (Applause)

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

13 Now, all those tubes were  
14 pressurized -- attempted to pressurize up to 5200 psi,  
15 which is, again, essentially almost three times higher  
16 than normal pressure.

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

25 FACILITATOR DANIEL: Okay. Go ahead, Elmo.

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1 MR. COLLINS: Let me re-ask that question.  
2 Do we think the tube degradation, the as-found  
3 conditions of the tubes, had a significant impact on  
4 the ability of the steam generators to withstand the  
5 seismic event? That might have been one of the  
6 questions I heard there.

7 FACILITATOR DANIEL: That's right.

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

13 FACILITATOR DANIEL: Go ahead, Emmett.

14 MR. MURPHY: Well --

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

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

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1 capability of the tube, that should be reflected in the  
2 test pressure that the in situ pressure test was  
3 conducted.

4 It was my understanding during discussions  
5 that I had with personnel during the time that the tests  
6 were done that at the sections that they were testing  
7 that no -- that the loading conditions for size  
8 differential pressure did not impact the failure  
9 pressures.

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

13 FACILITATOR DANIEL: Well, what does that  
14 mean? Okay. Clarification.

15 MR. COLLINS: Let me restate it. Emmett,  
16 you check me to make sure that I say this in plain  
17 language accurately.

18 (Off-mic question)

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

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1 MR. COLLINS: The test pressure, test  
2 pressures at which the in situ test was conducted should  
3 reflect any seismic that is occurring.

4 I think maybe the point of confusion was,  
5 you know, is how much does seismic affect the failure  
6 pressure for the conditions that we had at San Onofre.

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

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

10 (Off-mic question)

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

14 FACILITATOR DANIEL: All right. Thank  
15 you, Emmett.

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

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

23 That's the ground acceleration at the site that the  
24 plant has to withstand.

25 (Off-mic question)

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1 FACILITATOR DANIEL: Is that horizontal  
2 and vertical?

3 MR. WARNICK: There are components,  
4 horizontal and vertical. I don't know the numbers of  
5 exactly the horizontal and vertical, but yes that is  
6 considered.

7 FACILITATOR DANIEL: Okay. We have a  
8 gentleman here who has a question about steam  
9 generators.

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

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

17 This should have fallen under the 50.90 rule. The  
18 changed tube sheet, the thickness of the -- excuse  
19 me -- the change tube sheet was changed. This should  
20 have fallen under the 50.90 rule. The tube alloy  
21 change. This was the only, as I understand it, thing  
22 that was clear to the NRC that was changed that SCE  
23 notified you guys of.

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

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1       The changed tube supports should have fallen --  
2       (Whereupon, at 12:18 p.m., DVD 2 ended)  
3

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