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Plant Operations and PRA Subcommittees
South Texas Project Exemption Request

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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

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ADVISORY COMMITTEE ON REACTOR SAFEGUARDS (ACRS)
PLANT OPERATIONS AND PRA SUBCOMMITTEES
SOUTH TEXAS PROJECT EXEMPTION REQUEST

+ + + + +

WEDNESDAY,

FEBRUARY 21, 2001

+ + + + +

ROCKVILLE, MARYLAND

The Subcommittees met at the Nuclear
Regulatory Commission, Two White Flint North, Room
T2B3, 11545 Rockville Pike, at 8:30 a.m., Doctor
George Apostolakis, Chairman, presiding.

COMMITTEE MEMBERS:

GEORGE APOSTOLAKIS, Chairman (of ACRS and) PRA

Subcommittee

JOHN D. SIEBER, Chairman, Plant Operations

Subcommittee

MARIO V. BONACA, Vice Chairman, ACRS

THOMAS S. KRESS, Member

DANA A. POWERS, Member

WILLIAM J. SHACK, Member

ROBERT E. UHRIG, Member

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RICK GRANTOM, STPNOC

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A-G-E-N-D-A

Page No.

Introductory Remarks, **GEORGE APOSTOLAKIS,**

Subcommittee Chair 5

Industry Presentation 6

RICK GRANTOM, STPNOC

GLEN SCHINZEL, STPNOC

RALPH CHACKAL, STPNOC

RUSS LOVELL, STPNOC

ALLEN MOLDENHAUER, STPNOC

NRC Staff Presentation 126

RICH BARRETT, NRR

STU RICHARDS, NRR

JOHN NAKOSKI, NRR

SAMUEL LEE, NRR

General Discussion and Adjournment

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

(8:30 a.m.)

CHAIRMAN APOSTOLAKIS: The meeting will now come to order. This is a meeting of the ARCS Subcommittee, Plant Operations and PRA. I'm George Apostolakis, Chairman of the PRA Subcommittee. Mr. John Sieber on my left is Chairman of the Plant Operations Subcommittee.

ACRS members in attendance are Mario Bonaca, Thomas Kress, William Shack, Robert Uhrig and Dana Powers.

The purpose of this meeting is to discuss categorization and associated open items related to the South Texas Project request to exclude certain components from the scope of special treatment requirements in 10 CFR, Parts 21, 50 and 100.

Maggalean W. Weston is the ACRS staff engineer for this meeting.

The rules for participation in today's meeting have been announced as part of the notice of this meeting previously published in the Federal Register on January 29, 2001. A transcript of the meeting is being kept and will be made available as stated in the Federal Register notice. It is requested that speakers first identify themselves and

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1 speak with sufficient clarity and volume so that they
2 can be readily heard.

3 We have received no written comments from
4 members of the public regarding today's meeting.

5 We'll now proceed with the meeting, and I
6 call upon Mr. Rick Grantom of South Texas to begin.

7 Rick?

8 MR. GRANTOM: I appreciate the opportunity
9 to address the ACRS. We are here today to talk about
10 STP's categorization process. This process was
11 started back during the time when we went for the
12 graded quality assurance pilot which was developed
13 during that period of time. We've done some
14 refinements to address the treatment requirements for
15 special treatment requirements, and at this time what
16 we plan to do is, Glen Schinzel will be doing most of
17 the presentation. We brought with us Russ Lovell,
18 Allen Moldenhauer from my staff, and Russ Lovell from
19 the Training Department, and Ralph Chackal.

20 So, with that, I'll turn it over to Glen
21 to start the presentation, if there aren't any other
22 questions.

23 DOCTOR SHACK: Can you just tell me how
24 many open items are left on the categorization process
25 from the SER? I was trying to keep track of that.

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1 MR. SCHINZEL: We have three open items
2 specific to categorization. All three of those are
3 still open, have not yet been fully resolved.

4 DOCTOR SHACK: That's what, 32, 33 --

5 MR. SCHINZEL: 34, 35 and 36.

6 DOCTOR SHACK: You guys punted on the
7 common cause one, 31.

8 MR. GRANTOM: Yes. We went back to the
9 way that we had done that in the graded quality
10 assurance.

11 MR. SCHINZEL: We will discuss that in our
12 presentation.

13 Okay. If we could get our Power Point
14 presentation. Okay.

15 Again, good morning to the ACRS members.

16 The STP attendees today, like Rick
17 mentioned, includes Rick Grantom, who is an Expert
18 Panel member on our process groups, Allen Moldenhauer
19 is to his left. Allen is our Working Group PRA
20 member. Russ Lovell to his left is a past Working
21 Group chair. Ralph Chackal, to the far left, is our
22 Working Group facilitator, and my name is Glen
23 Schinzel, I essentially serve as the Working Group
24 sponsor for our graded quality assurance Working
25 Group.

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1 CHAIRMAN APOSTOLAKIS: It's not obvious
2 what the difference is between a sponsor, a
3 facilitator and a chairman of the Working Group.

4 MR. SCHINZEL: Okay.

5 Essentially, the chair has the
6 responsibility for maintaining the meeting, the
7 activities of each Working Group meeting activity.
8 The facilitator, essentially, prepares the information
9 to be brought to the meetings for the Working Group
10 members, and then as a sponsor I'm the primary
11 interface between the Working Group and the Expert
12 Panel, and in showing that from a schedule standpoint
13 we are getting done what we have intended to.

14 CHAIRMAN APOSTOLAKIS: So, you are a member
15 of the Expert Panel?

16 MR. SCHINZEL: I'm not a member of the
17 Expert Panel or the Working Group.

18 CHAIRMAN APOSTOLAKIS: I see.

19 MR. LOVELL: Can I mention, Russ Lovell,
20 I'm also now a member of the Expert Panel. I
21 originally was the Working Group chairman, now on the
22 Expert Panel. It was my reward for doing things
23 right, I guess.

24 MR. SCHINZEL: Any other questions? Okay.

25 We'll continue with the next slide. From

1 a categorization process, our categorization does
2 include two areas. One is the PRA input, the other is
3 the deterministic input. As we start in on each
4 individual system, we do review the bases for the PRA
5 model for that particular system. We look at the
6 model inputs and the results coming from that model.
7 In addition, for the model components we identify what
8 the categorization results from the PRA are for those
9 individual components.

10 On the deterministic side -

11 DOCTOR KRESS: Is that based on importance
12 measures?

13 MR. SCHINZEL: Yes, it is. We are going to
14 go through that in some detail, as to exactly how we
15 determine those.

16 So, here I just want to give a very high-
17 level overview of the process, I'll just do that on
18 one slide, and then we'll step into the details.

19 On the deterministic side, we do identify
20 the functions that are performed by the system, those
21 primarily come through our design basis document, also
22 with input from our system engineer. We established
23 a risk significance for each one of those functions,
24 and that goes through our categorization process,
25 asking our five critical questions. We'll go through

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1 that in some detail later.

2 DOCTOR BONACA: Just a question with that,
3 the deterministic process is to focus only on the core
4 damage issues or containment challenges, you do not
5 look at the intermediate goals that you have inside
6 the FSAR, for example.

7 MR. SCHINZEL: That's correct.

8 DOCTOR BONACA: You don't look at DNB as a
9 condition that you want to -

10 MR. SCHINZEL: That's correct, we focus on
11 core damage frequency.

12 DOCTOR BONACA: So, your deterministic
13 process really is not part of the - FSAR, it just
14 still focuses on the same criteria that you meet.

15 MR. SCHINZEL: That is correct.

16 DOCTOR BONACA: All the intermediate
17 criteria that were in the FSAR are not of concern
18 anymore.

19 MR. SCHINZEL: That's correct.

20 DOCTOR KRESS: Since risk is inherently a
21 probabilistic issue, are you going to explain what a
22 deterministic risk significance is and how that
23 differs from the normal risk significance?

24 MR. SCHINZEL: We will. I think as we step
25 through the presentation we'll try to make that clear.

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1 CHAIRMAN APOSTOLAKIS: I think the use of
2 the word deterministic is unfortunate here. It's
3 really a non-PRA or a subjective categorization,
4 because there's nothing deterministic about it. I
5 mean, you are asking people to categorize things and
6 put them in bins, so the word deterministic really
7 doesn't belong here.

8 But, it's not obvious what a better word
9 is.

10 DOCTOR BONACA: No, but when you read
11 deterministic the first thing you do, you say, oh,
12 okay -

13 CHAIRMAN APOSTOLAKIS: Subjective is
14 better, but I can understand why you would be
15 reluctant to use that word.

16 MR. GRANTOM: That's kind of evolved over
17 time, where the word deterministic has been used to
18 characterize judgment.

19 MR. SCHINZEL: And, I think as we go
20 through the process you'll see that there is structure
21 to the process.

22 CHAIRMAN APOSTOLAKIS: Sure.

23 MR. SCHINZEL: There's consistency to the
24 process, so one thing that we want to ensure that you
25 understand is, it's not a group of people, and a

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1 different set of people coming in at different times,
2 throwing in different ideas, different bases for the
3 determinations.

4 CHAIRMAN APOSTOLAKIS: Maybe you can call
5 it methodology using structured judgment, because
6 that's really what you are doing.

7 MR. SCHINZEL: It is.

8 CHAIRMAN APOSTOLAKIS: It's a structured
9 judgment approach.

10 MR. SCHINZEL: It is.

11 CHAIRMAN APOSTOLAKIS: Because
12 deterministic is — and deterministic risk
13 significance, as Doctor Kress said, is kind of an
14 oxymoron, right?

15 MR. SCHINZEL: If you could kindly accept
16 our use of deterministic for the focus of this
17 presentation, we're going to use it several times.

18 CHAIRMAN APOSTOLAKIS: We are just trying
19 to be constructive.

20 MR. SCHINZEL: I understand.

21 DOCTOR BONACA: I think it's substantial
22 for a reason, that again the point I made is that a
23 member of performance measures, which were the
24 original designer of the plant, for certain transients
25 of a given frequency, are eliminated, and that's

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1 really where the whole deterministic process was
2 focusing on, was the ANSI standards, the approach to
3 categorization, and what kind of performance measure
4 you accepted for that.

5 So, there is a history behind that, that's
6 why I was confused at the beginning when I was reading
7 it over, I jumped into that and I said, well, it's not
8 here.

9 MR. SCHINZEL: Once we do identify the
10 significance of each function, then we map that
11 function to the individual components, and then based
12 upon that mapping process a determination is made of
13 the significance of each individual component, and
14 that's broadly what we do in that portion of the
15 determination or the risk significance process.

16 Once we have gone through the PRA and the
17 deterministic aspects, then we come up with the final
18 categorization for the individual components, and
19 that's comparing the categorization for both the PRA
20 and the deterministic, and we select the higher of the
21 two and we can never have the final categorization
22 being less than what the PRA categorization is.

23 In addition, we do identify critical
24 attributes. These are the attributes that have made
25 that specific function or that specific component

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1 important, and then the Working Group, once we
2 document the bases for all of our information and
3 decisions, then these decisions are presented in draft
4 form to an Expert Panel, and the Expert Panel reviews,
5 critically assesses the product, and then the Expert
6 Panel has the priority of, or the responsibility of
7 approving the process before it can be used.

8 CHAIRMAN APOSTOLAKIS: Now, when you say
9 based on the higher of PRA and deterministic, do you
10 mean for every component that is part of the PRA you
11 also did the deterministic risk evaluation?

12 MR. SCHINZEL: That is correct. Every
13 component receives, if it's in the PRA, it also
14 receives the deterministic side. Those that were not
15 in the PRA only received the deterministic.

16 CHAIRMAN APOSTOLAKIS: Now, how consistent
17 were the rankings according to the PRA and the
18 deterministic?

19 MR. SCHINZEL: Generally, they were very
20 consistent. There are times where, based on the
21 subjective insight from the panel members, we've
22 identified areas where we feel that the categorization
23 should be higher, and in those cases we made it
24 higher. In some of those cases, PRA came out with a
25 categorization of low, deterministically we felt that

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1 the categorization should be somewhat higher. So —

2 DOCTOR POWERS: That would suggest to me
3 that there must be something in the PRA that is not
4 reflective of the group's judgment. Have you tried to
5 identify what that is?

6 MR. GRANTOM: I think a lot of the cases
7 that happened in there is the fact that the PRA is
8 focused on being a power model, and the deterministic
9 sets of questions follow things from emergency
10 operating procedures, is it necessary for a mode
11 change or shutdown safety, and that's part of the
12 reason why we asked both deterministic and
13 probabilistic, we cover those uncertainties. Some of
14 those differences lie in the answering of those kinds
15 of questions.

16 DOCTOR POWERS: So, the improved technology
17 in the area of, say, shutdown as an example, could
18 obviously help.

19 CHAIRMAN APOSTOLAKIS: Well, what you are
20 saying, Rick, is that, perhaps — I mean, the way I
21 understand it is that, if I were to do a PRA
22 categorization, using importance measures that would
23 focus on intermediate goals, as Doctor Bonaca said
24 earlier, rather than CDF, let's say on a function,
25 then, perhaps, the rankings would not be that

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1 different, because you said that in the deterministic
2 categorization people look at things like, well, in
3 addition to shutdown, support of procedures and so on.
4 So, you know, it's a matter of focus.

5 MR. GRANTOM: Exactly, it's a different
6 question. The traditional -- of merit that we have
7 used have been based on 5046 criteria, ETCS acceptance
8 criteria, this is based on a core damaging event,
9 that's different.

10 CHAIRMAN APOSTOLAKIS: Yes, sure.

11 So, you brought in some of that old
12 thinking through the deterministic categorization.

13 MR. GRANTOM: Right, to handle issues like
14 uncertainties and incompleteness, scope issues.

15 CHAIRMAN APOSTOLAKIS: Right. We'll come
16 back to that, yes.

17 MR. SCHINZEL: The next slide shows a very
18 broad overview of a flow chart of the categorization,
19 and, again, this is a very high level. It does show
20 on the far upper left-hand side our PRA ranking. The
21 model will develop a ranking of either high, medium or
22 low, and we'll go through those in some detail as to
23 how we developed those. It does factor in station and
24 industry experience separately from the PRA
25 categorization. There is a graded quality assurance

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1 Working Group categorization, and again, the bullets
2 there broadly identify the activities of the Working
3 Group to analyze performance data, consider the risk
4 ranking, inject the deterministic insight, and then
5 develop recommendations regarding the final
6 categorization and those programmatic controls that
7 would be placed over those components.

8 Then, coming from the Working Group, there
9 is a documented, what we call a risk significance
10 basis document, which documents the judgments and
11 results from the working group. That documented bases
12 is then sent to an Expert Panel. The Expert Panel
13 reviews these inputs, considers the risk
14 categorizations recommended, and injects their own
15 deterministic insights into the process.

16 Upon approval, then those changes to the
17 processes are available to be inputted into the
18 station, and we do have an ongoing feedback loop that
19 feeds back into both the PRA and the deterministic
20 insights of the Working Group for potential changes to
21 either the PRA model or the Working Group's inputs and
22 following categorizations.

23 So, that was, basically, the high-level
24 overview. We'll start into -

25 MR. SIEBER: Maybe I can ask a question.

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1 MR. SCHINZEL: Certainly.

2 MR. SIEBER: Overall, you've deal with or
3 categorized something like 42,000 components, how many
4 of those actually appears specifically in your PRA?

5 MR. SCHINZEL: We have a total of
6 approximately 1,200 components that are in the PRA.
7 Now those, for the systems that have been categorized
8 to date, 886 of those model components are included in
9 those categorized systems. So, it's roughly 3/4s.

10 MR. SIEBER: And, what process do you go
11 through to gather the 39 out of 40 that don't appear
12 in the PRA into the categorization process? Just go
13 through your Q list?

14 MR. GRANTOM: That's what we are going to
15 cover here in just a second, just go through how we
16 handle those components that are included within the
17 scope of the PRA.

18 MR. SIEBER: Okay.

19 MR. GRANTOM: And then, that's in several
20 of the slides in here, so we'll be able to address
21 your question.

22 DOCTOR KRESS: Your categorization from the
23 PSA is based on importance measures, do you have a -
24 what was your criteria on which - where to draw the
25 lines between high, medium, low and none?

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1 MR. SCHINZEL: We are going to have a
2 specific slide that goes through that, as far as where
3 those thresholds are.

4 DOCTOR KRESS: Okay.

5 MR. SCHINZEL: So, as far as the next page,
6 the categorization controls, again, just broadly,
7 generally, the industry views this as an integrated
8 decision-making process. We call that our Expert
9 Panel and Working Group. These are made up of
10 experienced, qualified personnel. There is specific
11 training that we have identified for these personnel.
12 There's a designation of experience that we want these
13 members to have.

14 The membership is diverse. We have people
15 from our maintenance organization, licensing
16 organization, operating experience from our PRA group,
17 operations, a broad background, a broad insight that's
18 brought to the table, and then we ensure from a
19 decision-making standpoint that we do use consensus
20 decision-making. If we have one member who feels that
21 he can't support the final recommendation or judgment,
22 we do have the ability, it's procedurally allowed, to
23 document a differing opinion, and that differing
24 opinion is then taken up to a more senior panel, and
25 that more senior panel then hears the pros and the

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1 cons and makes a judgment on what the final
2 categorization or what the resolution for that issue
3 should be.

4 Like I said, the process is procedurally
5 controlled. There is a Working Group procedure and
6 there's a separate procedure for the Expert Panel, and
7 we do categorize our components into one of four
8 categories. We have the high safety significant,
9 medium safety significant, low safety significant and
10 not risk significant. And, that traditionally follows
11 a four box approach that the NRC staff and the
12 industry is currently looking at.

13 That takes us into the specifics of the
14 PRA categorization approach, and we'll get into some
15 of the details specifically with the PRA. The PRA
16 risk ranking process is procedurally controlled.
17 There are several procedures that give insights as to
18 how we do that categorization. The PRA model at South
19 Texas, it is a full scope model quantification that
20 includes at-power Level 1 and Level 2, with both
21 external events and internal floods and fires. I
22 mentioned that we modeled roughly 1,200 components,
23 that's on a per unit basis, so with both units that's
24 2,400 components.

25 DOCTOR KRESS: When you say it includes

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1 fires, do you have a PRA that has fire initiating
2 frequencies and models that carry that to core damage
3 frequency?

4 MR. GRANTOM: We do have a fire PRA.

5 DOCTOR KRESS: You have a fire PRA.

6 MR. GRANTOM: A fire PRA, and we do have an
7 internal flooding PRA.

8 DOCTOR POWERS: The fire PRA handles all
9 areas of the plant, it doesn't look at only a subset
10 of fire regions.

11 MR. GRANTOM: All areas.

12 DOCTOR POWERS: Nothing is screened out.

13 MR. GRANTOM: Yes, there are things that
14 screen out, yes.

15 DOCTOR BONACA: You said your PRA model is
16 about 1,200 SSCs, and there was a question before, I
17 didn't get the answer I guess, but when I look at this
18 breakdown I see that probably roughly 40,000
19 components are addressed insofar as the separation, so
20 that's - but only 1,200 of those are really modeled in
21 the PRA.

22 MR. SCHINZEL: Yes. We've had - you know,
23 on that slide it shows roughly 44,000 or so that have
24 been categorized.

25 DOCTOR BONACA: Something like that.

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1 MR. SCHINZEL: Out of 29 systems.

2 Now, of those we've mentioned that there's
3 1,200 that's included in the PRA, but only 886 of
4 those are included in these 29 systems that have been
5 categorized. So, roughly, 3/4s of the modeled PRA
6 components are included in what we've categorized
7 already.

8 MR. LOVELL: Basically, what happens when
9 we get to doing the deterministic side of it -

10 DOCTOR BONACA: Yes.

11 MR. LOVELL: - is we do it by system, and
12 we take a list of all of the components that are
13 listed in our total plant numbering system, and that's
14 then the group that we do the deterministic ranking
15 on. That's why it's a much larger size.

16 DOCTOR BONACA: You take categories, okay,
17 that's what I wanted to clear up.

18 MR. LOVELL: You take the whole system,
19 like, for instance, safety injection, we take
20 everything that's listed in their total plant
21 numbering system, and then rank it from there.

22 DOCTOR BONACA: Okay, so also - okay.

23 MR. SCHINZEL: For example, the safety
24 injection system might have 3,000 tagged components.
25 There may be 50 of those that are included in the PRA.

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1 DOCTOR BONACA: Yes, I understand.

2 MR. SCHINZEL: But, we'll categorize every
3 one of the components, and we do that for each system
4 as we go through the categorization process.

5 CHAIRMAN APOSTOLAKIS: But, at some level
6 all of these are in the PRA, because I can go higher
7 and find the component or a subsystem which is in the
8 PRA. Now, below that you may have a number of
9 components that do not appear explicitly in the PRA,
10 correct? Because if the function of the system
11 appears in the PRA, it depends how far down you go.

12 MR. SCHINZEL: That's true, however, there
13 are a lot of components in the system that are
14 associated with maintenance functions, or testing
15 functions, or maybe just monitoring functions, that
16 would have the system tag number would be pulled into
17 the categorization process, but they don't play a role
18 directly in the actual safety significant function of
19 the system.

20 So, when we talk about we look at all the
21 functions, we are really talking about we are looking
22 at all the functions a system does, everything from
23 draining the system, to venting the system, to
24 monitoring the system, all of those things represent
25 a function that are categorized or risk ranked by the

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1 —

2 CHAIRMAN APOSTOLAKIS: But, the function
3 itself must be in the PRA someplace.

4 MR. SCHINZEL: Yes.

5 CHAIRMAN APOSTOLAKIS: Maintenance, for
6 example.

7 Now, you are saying there are lots of
8 things that we do in the course of maintenance that do
9 not appear explicitly in the PRA, but maintenance
10 itself does.

11 MR. SCHINZEL: Yes.

12 CHAIRMAN APOSTOLAKIS: That's important for
13 later.

14 MR. SCHINZEL: Maintenance is in there,
15 both planned and unplanned.

16 CHAIRMAN APOSTOLAKIS: Yes, right.

17 DOCTOR BONACA: The reason why I was asking
18 that question is that you have in one of the documents
19 we reviewed you have three tables, where you have
20 general categories. For example, category one, vent,
21 drains, test valves, one inch or less in size, no risk
22 significant, that captures a significant population of
23 valves.

24 MR. SCHINZEL: Correct.

25 DOCTOR BONACA: Each one of those is part

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1 of the 44,000.

2 MR. SCHINZEL: Correct.

3 DOCTOR BONACA: Okay. I'm trying to
4 understand it because otherwise I confuse system level
5 versus component level.

6 These categories here must capture a very
7 large fraction of the component that you have.

8 MR. CHACKAL: Just to clarify, the 43,000
9 number is for both units. The PRA numbers that we
10 mentioned earlier, 1,200, and 886, are on a per unit
11 basis.

12 CHAIRMAN APOSTOLAKIS: Per unit, so per
13 unit we are talking roughly about 20,000.

14 MR. CHACKAL: Right.

15 CHAIRMAN APOSTOLAKIS: That's important.

16 How long did it take you to do this,
17 40,000 components?

18 MR. SCHINZEL: We started with the
19 categorization process in the second quarter of '98,
20 and by the time we got to the latter part of '99 we,
21 essentially, had finished with the categorization of
22 these 29 systems, and we've been focused on our
23 exemption request and trying to get it completed prior
24 to moving forward with additional systems. So, it was
25 about 18 to 20 months.

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1 MR. LOVELL: One of the things that helps
2 on that is, you have those large number of components,
3 but we are a three train plant, so like for safety
4 injection, by doing - reviewing one train you covered
5 all three trains in both units, so that helped us
6 quite a bit in the numbers.

7 CHAIRMAN APOSTOLAKIS: There's a certain
8 symmetry to it.

9 MR. LOVELL: Right.

10 And, I also point out, both units we've
11 kept them very close to identical. The major
12 difference between the two units right now is we
13 replaced steam generators in unit one and are getting
14 ready to replace steam generators in unit two. Other
15 than that, the difference between the units are very
16 small.

17 DOCTOR BONACA: At some point during the
18 presentation, I would appreciate an explanation of how
19 you can eliminate the full class of components based
20 on a genetic statement. Okay, I'm sure you have some
21 logic for that, it would be interesting to see how you
22 do that, okay, and you'll know the time in the
23 presentation when it's best to do that.

24 MR. SCHINZEL: Okay, we'll do that.

25 With the PRA categorization, the fourth

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1 bullet, the PRA model is periodically updated. It is
2 considered a living document, and this will reflect
3 changes in performance of individual components and/or
4 changes in Station design, whether there's been
5 modifications that have been installed, or the way or
6 manner in which we operate the plant.

7 CHAIRMAN APOSTOLAKIS: When was your PRA
8 completed?

9 MR. GRANTOM: The original -- we started the
10 PRA study at STP in 1982, and we completed the initial
11 phases of the PRA in the middle '80s. '87 we had our
12 final PRA completed, and ever since that time the PRA
13 has undergone just a periodic care and feeding type of
14 stuff. We've used it for application since then, but
15 that's about the time frame that we started.

16 CHAIRMAN APOSTOLAKIS: So, how many times
17 have you updated, or is it difficult to say this was
18 an update? I mean, does it happen in a continuous
19 manner, or as necessary, or every 18 months?

20 MR. GRANTOM: It used to happen -- when we
21 weren't controlled and proceduralized, it used to
22 happen almost continually. We found that we really
23 have administrative problems in doing that when you
24 are dealing with an operating station, so now we
25 proceduralize the update process to where it's a

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1 controlled roll-out periodically, every 18 months we
2 have a controlled roll-out, and we'll have a statement
3 in there of what the scope of a particular update is.
4 You know, we can't physically update everything that's
5 in the PRA. We don't update the human performance
6 analysis every time, but we'll have a scope statement.
7 At a minimum, we update performance, design and
8 procedure changes. So, that's the way that the
9 process works.

10 DOCTOR BONACA: In between the 18 months,
11 do you perform a PRA significant determination of each
12 change that you have not reflected in the PRA yet?

13 MR. GRANTOM: Yes. We have a configuration
14 control process with a database that reads the drawing
15 database, the procedure database.

16 DOCTOR BONACA: Okay, so you do that.

17 MR. GRANTOM: As a matter of fact, that's
18 a performance indicator for the PRA group, is how well
19 they keep up with their reviews.

20 MR. SCHINZEL: The next bullet is going to
21 get us into the PRA categorization. We do base it on
22 importance measures of Fussel-Vesely and RAW, risk
23 achievement worth and Fussel-Vesely, and the next
24 slide will show the details. And, I'll let either
25 Rick or Allen step through the categorization itself.

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1 MR. MOLDENHAUER: Basically, this
2 categorization process that we have here was agreed to
3 with the staff for the GQASER back in '98, I believe
4 was the date, and what we base it on is both the risk
5 achievement work and the Fussel-Vesely values. As you
6 can here, the criteria we have for high, and then
7 there's the medium, what we call medium R, or needing
8 further additional review, which, basically, says to
9 the Working Group that the critical attributes, or the
10 attributes modeled in the PRA, should have full
11 quality QA programs associated with them.

12 And then we have another group, medium,
13 and then the final group of low.

14 DOCTOR KRESS: Is there some reason why
15 these numbers are appropriate for RAW or Fussel-
16 Vesely?

17 MR. MOLDENHAUER: What we have found is
18 that these numbers match up real well with the
19 deterministic aspect of it, and we feel comfortable
20 with these thresholds as our current PRA
21 categorization process.

22 DOCTOR KRESS: I had in mind more like
23 something like, if you fall into the high category,
24 does this RAW or Fussel-Vesely translate into a
25 certain contribution of that set of components to the

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1 CDF?

2 MR. GRANTOM: The values that we have in
3 here originated for us back when we had the document
4 of the EPRI PSA Applications Guide, and these values
5 were listed in there.

6 There is a correlation. We have a cap on
7 the RAW and the Fussel-Veselys, and you can see that
8 the RAW are greater than 100, anything that would
9 change core damage frequency, in and of itself, by two
10 orders of magnitude is considered a high component.
11 And, RAW looks at the avail -- the importance of the
12 availability of the component, where Fussel-Vesely is
13 a little bit more aligned with the reliability of it.

14 So, and then we have a combination of the
15 two. The RAW values of a doubling of CDF has been
16 pretty much a standard that has been carried through
17 the PSA Applications Guide, I think even before that,
18 as some measure of significance. So, we've started at
19 that point, and through the negotiations with the
20 staff there was a concern that components that may not
21 necessarily show up in the results of the PRA, because
22 they are so highly reliable, but when removed from
23 service could have a big impact. So, that's why you
24 see the cap of a risk achievement worth of 100, so
25 that we don't -- we wouldn't reduce controls on a

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1 component strictly because of its reliability as being
2 so good.

3 CHAIRMAN APOSTOLAKIS: What is the core
4 damage frequency now for South Texas?

5 MR. MOLDENHAUER: It is approximately 1E to
6 the minus 5, it's a little above that, 1.174, I
7 believe.

8 DOCTOR KRESS: If your core damage
9 frequency were considerably higher than that, would
10 you still use these same RAW values and Fussel-Vesely
11 values?

12 MR. GRANTOM: Well, that's kind of an
13 issue, the RAWs and the Fussel-Veselys are going to be
14 relative. If you have a ten to the minus two core
15 damage frequency, you'd still end up with numbers like
16 this.

17 CHAIRMAN APOSTOLAKIS: As a matter of fact,
18 you know, what we can do, just to play a game, we can
19 put a system in series with everything else you have
20 now, that fails with a frequency of ten to the minus
21 — or five ten to the minus four per year, then the
22 whole categorization is thrown out of the window
23 because you cannot increase the core damage frequency
24 by a factor of 100 by failing any one of the other
25 components, because you have this big one now there

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1 which controls the core damage frequency, which is a
2 good example of what you just said, that the absolute
3 value of the core damage frequency -- really doesn't
4 enter into this. It's a very relative thing.

5 MR. GRANTOM: Well, in your example I'd say
6 you probably need to go back and look at the PRA.

7 CHAIRMAN APOSTOLAKIS: You are violating
8 the goals that way.

9 MR. GRANTOM: Yes, but it is, you have to
10 depend on the fact that we have a robust PRA, it's a
11 PRA that's been reviewed, both internally and
12 externally, and we have confidence that the model has
13 a good degree of fidelity and robustness that's
14 associated with it. It's been proven over time.

15 So, but your concern is valid, these are
16 relative importance measures, and risk ranking
17 methodology and importance measures are going to, I
18 feel, continue to evolve and we have to be ready to
19 evolve with that. I think that's a good point.

20 CHAIRMAN APOSTOLAKIS: And, to take the
21 other extreme, what if you have a unit that has a ten
22 to the minus seven?

23 DOCTOR KRESS: They are unfairly penalized
24 in a sense.

25 CHAIRMAN APOSTOLAKIS: You are penalizing

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1 them.

2 DOCTOR KRESS: Yes.

3 CHAIRMAN APOSTOLAKIS: Because it would
4 still have —

5 DOCTOR KRESS: It works both ways, yes.

6 MR. GRANTOM: It does, and with South Texas
7 we'd say we might be penalizing ourselves in a sense
8 with the investment of a third train having lower core
9 damage frequency numbers, but these are relative so we
10 are still treating these as important.

11 DOCTOR KRESS: Well, that's why I brought
12 the whole question up.

13 DOCTOR POWERS: I am hardly expert in this,
14 but my recollection is that these numbers are, risk
15 achievement worth and risk reduction worth, are
16 achieved by looking at the components only one at a
17 time, and we don't look at the possibility that one
18 component is degraded and the other one is either
19 completely efficient or completely inefficient.

20 DOCTOR KRESS: Other than where we factor
21 in common cause, that's true.

22 MR. MOLDENHAUER: Well, we did do a
23 sensitivity study where we increased the failure rates
24 for all the low risk significant components by a
25 factor of ten, to see what the impact would be on core

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1 damage frequency and whether the components would
2 change classification from low to either medium or
3 high.

4 MR. GRANTOM: It might be interesting to,
5 when we get to the slide on the sensitivity studies,
6 to get the committee's feelings and thoughts about
7 that, because just like Mr. Powers question, we tried
8 to answer that, we just don't look at the PRA and take
9 the average PRA and here's the risk, the RAWs and the
10 Fussel-Veselys and that's it, we go through a whole
11 series of sensitivity studies to manipulate the model,
12 to see what the sensitivities are.

13 So, when we get to that, maybe we can talk
14 about some of the other -- there might be some other
15 questions that come up relative to things like that.

16 DOCTOR BONACA: Before you move away from
17 this ranking, in the papers we got there is a
18 description of how in some cases you may have a high
19 safety significant system and components that make up
20 the system, for example, the trains, be redundant, may
21 be classified at a lower safety significant level. I
22 would like to see how you go through that process.

23 MR. GRANTOM: Okay.

24 CHAIRMAN APOSTOLAKIS: That's in the
25 deterministic part, right?

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1 DOCTOR BONACA: Is it?

2 CHAIRMAN APOSTOLAKIS: Yes, right.

3 DOCTOR BONACA: Okay, so for the
4 probabilistic you have — all right.

5 CHAIRMAN APOSTOLAKIS: The documents other
6 than those from STP really don't go into full
7 categories, right? They consider only two, I believe,
8 high risk significance and low.

9 MR. GRANTOM: Right.

10 CHAIRMAN APOSTOLAKIS: And, they are all
11 greater than two and Fussel-Vesely greater than .005
12 puts you in the high category and anything else, I
13 think, puts you in the low. Something like that.

14 MR. GRANTOM: Something like that, yes.

15 CHAIRMAN APOSTOLAKIS: Now, what is the
16 benefit of having a more detailed categorization
17 scheme, have you thought about that? I mean, do you
18 really gain much by going through this, or a simple
19 up/down scheme is good enough?

20 MR. GRANTOM: Well, I think there's a
21 benefit to the medium category. I think it's an
22 important aspect that through the process of updating
23 a PRA, or in the event that you find an error, that
24 you don't have mass migrations of equipment from low
25 to high, and you need some intermediate buffer that

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1 keeps components treated very close to what you are
2 already doing for the high component, so that if you
3 do have some movement the impact isn't nearly as great
4 to the Station, the impact is not nearly as great to
5 the requantified analysis.

6 However, with the way that the exemption
7 request works, you know, low and non-risk significant
8 components, through, just hypothetically speaking,
9 some error were to show that one of those should be
10 high, then you have a whole list of issues that could
11 be concerning you then on how that component was
12 treated, how you had recertified and reverified that
13 component.

14 So, I feel that medium is an important
15 buffer to have, and high and medium corresponds to
16 what the staff has put, they call it the risk one box,
17 that's basically where we have it, and low and NRS
18 would be box three.

19 CHAIRMAN APOSTOLAKIS: Where is the no risk
20 significant category? I thought you had one like
21 that.

22 MR. SCHINZEL: We do have one for the
23 deterministic only, not for the PRA, and for the
24 deterministic that, essentially, identifies where, you
25 know, the risk overall is so low that we call it non-

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1 risk significant. And, we'll go through the
2 thresholds that we use in that also.

3 CHAIRMAN APOSTOLAKIS: So, you have two
4 medium categories, give an example of this medium R,
5 this is the focused thing?

6 MR. GRANTOM: Right, there was still a
7 concern that even a component that would change the
8 core damage frequency by an order of magnitude, by the
9 fact that it was out of service, was still a concern
10 and we might need to look at the reliability level.
11 Is it because it's just reliable, or what are the
12 other reasons? And, some of these components, I mean,
13 components that get high risk achievement worth are
14 sometimes very reliable components. They can be
15 passive, like a locked open manual valve that
16 basically is a piece of the pipe, or it can be
17 something very important like a solid state protection
18 system, which are extremely reliable systems, and,
19 therefore, in core damage scenarios they don't show up
20 very often because they are very reliable.

21 You have this classic category here where
22 the risk achievement could be, you know, greater than
23 ten, but it's really less than 100, so we ought to
24 look at those more. And so, it was just to make
25 certain that you don't classify things without some

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1 scrutiny associated with those things that fall in the
2 middle here.

3 DOCTOR KRESS: Do you have an example of
4 one?

5 MR. MOLDENHAUER: The only example I can
6 think off my head is a locked open manual valve that
7 we've modeled as transfer and close during the mission
8 time, and there's probably one maybe in the auxiliary
9 feed water system would be ranked medium R.

10 DOCTOR KRESS: I'd like to return a minute
11 to Doctor Powers' question. If you have a component
12 that has, say, a low risk significance coming out of
13 the PRA, based on these RAW and Fussel-Vesely values,
14 but you actually have 100 of those components in
15 separate systems, and if the failure of the components
16 are by chance, which is sort of the way we deal with
17 them in PRA, then shouldn't those Fussel-Veselys and
18 RAWs be multiplied by 100?

19 MR. GRANTOM: The sensitivity studies that
20 we do, and the ones that we've done, is we've taken
21 those ones that fall into the low and have increased
22 their failure rates by an order of magnitude in total,
23 to see what the impact on core damage frequency does,
24 and, of course, the impact increases core damage
25 frequency, but it's still within the guidelines of Reg

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1 Guide 1174.

2 DOCTOR KRESS: Yes, well, that's the nature
3 of sensitivity studies, but I'm trying to come up with
4 a philosophical logical basis for how to deal with
5 multiple components, rather than one at a time.

6 MR. GRANTOM: Well, there's a common cause
7 aspect that we deal with, and common cause is
8 explicitly - common cause basic events have their own
9 -

10 DOCTOR KRESS: Yes, but even say there were
11 no common cause failures at all, the probability of
12 one of those things failure is the probability of one
13 failure times the number of them that are there.

14 DOCTOR SHACK: But still, I mean, your
15 ultimate goal is the delta CDF, and as long as that
16 remains small in total, that's truly the real check on
17 this. This is only a way to get you to some
18 categorization, but the ultimate check is when you
19 look at the delta CDF, it better be small in toto.

20 CHAIRMAN APOSTOLAKIS: Yes, we'll come back
21 to that two slides later, when they talk about
22 sensitivity studies, because that's an important
23 point.

24 MR. GRANTOM: Yes.

25 CHAIRMAN APOSTOLAKIS: So, the main message

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1 here is that these threshold values are sort of
2 reasonable, that there is no really technical basis
3 behind it, I mean, they just turned out to be
4 reasonably in agreement with what people would expect
5 to see.

6 MR. GRANTOM: Yes, and this is something we
7 worked out with the staff to be reasonable.

8 CHAIRMAN APOSTOLAKIS: Yes, okay.

9 MR. SCHINZEL: The next slide gets into the
10 approach to common cause. I know that there was a
11 question about this when we met with the committee
12 back in December. What we've evolved to here, that
13 STP will use the conservative common cause approach
14 that was approved in graded quality assurance.

15 Now, with that we recognize that there are
16 some potentials for improvement, so we also recognize
17 that this is a conservative approach, and from the
18 standpoint of the application for this time it's
19 probably going to be the right approach for us.

20 The approach that we're using does sum the
21 Fussel-Vesely RAW importance measures for all the
22 causes of basic event failures. The final component
23 Fussel-Vesely RAW importance includes the total common
24 cause contribution and the different failure modes.

25 CHAIRMAN APOSTOLAKIS: Well, I guess, is

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1 the staff going to get into more detail on the issue
2 of common cause failures?

3 UNIDENTIFIED SPEAKER: I don't know that
4 we'll go into more detail.

5 MR. LEE: We are prepared to discuss, in a
6 little more detail, as to the issue that you had
7 raised in the last meeting, and how we came to a
8 resolution of that, yes.

9 CHAIRMAN APOSTOLAKIS: Right.

10 Now, if we have, let's say, a three train
11 system, okay, and you have the pump. You have three
12 pumps, you will have the random failures plus the
13 common cause contribution.

14 For Fussel-Vesely, I guess it's okay to
15 add them up, because it's added, it's just all the
16 minimal cut sets that contain the component, so it's
17 okay.

18 For RAW, though, I'm not so sure we can do
19 that, and, in fact, don't you say somewhere in your
20 letters of January that for RAW you did something
21 else? You said that, in Attachment 1 to your letter
22 dated January 15, 2001, from Mr. Rosen to the NRC,
23 open item 3.1, you say you are doing something else
24 with RAW. "It has been determined that the PRA risk
25 ranking incorrectly adds risk achievement worths

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1 across differing failure modes. Rather, the proper
2 approach considers the role for the component to be
3 equal to the highest component failure mode and not
4 the sum of the failure modes." This would appear to
5 be inconsistent with your slide.

6 MR. MOLDENHAUER: Yes, we have gone back to
7 the original, what we'd said in the graded QA SER, in
8 that where we were going to sum them all up, instead
9 of doing the approach, and I think we've probably
10 resubmitted that, haven't we, Glen, that we were going
11 to --

12 MR. SCHINZEL: Yes, that has been
13 resubmitted. We had this as our original response to
14 open item 3.1. The letter dated January 18,
15 Attachment 6, includes a revised open item response to
16 3.1, and in that --

17 CHAIRMAN APOSTOLAKIS: Yes.

18 MR. SCHINZEL: -- our response coincides
19 with what we have on our slide.

20 CHAIRMAN APOSTOLAKIS: So, let me
21 understand now, there are two letters here, one is
22 dated January 15th, and the other three days later,
23 January 18th. In the January 15th, the first letter,
24 there is an attachment that says that what you did
25 with RAW was not proper, and that you will change it.

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1 But, three days later you say, let's go back to what
2 we did with it in the GQA and be done with it. Where
3 does that leave the advisory committee? Which one is
4 right?

5 MR. GRANTOM: The one that we've chosen, as
6 far as the way we did it in the graded QA is generally
7 acknowledged as being a conservative approach.

8 CHAIRMAN APOSTOLAKIS: But, RAW, it cannot
9 be added. You can't do that, I mean, as you yourself
10 submit.

11 MR. GRANTOM: Right, we are not -- we are
12 trying to categorize equipment into groups, and we're
13 not trying to make an accurate calculation of common
14 cause contribution.

15 We recognize that there are better ways to
16 do this, and certainly want to pursue solving this in
17 the correct manner, but the constraints associated
18 with getting the exemption request approved preclude
19 us going to a totally new approach and the reviews
20 associated with that.

21 So, we elected to go and maintain the
22 conservative aspects of this.

23 CHAIRMAN APOSTOLAKIS: But, Rick, these are
24 your words, "STPNOC will revert back to the recognized
25 conservative approach for PRA risk rankings from the

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1 GQA SER, with one exception as stated below." These
2 are your words. And, the exception refers to RAW.

3 But then, three days later you come back
4 and say forget about it, it's okay, because I think
5 you are right in the January 15th letter, you are
6 right, I mean, that's what you say, and if you have
7 three failure modes you go with the highest, which is
8 the correct way of doing it, because RAW assumes other
9 component is down.

10 Now, I don't know what happened to the
11 GQA, did you do that? Maybe that should be a question
12 to the staff.

13 MR. SCHINZEL: I agree.

14 CHAIRMAN APOSTOLAKIS: Not right now, but
15 you'll have time later.

16 So, what you have on the slide there is
17 inconsistent with your January 15th letter, but it is
18 consistent with the January 18th letter, which is all
19 right.

20 MR. SCHINZEL: Yes, based on -

21 CHAIRMAN APOSTOLAKIS: Consistent with the
22 latest.

23 MR. SCHINZEL: - upon receipt of our
24 January 15 letter, the staff and South Texas did have
25 some discussions, some phone conversations, and based

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1 on those phone conversations the decision was made
2 that we would revert back to our graded quality
3 assurance approach. And so, that predicated the
4 revision to that open item response, and our follow-up
5 letter of January 18.

6 CHAIRMAN APOSTOLAKIS: Let me tell you what
7 my overall feeling is about all this. I think the
8 methodology, and we'll come to aspects of it as we
9 review it, I think the methodology could be improved
10 in several areas, and some things, perhaps, as you
11 say, are improper and so on.

12 The problem I'm having is that I'm not
13 sure that if one did it correctly one would find a
14 very different categorization than you guys came up
15 with. So, it is all well that ends well. That's a
16 problem I'm having, and if this was a routine
17 application maybe I wouldn't care that much, but this
18 is setting a precedent. There will be some rulemaking
19 in the near future, and so on, and so if it worked
20 here why not put it in the rule. Well then, I'm going
21 to really object.

22 But, the importance measures - it really
23 - I don't think - and it's not because you don't know,
24 I mean these things are as a community, now we are
25 scrutinizing them more because they are becoming so

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1 important. So, I'm not blaming you guys, I mean, you
2 did the best you could do with the available methods.
3 But, the truth of the matter is that a lot of this
4 stuff really could be improved and in some ways it is
5 really wrong.

6 But, the ultimate result still remains,
7 and I have another case where this happened, I mean,
8 where Sandia did 1150, first time around they were
9 criticized that they didn't use formal methods for
10 expert opinion elicitation, and then they went back
11 and did it, spent a lot of dollars, and what was the
12 result, the same as before.

13 MR. GRANTOM: Doctor Apostolakis, I would
14 agree with you that risk ranking methodologies can
15 improve. We were the first out of the box to go and
16 do this stuff, and this is an important lesson learned
17 and, hopefully, we can continue to work with the staff
18 to improve the methodologies because there are some
19 things that are out there that we would like to do,
20 possibly, you know, at a formal professional or
21 institutional conference somewhere, to say here's the
22 difference between these two methods here, and we'd
23 like to do that, but we are trying to get an exemption
24 request approved also.

25 CHAIRMAN APOSTOLAKIS: Now, another thing

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1 I don't understand, Rick, is, if you get your request
2 approved, why would you continue to work with the
3 industry to start to improve risk ranking methods?

4 MR. GRANTOM: Because we agree with you,
5 they need to be improved.

6 CHAIRMAN APOSTOLAKIS: It was a glory of
7 science.

8 MR. GRANTOM: It is for getting the right
9 answer.

10 MR. SCHINZEL: Yes, it's really driving
11 toward the right answer. We recognize that what we
12 have is overly conservative, and in the process of
13 discussing this with the staff it was recognized that
14 in the PRA community there's not final agreement on
15 what the right answer is.

16 And, we can turn this into a research
17 project right now, but it's not the right time for
18 South Texas to have this turned into a research
19 project. So, from that perspective, we go back to a
20 very conservative approach, which is recognized to be
21 conservative, but at the same time we are not
22 satisfied with where we are with this resolution. So,
23 we want to continue to work with industry and staff,
24 come up with a community position on what the right
25 thing to do is.

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1 CHAIRMAN APOSTOLAKIS: I think it's not
2 really a matter of the final results changing that
3 much, it's a matter of confidence. It's really a
4 matter of confidence that we know what we are doing,
5 and Doctor Wallace is not here to tell us how it's
6 important to keep the technical communities on our
7 side.

8 Shall we go to the next slide?

9 DOCTOR POWERS: He completely wore himself
10 out yesterday.

11 CHAIRMAN APOSTOLAKIS: I'm sorry?

12 DOCTOR POWERS: He completely wore himself
13 out yesterday making that point.

14 MR. SCHINZEL: You mentioned that you
15 didn't think that the results would change that much,
16 and I think I'm correct in saying that going to this
17 alternate approach that we had in our January 15
18 letter, there were only a total of 46 components that
19 ended up changing their categorization.

20 CHAIRMAN APOSTOLAKIS: But, they did
21 change.

22 MR. SCHINZEL: They did change.

23 CHAIRMAN APOSTOLAKIS: But, you see, that's
24 an interesting question now. I mean, if they changed
25 because we changed the way you calculate RAW, why

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1 didn't the Expert Panel catch that before you
2 recalculated it? We seem to be placing a lot of
3 confidence and trust in the Expert Panel, they are
4 always conservative, they would move things up in the
5 categories, and here are 46 components where you did
6 something new with RAW, and the Expert Panel said not
7 to change it.

8 MR. MOLDENHAUER: For the most part, the
9 Working Group and the Expert Panel did catch that.
10 They were deterministically ranked higher, there was
11 only 12 of them that we had to actually go back and
12 reclassify.

13 CHAIRMAN APOSTOLAKIS: So, only 12 instead
14 of 46.

15 MR. SCHINZEL: Well, we had 46 that
16 changed, but that was out of the PRA.
17 Deterministically, all by just a handful had already
18 deterministically been shown with a different
19 categorization.

20 MR. MOLDENHAUER: And, they went from the
21 rank of medium to high, so they were still not -

22 MR. GRANTOM: That's why it's important to
23 have a buffer.

24 CHAIRMAN APOSTOLAKIS: So, you are already
25 doing something.

1 Well, that's a good point. So, shall we
2 move on to the sensitivity study?

3 MR. SCHINZEL: With the sensitivity
4 studies, and I'll let Allen step through some of the
5 details here, we do have 21 sensitivity studies that
6 are currently in use in the South Texas PRA model. We
7 give on this slide some of the sensitivity studies
8 that are in use, and, Allen, I'll just let you talk
9 through what you want to focus on, and we can step
10 through some of these in more detail if the committee
11 needs us to.

12 MR. MOLDENHAUER: I'd like to put up a
13 slide here that was part of the additional handouts.
14 And, this is how we categorized the PSAs. On the
15 left-hand side are the component tag numbers, our
16 total plant numbering system, to identify them, and
17 then we had each of the sensitivity studies here going
18 across and some of - the first set of sensitivities
19 here are planned maintenance, and that where we are
20 looking at, if you are in this planned maintenance
21 state, if you have a central cooling water train out
22 of service what is the effect of the other components
23 that are still in service? Do their risk rankings go
24 up?

25 And, there's 13 of them, of the planned

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1 maintenance ones. The last three, PM1, PM2, PM3, deal
2 specifically with no planned maintenance activities.
3 And then, the GN1 through 10 deal with different
4 maintenance activities that will be occurring on our
5 12-week rolling maintenance site for planned
6 maintenance. Then the next set here is the increased
7 failure rates. When we initially did it, we went and
8 we looked at increasing the failure rates by a factor
9 of two, five and ten, to see if there was any
10 differences. The next one, NCC, is the removal of
11 common cause, we wanted to see what the component risk
12 ranking would be if we didn't have common cause in the
13 model. REC is for removal of any operator recovery
14 actions, to see just what the independent failures
15 themselves, without the ability of the operators to
16 mitigate the accident, what the impact would be. STP
17 here is the average core damage frequency model. The
18 LER is a sensitivity study on the large early release,
19 where we decrease the frequency of steam generator
20 tube rupture, so that we can see the effect of
21 components, because steam generator tube rupture
22 dominates our large early release and there aren't
23 very many components that can mitigate it after that.
24 The STP L2 is the large early release rankings, and
25 then we had a composite ranking out of these, and then

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1 we did a final category – excuse me, the final ranking
2 is based off of looking at and making sure we are
3 getting consistent results between the trains.

4 CHAIRMAN APOSTOLAKIS: This business of
5 multiplying the failure rates by two, five and ten,
6 now if I – let's take again the three train system,
7 the failure rate of a pump will appear in many terms,
8 but the two terms that are of importance are the
9 random failure of the three pumps, so it would be Q^3
10 typically over one by other terms, and then a common
11 cause term that will be Q times beta, times gamma in
12 the multiple Greek letter method.

13 When you multiply the failure rate by ten,
14 do you multiply it everywhere where Q appears,
15 including the common cause term?

16 MR. MOLDENHAUER: We did include it in the
17 common cause, but we didn't increase the failure rates
18 of the beta and the gamma factors.

19 CHAIRMAN APOSTOLAKIS: No, but in Q ?

20 MR. MOLDENHAUER: But, we did in the Q .

21 CHAIRMAN APOSTOLAKIS: So, the common cause
22 term goes up by a factor of ten as well?

23 MR. MOLDENHAUER: Yes.

24 CHAIRMAN APOSTOLAKIS: I thought Rick told
25 us last time you didn't do that in December.

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1 MR. GRANTOM: I don't recall that, Doctor
2 Apostolakis, so if I did I might have misspoke.

3 DOCTOR SHACK: You might have been talking
4 about the betas.

5 MR. GRANTOM: Yes.

6 CHAIRMAN APOSTOLAKIS: No, the beta cannot
7 be multiplied by ten, because it becomes one. The Q
8 itself, because if you did that, then Doctor Shack is
9 right, that what do I care? I mean, if the total is
10 delta CDF is negligible it's okay, but if you didn't
11 do that then that argument is not valid, because you
12 are increasing selectively terms. So, this is a key
13 question, because Q appears in a number - I mean, it
14 also appears in the maintenance terms, right?

15 MR. MOLDENHAUER: Yes.

16 CHAIRMAN APOSTOLAKIS: That one pump is
17 down, the other -

18 DOCTOR SHACK: I'd say assuming the failure
19 rate goes up by a factor of ten, it's a fairly
20 conservative assumption.

21 CHAIRMAN APOSTOLAKIS: But, you see, that's
22 what bothers me about these things, when we increase
23 it by ten and we find out the number is acceptable,
24 then we are all happy. If it not acceptable then we
25 say, well, gee, a factor of ten is really too high.

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1 Well, I'm sorry, either you go with ten or you don't.
2 Okay? And, if it turns out to be unacceptable, then
3 don't come back and say, well, gee, it was too much.

4 MR. GRANTOM: Well, I appreciate Allen
5 being here to correct anything that might have
6 happened in the previous meeting, but that's why we do
7 these series of sensitivity studies, to see what
8 happens when you increase things by a factor of ten
9 across the board.

10 CHAIRMAN APOSTOLAKIS: So, you actually
11 included the common cause terms in increasing by a
12 factor of ten?

13 MR. MOLDENHAUER: Yes, we did.

14 CHAIRMAN APOSTOLAKIS: Well then, you are
15 right.

16 DOCTOR POWERS: Could you remind me --

17 CHAIRMAN APOSTOLAKIS: If that's the case,
18 then it doesn't matter.

19 DOCTOR POWERS: -- could you remind me what
20 T stands for in this table?

21 MR. MOLDENHAUER: Oh, T is for truncated.
22 Those are components that fall outside of the PRA that
23 we didn't get any results from. They were modeled,
24 but there were no -- they weren't captured in the
25 sequence database.

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1 DOCTOR POWERS: So, T is less than low.

2 MR. MOLDENHAUER: Yes.

3 DOCTOR POWERS: T is off the table.

4 MR. MOLDENHAUER: Still from a graded
5 quality assurance standpoint, we call it low, because
6 anything that's modeled in PRA has got to have some
7 risk associated with it.

8 CHAIRMAN APOSTOLAKIS: Isn't it amazing,
9 though, that you took all the low components, how many
10 of those do you have, thousands, don't you?

11 MR. MOLDENHAUER: In the PRA?

12 CHAIRMAN APOSTOLAKIS: Low risk, in the PRA
13 you have a few hundred, I guess.

14 MR. MOLDENHAUER: Yes, a few hundred.

15 CHAIRMAN APOSTOLAKIS: You increase their
16 failure rate by a factor of ten, and you still didn't
17 find any impact of the core damage frequency?

18 MR. MOLDENHAUER: The impact of the core
19 damage frequency was approximately 2.5 E to the minus
20 seven.

21 MR. LOVELL: Allen, do you want to pull up
22 that slide?

23 MR. MOLDENHAUER: Sure.

24 MR. LOVELL: We have a slide that
25 specifically goes through this.

1 MR. MOLDENHAUER: When we initially did the
2 PRA risk ranking, we didn't know which components were
3 going to come out low through the graded quality
4 assurance process, so when we initially did it we just
5 took check valves, we figured that for the most part
6 check valves, if they only had one state they needed
7 to open, or, actually, they may have two states they
8 need to stay open, we increased their failure rates by
9 a factor of two, five and ten, but after we had gone
10 through the process and we knew exactly which
11 components were going to be ranked out low from this
12 process, we went back and that's when we increased the
13 failure rates for those components specifically, and
14 here's the results from it.

15 CHAIRMAN APOSTOLAKIS: So, when you say low
16 rank components, you mean all of them?

17 MR. MOLDENHAUER: Yes, all of them. Well,
18 all of the 843 that have gone through the risk ranking
19 process are in the PRA.

20 CHAIRMAN APOSTOLAKIS: Well, I guess this
21 is a powerful argument. I mean, the staff has
22 confirmed all this?

23 MR. BARRETT: Yes, the staff has reviewed
24 all this, it is a powerful argument. You know, the
25 other side of this, of course, is to assure ourselves

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1 that the changes that are in the treatment are such
2 that the reliabilities do not degrade beyond the
3 factor of ten, because some of these equipments have
4 ten to the minus three and ten to the minus four based
5 on reliabilities.

6 MR. LOVELL: Yes, I think the simple part,
7 I'm not an expert in the PRA, but being involved in
8 the graded QA, the thing I get out of it is, in fact,
9 if it's rated low it's low. There's not a lot of core
10 damage impact, and even if you change it a number of
11 times it still doesn't affect the overall number. So,
12 low is really low, and we ought to be looking at it
13 from that standpoint, even when we get into the
14 treatments.

15 CHAIRMAN APOSTOLAKIS: What do you mean the
16 removal of common cause failures in the previous
17 slide?

18 MR. MOLDENHAUER: That was one of the
19 sensitivity studies that we thought - we wanted to see
20 if there would be any impact on just the independent
21 failures of the component, not including common cause.
22 If for some reason the component would go from a low
23 to a medium or a high.

24 CHAIRMAN APOSTOLAKIS: I thought - I mean,
25 removing common cause failure terms is kind of an

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1 optimistic thing. Why would it make the ranking of
2 the component worse?

3 MR. MOLDENHAUER: There were no cases where
4 it did make it worse, but it was just something that
5 we needed to prove to ourselves.

6 CHAIRMAN APOSTOLAKIS: I guess what I'm
7 saying is, it's kind of obvious, but anyway.

8 DOCTOR SHACK: But, I think, isn't it sort
9 of like the steam tube generator, because they
10 dominate the thing you really take away the high stuff
11 to sort of see - you get a more sensitive appreciation
12 of what the individual component does if you get rid
13 of the thing that's really dominating the picture. At
14 least that's sort of what I see.

15 MR. GRANTOM: Well, and with STP it's
16 particularly true. I mean, you know, global common
17 cause failures pretty much dominates everything, and
18 so when you do a risk ranking they always pop up to
19 the top. So, when you go in to remove those, you can
20 kind of get a feel for what's the independent
21 components, I mean, when you are viewing the PRA under
22 different alignments, okay, different trains running,
23 different trains may be in standby, the alignment
24 subsystems can play a role when you are looking at
25 individual component effects and the number of common

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1 cause events also changes, too. So, there's some
2 things that filter out of that.

3 CHAIRMAN APOSTOLAKIS: Why do we have to
4 bother with all this importance measure business and
5 deterministic thing? Why don't we say this will be a
6 performance based decision? You tell us which
7 components you want to put in the low risk category,
8 you come in and say, we want these, then you multiply
9 their failure rates by ten and if the - CDF and LERF
10 is negligible then your argument is acceptable?
11 What's wrong with that, so we don't have to worry
12 about Fussel-Vesely? I mean, you made the case, you
13 multiplied everything by ten, then next time 20, until
14 somebody gets into trouble, but as far as I'm
15 concerned this is it.

16 DOCTOR KRESS: Well, you have to choose
17 that pen carefully.

18 CHAIRMAN APOSTOLAKIS: But, that's the next
19 thing, as Rick pointed out, that then you have to ask
20 yourself, you know, the removal of certain things,
21 does it decrease -

22 DOCTOR KRESS: But, in principle, I think
23 you are right.

24 CHAIRMAN APOSTOLAKIS: Why do I have to
25 bother with all this stuff and create all sorts of

1 questions? I mean, this set of components, if they
2 are multiplied by ten doesn't do anything.

3 MR. BARRETT: I'll take that as a question
4 for the staff. I'm Richard Barrett, I'm with the NRR
5 staff.

6 There are, as was pointed out, a number --
7 a large majority of the pieces of equipment in the
8 plant that are being categorized that are not modeled
9 in the PRA, and it's true to say that a lot of them
10 are not in the PRA because they have no particular --
11 they have no strong impact on the risk of the plant,
12 and I think for those pieces of equipment it's fair to
13 say that they are not credited in the PRA, which is
14 another way of saying they really don't matter very
15 much.

16 On the other hand, there are a number of
17 pieces of equipment in that category that are
18 implicitly in the PRA. They are not explicitly modeled
19 in the PRA, and yet they can have a very strong impact
20 on the result in a way that is not particularly
21 modeled. And so, that's really a lot of the questions
22 that we've raised have to do with, for instance, the
23 questions of pressure boundary type of issues and
24 things like that.

25 So, you know, there are, I guess I'll call

1 them secondary effects, but I agree with you, that the
2 argument that you've taken everything, requantified it
3 and shown that the impact on CDF and LERF is very,
4 very small, I think that's a very powerful argument.

5 CHAIRMAN APOSTOLAKIS: The danger is that
6 another licensee in the future may not be able to live
7 with a factor of ten increase, so you guys have
8 extreme redundancy, and where did the pen come from?
9 Right?

10 MR. BARRETT: Yes, those are the two -

11 CHAIRMAN APOSTOLAKIS: I mean, you are
12 taking the arbitrariness here and moving it somewhere
13 else.

14 MR. GRANTOM: Well, the ten has a bit of a
15 basis to it, because we count, on our corrective
16 action program, there's also 10 CFR 5065, which is a
17 maintenance rule that looks at functions and how they
18 are working, and those are barriers, in a sense, that
19 preclude failure rates to reach such a bounding level
20 as a factor of ten. And, the corrective action
21 program is used across the site for all components, no
22 matter what their risk significance or non-risk
23 significance is, and to have a component that would
24 reach a factor of ten in its failure rate, those
25 controls and those programs would come into play well

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1 before that level would happen.

2 So, we felt like the ten is a really, in
3 a sense, a bounding case, based on an effective
4 corrective action program.

5 CHAIRMAN APOSTOLAKIS: Right, plus I think
6 in the PRA community we are dealing with factors of
7 ten, because we are being conditioned from the -

8 DOCTOR SHACK: Well, again, George, you
9 wouldn't be disturbed if a plant with a higher CDF
10 couldn't put as many components in the low category.

11 CHAIRMAN APOSTOLAKIS: No.

12 DOCTOR SHACK: These guys get an advantage
13 for having three trains.

14 CHAIRMAN APOSTOLAKIS: Yes, although it's
15 not clear to me that the higher your CDF the fewer
16 components you can put in the low category. It's not
17 clear at all.

18 DOCTOR SHACK: Well, it may not be, because
19 they don't have any effect on it. If it turns out
20 that way.

21 CHAIRMAN APOSTOLAKIS: Yeah, if it turns
22 out that way it turns out that way.

23 Shall we go to slide 12, because we are
24 running out of time. Yes, please go to 12.

25 MR. SCHINZEL: Slide 12 takes us into the

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1 deterministic categorization function. As a Working
2 Group, we do use what we call five critical questions
3 in aiding us and guiding through the deterministic
4 categorization process. These five critical questions
5 are summarized below. We ask ourselves if the failure
6 would directly cause an initiating event, whether the
7 loss of the function would fail another risk
8 significant system, whether that system mitigates
9 accidents or transients, whether it is specifically
10 called out in our emergency operating procedures or
11 emergency response procedures, and if it's significant
12 for either shutdown or mode changes. Those are the
13 five specific areas that we look at.

14 And, as we go through and address those
15 questions, we'll either address those in either a
16 positive or a negative response.

17 CHAIRMAN APOSTOLAKIS: But, again, well now
18 actually we are getting into a territory where things
19 become more important, because you can't use your
20 sensitivity analysis to make the argument, right?

21 MR. SCHINZEL: Correct.

22 CHAIRMAN APOSTOLAKIS: Now, this is really,
23 what you are using here is an application, really, of
24 decision analysis, where you have your categories,
25 five categories, and then you rank - you rate each

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1 component from zero to five within each category,
2 multiply by the weight and add them up.

3 One of the important constraints when you
4 use methods like this is that your objectives, or what
5 you call questions, should be preferentially
6 independent. So, when we ask a question, is the
7 function specifically called out in the emergency
8 operating procedures, and then we ask, is the function
9 used to mitigate accidents or transients, isn't there
10 a significant overlap there? Are you double counting?
11 I mean, if the function is specifically called out in
12 emergency operating procedures or emergency response
13 procedures, doesn't it follow that that function most
14 likely is used to mitigate accidents or transients?

15 MR. GRANTOM: Yes, it does. I think you do
16 see some overlap. However, and Russ can probably
17 speak to this much better than I can, there's a lot of
18 other - there's other equipment that the operators may
19 use for accident mitigation. Maybe, Russ, you can
20 fill in.

21 MR. LOVELL: Probably the difference more
22 is there's a lot of equipment that's called out in the
23 emergency operating procedures that's used for
24 monitoring of the accident and decision making of
25 where you go in the procedures that may not be looked

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1 at quite as much as accident mitigation.

2 CHAIRMAN APOSTOLAKIS: So, for a number of
3 components then there is double counting, and for some
4 there isn't.

5 MR. LOVELL: Correct.

6 CHAIRMAN APOSTOLAKIS: Well, maybe a more
7 careful -

8 DOCTOR POWERS: Is this double counting?
9 I mean, all it is is a set of questions, they are not
10 counting anything here.

11 CHAIRMAN APOSTOLAKIS: No, because then
12 they put a weight of five to each, and then they
13 multiply -

14 MR. SCHINZEL: We have different
15 weightings. We can go through those details if you
16 wish us to.

17 CHAIRMAN APOSTOLAKIS: In your letter dated
18 January 23rd, Attachment 4, that's what you say, that
19 you have a weight of five, five, four, four, three and
20 three.

21 MR. SCHINZEL: Correct.

22 CHAIRMAN APOSTOLAKIS: Then you rate each
23 component from zero to five, starting from negative
24 response all the way to positive response.

25 MR. SCHINZEL: That's correct.

1 CHAIRMAN APOSTOLAKIS: With respect to each
2 one of these, right?

3 MR. SCHINZEL: Correct.

4 CHAIRMAN APOSTOLAKIS: See what they do
5 their, Dana? So, they take now one component that is
6 important with respect to accident transient, and also
7 EOPs, and multiply the rating times five and find the
8 weights, and they get scores, 25 and 25. That
9 component now gets a score of 50, essentially, for the
10 same function, because it is important to mitigate the
11 accident, and it also appears in the EOPs, but the
12 reason why it's in the EOPs is because it's important
13 to mitigate accidents.

14 MR. LOVELL: In many cases that's right.

15 The other thing to point out, though,
16 because this is a problem that we ran into in trying
17 to explain this thing, is we do not use these rankings
18 for component categorization, we do it only at the
19 function level, the system function level, not at the
20 component level.

21 CHAIRMAN APOSTOLAKIS: Which brings up
22 another, system function, why do you have to do this?
23 The system functions should be in the PRA, shouldn't
24 they? I mean, I can't imagine that there is a
25 function that is important to accident mitigation that

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1 is not in the PRA.

2 MR. GRANTOM: That's true, they are, but
3 there are a lot of -

4 CHAIRMAN APOSTOLAKIS: So, why do I need
5 this?

6 MR. GRANTOM: - there are a lot of
7 functions that a system does that aren't in a PRA
8 also, and there may be - and, I don't really -

9 MR. LOVELL: Let me give you an example.
10 One of the things we have up here is the ability to
11 make sure you can make a mode change, or you don't
12 make a mode change, you maintain your shutdown, I
13 don't believe that's covered in the PRA, but we
14 included that in our deterministic review.

15 MR. SCHINZEL: And, there are certain
16 systems that really the PRA doesn't have any interest
17 in. We've categorized some of those systems.

18 CHAIRMAN APOSTOLAKIS: Wait, wait, let's
19 not confuse the issue. If I look at the five
20 questions, they all use the word function, not system,
21 right?

22 MR. SCHINZEL: Right.

23 CHAIRMAN APOSTOLAKIS: Is the function used
24 to mitigate, is the function specifically called, does
25 the loss of the function directly fail another risk

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1 significant system, it's always function.

2 And, it seems to me that these questions
3 are at a high enough level, except for the shutdown
4 because your PRA is only for power and mode changes,
5 that these are at a high enough level that I can't
6 imagine that there is a function that does any one of
7 these and is not in the PRA. So, why do I need to go
8 to this weighting scheme to find out how important
9 they are when the PRA tells me how important they are?
10 In other words, find the Fussel-Vesely and RAW of the
11 function, you already have done a lot of it.

12 MR. MOLDENHAUER: One function that
13 wouldn't be covered by the PRA that would be risk
14 significant is fuel handling building accidents, spent
15 fuel pool cooling.

16 CHAIRMAN APOSTOLAKIS: Yes, because you are
17 talking about different - well then, it seems to me
18 that it would have been much more clean to say these
19 things, that we are going to do this, which is highly
20 subjective for functions that are not in the PRA. In
21 other words, we are relying on the PRA as much as we
22 can, and get the RAW and Fussel-Vesely for the
23 function, which you don't need because you know that
24 they are - to begin with.

25 MR. MOLDENHAUER: Well, to some extent we

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1 did do that. We did a straw man before we took this
2 to the Working Group, where certain individuals in the
3 Working Group are responsible for taking a first cut
4 at answering these questions, and I was responsible
5 for doing the mitigation of accidents and transients
6 and causes initiating event, and the input I provided
7 into that was from the PRA perspective of it, and I
8 looked at mainly the common cause issue in that. If
9 you have a common cause issue that could affect this
10 function here, you get a function ranking, and that's
11 basically how I came up with whether it should be a
12 five, four, three, two, or one.

13 DOCTOR KRESS: There are some people on the
14 committee who think the risk of shutdown is at least
15 comparable to risk at-power, so that brings me to a
16 question of why three weighting for that particular
17 item instead of a five?

18 CHAIRMAN APOSTOLAKIS: And not only that,
19 but this is probably the only question where you will
20 identify systems and components that are not in the
21 PRA, right, because your PRA is not shutdown.

22 MR. GRANTOM: Let me clarify something,
23 though, too. There are functions that aren't modeled
24 in the PRA. Draining the system is not modeled in the
25 PRA, it's a function that a system does. Every system

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1 does it out there. They've got certain components
2 that drain the system for maintenance for those types
3 of things. When we say, all right, we are looking at
4 drain valves, does that mitigate accidents or
5 transients, the probable answer to that is low or no.
6 So, we are covering all the functions that a system
7 does.

8 Yes, there's the significant functions of
9 mitigating the core damaging event, and those are
10 going to be asked too, which they are going to get a
11 very high ranking and the components get a high
12 ranking. So, that's why that happens.

13 But, in regard to the shutdown issue, the
14 PRA does, in fact, cover, you know, the power
15 dissension pieces of that, to cold shutdown, and what
16 we are concerned about now is, now that we are in a
17 cold shutdown condition, the weighting comes, there's
18 longer times to recover from many of the plant
19 configurations, and I wouldn't argue the fact at all
20 that more work needs to be done in shutdown risk
21 models, I mean, and once those are matured, you know,
22 that could roll into this process here.

23 But, currently what we have, we are
24 concerned with already being in a shutdown mode.

25 DOCTOR POWERS: Are all shutdown modes

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1 slow, are all shutdown accidents slow to develop?

2 MR. GRANTOM: Not all, no.

3 MR. LOVELL: The main one would be when you
4 are mid-loop.

5 MR. GRANTOM: Yes, front end mid-loops
6 where time to boiling is very short.

7 DOCTOR POWERS: So, I mean, shouldn't the
8 weighting factor then depend on whether it affects
9 this mid-loop operation or not?

10 MR. GRANTOM: I guess, you know, one could
11 make a clarification that if you wanted to include
12 something special with mid-loop, you are still dealing
13 with the same systems, residual heat removal
14 capabilities, which have already been categorized
15 through the PRA. So, most of the systems have been
16 subsumed just in the power transition to mid-loop.

17 There are some other things associated
18 with mid-loop, you know, with people being in
19 containment that need to look at as far as the plant
20 systems have been subsumed.

21 MR. SCHINZEL: We based these five
22 questions as a guide for the Working Group for all
23 systems. As we've got to systems where mid-loop is an
24 issue deterministically the members bring that to
25 light as we address our specific questions, what the

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1 final categorization is.

2 MR. LOVELL: I can't think of a specific
3 component or function we did this on, but I remember
4 in our discussions we had a couple where we just
5 raised the risk ranking in the Working Group based on
6 the fact that it specifically affected mid-loop.

7 MR. MOLDENHAUER: There were some level
8 indicators.

9 MR. LOVELL: Level indicators, that's
10 right, we moved them up significantly, just on the
11 fact that it was so important for the mid-loop, raised
12 them to medium.

13 DOCTOR KRESS: I was intrigued by the
14 parenthetical expression that says your weight was
15 based on contribution to public health and safety, and
16 the only way I know how to get that contribution is
17 with a PRA.

18 CHAIRMAN APOSTOLAKIS: Sure, that's my
19 point.

20 DOCTOR KRESS: And so, being a little bit
21 of a loss as to where the weighting factors actually
22 come from, and --

23 CHAIRMAN APOSTOLAKIS: The other thing is,
24 why do add, why didn't you use them as a norm, in
25 other words, you tell the group, look, these are five

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1 questions, if you think that this particular function
2 is important to anyone, then we'll look at it, instead
3 of adding them up, and double counting, and triple
4 counting.

5 MR. CHACKAL: We do that in instances where
6 there's a high answer to one particular question, and
7 we don't want it to mask the other questions.

8 CHAIRMAN APOSTOLAKIS: Yes, I remember
9 that.

10 MR. CHACKAL: We do that.

11 CHAIRMAN APOSTOLAKIS: But, this score
12 there of 25, plus 25, plus 20, is so artificial, it
13 really doesn't mean anything.

14 MR. CHACKAL: Well, the other thing to note
15 is that we really are - our approach here was to
16 provide an independent subjective, if you will,
17 determination apart from the PRA, independent of the
18 PRA, where we as a group, our experiences and
19 knowledge of our particular plant, would reach
20 conclusion.

21 Now, it's true that in a lot of cases
22 there end result from that subjective grouping turns
23 out to be the same as with PRA, but we felt it was
24 important to provide that independently to make up
25 some of the PRAs limitations and assumptions.

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1 CHAIRMAN APOSTOLAKIS: Well, I guess the
2 way I would look at this is -

3 DOCTOR POWERS: They're just being risk
4 averse, George.

5 CHAIRMAN APOSTOLAKIS: Huh?

6 DOCTOR POWERS: They're just being risk
7 averse, that's all.

8 CHAIRMAN APOSTOLAKIS: I don't know what
9 they are doing.

10 Well, the real issue, the problem here is
11 that you don't have the sensitivity study at the end
12 that saves the day, because these things are not in
13 the PRA, although you could. See, the way I see it,
14 at some high level the function is in the PRA, and the
15 only way to connect anything you do with public health
16 and safety as Doctor Kress said is through the PRA.
17 Otherwise, what have we been doing all these years.

18 Then you keep going down, and I admit, you
19 know, as you said, that - it's not a matter of
20 admission actually - that's the way it is, as you go
21 down you find certain functions and so on that are not
22 explicitly modeled in the PRA, yet at some level they
23 affect the PRA.

24 So, why don't we start with the PRA there
25 and keep going down, in other words, why don't you do

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1 what Westinghouse proposed for in-service inspection,
2 with surrogate components and all that, which ties
3 very nicely with the PRA and deals with things that
4 are not in the PRA, and it seems to me this cries for
5 it.

6 Now, you probably were not aware of it,
7 the surrogate component idea.

8 MR. GRANTOM: No, I'm not familiar with
9 what that is.

10 CHAIRMAN APOSTOLAKIS: Basically, what they
11 do is, they take a pipe, a piece of pipe that is not
12 in the PRA, obviously, but then they ask themselves,
13 if this fails what are the consequences, it affects
14 this component, or this system which is in the PRA, so
15 now I can tell what the impact is.

16 MR. GRANTOM: I haven't heard it called
17 surrogate, but, yeah, well, in fact, we -

18 CHAIRMAN APOSTOLAKIS: I think that's what
19 they call it.

20 MR. GRANTOM: - yes, we've had discussions
21 with this about, is this process robust enough to
22 categorize passive components, and for the very reason
23 you just said this process does that. We'd asked the
24 very same question, we fail this piece of pie, well,
25 it's associated with an aux feed water train. Well,

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1 what does it do? Well, it fails that train, which
2 goes directly back up to the risk significant function
3 that it's associated with.

4 CHAIRMAN APOSTOLAKIS: But, that's not what
5 you do, you are assigning a weight to the auxiliary
6 feed water system.

7 MR. GRANTOM: Right, but you are talking
8 about an auxiliary feed water system, what about the
9 little local pressure indicator over there that merely
10 is used by an operator to go around and look at what
11 the pressure of the system is right now, and it's not
12 used for anything else, it's just merely for him to go
13 and check off a control room log. It's safety
14 related, so how are we going to categorize that? I
15 don't think it's going to cause an initiating event,
16 and I don't think it's going to fail the system, but
17 the indicator, it's not going to actually be used to
18 mitigate the accident. I don't think -- it would
19 probably fall as a no to a lot of these things and be
20 called non risk significant, but when you are going
21 through a total plant numbering system and you are
22 looking at all of the tag numbers that are associated
23 with the system, you are going to have to somehow be
24 able to do the bookkeeping here to say we looked at
25 all of this.

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1 And, a lot of them have functions that are
2 somehow related, like you say, to maintenance, but
3 they are only maintenance during shutdown conditions
4 when we completely drain the system and go do stuff at
5 that point.

6 So, their function is different, and you
7 are really talking - and that's why the PRA is the way
8 it is, people always ask why are there so few
9 components modeled in the PRA, because, you know,
10 those are the components that really determine the
11 risk. Those are the main big pumps, big motors, those
12 types of things, active components that have to work,
13 so we can tie it all to this, and I don't disagree
14 with you all, that we probably are double counting
15 some of these things in here, but we are also trying
16 to get a conservative process because we are a
17 prototype effort going forth here, and there's a lot
18 of things that can be improved.

19 CHAIRMAN APOSTOLAKIS: And, it's really
20 maybe unfortunate or, I don't want to use the word
21 unfair, but, I mean, you guys, because you are
22 pioneers, you get all these questions. So, I'm
23 completely aware of that, but I would like also to
24 make a point here which may be obscure to you, but
25 it's directed to Doctor Powers. One of the reasons

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1 why you see all these things here is precisely because
2 as a community we have not paid attention to decision
3 making theories.

4 DOCTOR POWERS: - to you to ignore the
5 narrative - I mean, to ignore that, the failed
6 methodology.

7 CHAIRMAN APOSTOLAKIS: What failed -

8 DOCTOR POWERS: To ignore the decision-
9 making failed methodology, not make the mistakes of
10 the famous F-111.

11 CHAIRMAN APOSTOLAKIS: It's very difficult
12 to communicate with this group. I think as a
13 community we have not paid much attention to these
14 kinds of methodologies, which are being used routinely
15 elsewhere. In fact, the Department of Defense uses
16 these a lot, but you have to -

17 DOCTOR POWERS: They being a paragon of
18 economic and judicious decision making.

19 CHAIRMAN APOSTOLAKIS: As you have told us
20 many times, that they know how to plan research. So,
21 it seems to me that again you are being put on the
22 spot here for something that has not been scrutinized
23 by the community. But, the issue of double counting
24 is very, very important. I mean, you can't have
25 decision theories like that.

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1 DOCTOR POWERS: Well, yes, the double
2 counting is not that important, it is simply a
3 reflection of a different utility function.

4 CHAIRMAN APOSTOLAKIS: Oh, no, no, no.

5 MR. GRANTOM: And, I would like to just add
6 here, these questions here are very similar to the
7 same screening questions used in the maintenance rule,
8 for scope in the maintenance rule, it's very similar.

9 CHAIRMAN APOSTOLAKIS: That's why I'm
10 saying, instead of adding them up, it probably would
11 have been an "or" gate there, if any one of these is
12 important do something, because they overlap so much.

13 MR. GRANTOM: I think that's part of the
14 reason of the weighting, if the weighting falls into
15 place it kind of creates a pseudo kind of "or" gate,
16 because if you multiply it by its weighting it flops
17 over into -

18 CHAIRMAN APOSTOLAKIS: So, there's the
19 issue of the questions overlapping, there is the issue
20 of the appropriateness of the weights, right, and then
21 the -

22 DOCTOR KRESS: And then there's the
23 threshold.

24 CHAIRMAN APOSTOLAKIS: - and the bigger
25 issue is really why didn't we use the PRA coming down,

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1 and then, like you say - the component, and the final
2 issue is on the next slide, which is related to the
3 thresholds that Doctor Kress raised, why is the score
4 range between zero and 20 non risk significant, and
5 does that correspond to Fussel-Vesely less than .05 or
6 whatever it was, and risk achievement were less than
7 two, right?

8 DOCTOR KRESS: These are the questions,
9 yes.

10 CHAIRMAN APOSTOLAKIS: This is really the
11 question here. I mean, actually, it was low safety
12 significance, I think, in that case. But, I mean, how
13 did we decide, and that's where, again, the double
14 counting comes in to its full glory, that a score less
15 than 40 corresponds to a Fussel-Vesely less than .001,
16 and RAW less than two. Obviously, it's a judgment,
17 right?

18 MR. SCHINZEL: It was judgment on that.
19 You know, we took the overall score range of 100, we
20 looked at the lower 40 percent being low and non risk
21 significant, and then the upper 60 percent being high
22 or medium safety significant, and from the perspective
23 of the thresholds that was judgment on our part as to
24 what was considered reasonable, as far as where we
25 would draw the lines to segregate low from non risk

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1 significant, medium from high.

2 DOCTOR POWERS: Have you done anything just
3 to validate that judgment, by running a few things
4 that you run the Fussel-Vesely through just to see if
5 it works?

6 MR. SCHINZEL: One thing that we've done
7 is, we've done, you know, extensive comparisons with
8 all the components that we've categorized to date, and
9 we've seen very good correlation with the PRA
10 categorization in deterministically what we've come up
11 with.

12 DOCTOR POWERS: I think I would take some
13 credit for that, and advertise that a little bit, so
14 that you can avoid him getting lock horned to these
15 decision theory things that he likes to do.

16 MR. LOVELL: I think it's been a help to,
17 like for myself as an operator, I have an SRO, is that
18 it does give a lot of credibility to the process, and
19 we go through it, and then you compare the results,
20 and generally they are comparable. There are some
21 cases where we rate it higher and some cases we would
22 have gone lower, but the PRA had it higher and we went
23 with that rating.

24 So, it's kind of the internal consistency
25 that, for me to understand it and to have confidence

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1 in it, has really helped.

2 MR. CHACKAL: And, this is the type of
3 process that we might use if we didn't have the PRA.
4 I mean, we developed this independent of what - of the
5 PRA. We said, well, how would we do this as a Working
6 Group subjectively, deterministically, what kind of a
7 threshold do we want to establish, and this is what we
8 came up with, and it was, again, to provide an
9 independent perspective.

10 And, just to give out some numbers, out of
11 886 modeled components, PRA modeled components that we
12 had already categorized in our systems, 800 were the
13 same ranking. So, it's about 85 percent or so, and
14 the ones that were not the same ranking are, of
15 course, by definition, higher. We deterministically
16 ranked them higher, because we can never be lower than
17 the PRA.

18 CHAIRMAN APOSTOLAKIS: Well, the PRA, if we
19 want to push this point, things that are in the PRA,
20 and are ranked high in the PRA, will definitely be in
21 the high safety category here, because you have triple
22 counted them. So, that doesn't surprise me a bit. It
23 doesn't prove anything. Right, because there will be
24 important initiating events, they will be important -
25 all the questions, the function will be in the EOPs,

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1 does the loss of function directly affect other
2 systems, you know, the whole thing, except for the
3 shutdown. So, those systems will get five, times
4 five, times five, plus, plus, plus, 95.

5 MR. LOVELL: Well, let me give you an
6 example, a specific one that I always give Mr.
7 Moldenhauer a bad time about, and that's a refueling
8 water storage tank. I mean, doing it
9 deterministically it's an important piece of
10 equipment, but its failure rate is, essentially, zero.
11 You know, it's a very reliable piece of equipment, and
12 we would have ranked it, I don't remember what, but it
13 was less than the high that the PRA had, I think
14 probably because of the RAW score?

15 MR. MOLDENHAUER: Yes.

16 MR. LOVELL: And so, deterministically, we
17 would have actually come out with a lower number than
18 what the PRA had.

19 CHAIRMAN APOSTOLAKIS: But, the PRA -
20 excuse me, the PRA in the RAW says assume the system
21 is down, so the failure rate is irrelevant, so in
22 terms of RAW it would sky rocket.

23 MR. LOVELL: That's right, but overall,
24 even deterministic, going through these questions, we
25 came out with a lower risk ranking than high. So, it

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1 doesn't necessarily say that the PRA systems
2 automatically go to the same things because of how we
3 add these things up.

4 CHAIRMAN APOSTOLAKIS: If you take the
5 refueling water storage tank, is the function used to
6 mitigate accidents? Is it needed? Yes. I don't know
7 that it's called an operating procedure, probably not.

8 MR. LOVELL: It is.

9 CHAIRMAN APOSTOLAKIS: It is, specifically?
10 Okay, so that's there, too. Does the loss of the
11 function directly fail other risk significant systems?

12 MR. CHACKAL: You bet.

13 CHAIRMAN APOSTOLAKIS: You bet.

14 Is the loss of the function safety
15 significant for shutdown or mode changes? Does the
16 loss of the function in and of itself directly cause
17 an initiating event?

18 MR. CHACKAL: No.

19 CHAIRMAN APOSTOLAKIS: No, so we have four
20 yeses and one no.

21 MR. LOVELL: But, what would happen,
22 though, is, one of the things we used in our
23 deterministic ranking is the reliability of the
24 component. So, instead of writing it at a five for
25 any of those answers, and it was probably a three -

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1 CHAIRMAN APOSTOLAKIS: But, if you go to
2 the PRA and calculate RAW, the fact that you have to
3 assume that a tank is down, I mean, defeats so many
4 things.

5 MR. LOVELL: Right.

6 CHAIRMAN APOSTOLAKIS: So, it's not -
7 anyway, I mean -

8 MR. GRANTOM: Well, George, the questions
9 are good screening questions for what you ought to put
10 into a PRA.

11 CHAIRMAN APOSTOLAKIS: Sure.

12 MR. GRANTOM: They really are. And, what
13 we are trying to do here is, we are trying to make
14 certain that somehow there isn't some function that an
15 operator knows about, that is used somewhere, that
16 somehow has been screened over in the PRA because it's
17 not directly called for, but has been used for a mode
18 change or shutdown, or it has been shown in our
19 experience that this component tripped the plant, even
20 though it probably cascaded to some degree. So, it's
21 trying to catch things in that regard, but I don't
22 disagree with you that, yeah, you can use the PRA
23 strictly, but also you have to realize this is also
24 supposed to be a risk informed approach, which is
25 supposed to blend probabilistic and subjective -

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1 CHAIRMAN APOSTOLAKIS: Yes, structured
2 judgment.

3 MR. GRANTOM: - structured judgment.

4 CHAIRMAN APOSTOLAKIS: I guess what I'm
5 saying is that -

6 MR. GRANTOM: And so, this is an attempt to
7 blend those pieces together.

8 CHAIRMAN APOSTOLAKIS: - I think what you
9 are doing in your so-called deterministic approach in
10 parallel to the PRA.

11 MR. GRANTOM: Yes, it is a parallel
12 process.

13 CHAIRMAN APOSTOLAKIS: The blending is not
14 very good.

15 MR. LOVELL: And, where this really comes
16 in important is, is that as we mentioned, most
17 components we've ranked do not have a PRA ranking.
18 So, this is how we really get to rank them for those,
19 the majority of the components, the vast majority.

20 CHAIRMAN APOSTOLAKIS: Is there a
21 sensitivity study here? Did you assume that all the
22 low safety significant and non risk significant
23 components are down, and you sort of know - did you do
24 anything dramatic as in the PRA case?

25 MR. GRANTOM: There is certainly no

1 quantified, they are not in the scope.

2 MR. LOVELL: But, on the other hand, we've
3 talked about this in the Working Group, and again,
4 this is all subjective judgement, but, basically,
5 looking at the people who are in that group looking at
6 it, is what would happen if all these lows went away,
7 and the feeling we had with our subjective judgment is
8 that it really did not impact the overall core damage
9 frequency.

10 CHAIRMAN APOSTOLAKIS: So, you actually did

11 —

12 MR. LOVELL: Informally, I mean —

13 DOCTOR SHACK: But, to use something like
14 a RAW, where, you know, you don't want to penalize the
15 component because it's normally so reliable, that, you
16 know, if it failed, as unlikely as it was.

17 MR. GRANTOM: Well, then you are really
18 kind of getting into — I don't know, to me the
19 question came up, you know, what if all the drain
20 valves failed during an event, I mean, now you are
21 getting into ridiculous, you know, assumptions about
22 things.

23 I mean, if all of the non risk significant
24 components failed, would it be a good thing, well, of
25 course, it wouldn't be a good thing, it would probably

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1 be messy or something, but it wouldn't preclude our
2 ability to bring that plant to a safe shutdown
3 condition. It might be messy, and things might have to
4 be fixed, but it's not -- it's not going to make or
5 break our ability to maintain a safe plant, or protect
6 public health and safety I should say.

7 DOCTOR KRESS: Well, the fact that you came
8 out with a consistency with your PRA in this process
9 is helpful to me in saying, for your particular system
10 that you may have chosen the right weighting values
11 and the right ranges for the thresholds, but what
12 bothers me is, the next plant that comes in, which is
13 going to be a lot different than your's, will
14 probably, because we've set a precedent, will want to
15 use these same values, these same thresholds, and even
16 the same process, and I'm not sure that this is not a
17 plant specific consistency, because I don't have a
18 firm basis for choosing this that is based in the
19 actual risk numbers in some way. And so, I'm not sure
20 that this is universally true. That's my problem.

21 I would be willing to accept that you've
22 validated it for your system by the consistency.

23 CHAIRMAN APOSTOLAKIS: One could have done
24 this without any knowledge of the PRA technology.

25 DOCTOR KRESS: You could have, but you

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1 would have trouble, in my mind, saying -- picking the
2 right range for the score of the thresholds.

3 CHAIRMAN APOSTOLAKIS: Yes, but it --

4 DOCTOR KRESS: Because that was completely
5 arbitrary. You know, I might have picked one, somebody
6 else might have picked another, but the fact that they
7 are shown as a consistency then says you probably
8 picked pretty good values for your plant.

9 CHAIRMAN APOSTOLAKIS: Sure.

10 MR. GRANTOM: Well, there are criteria that
11 go to determining how frequent a component's demand
12 is, and what the impact of the failure of that
13 component is, and that's included in the number that
14 would be assigned to that component or that function.

15 DOCTOR KRESS: The number --

16 MR. GRANTOM: The number, and then the
17 weighting gets multiplied by that number. If we
18 expect something that's always continuously demanded,
19 which is possible because it's a running system,
20 continuously running system, well, that gets the
21 highest level. If it's something like accumulators,
22 we might say that never or at most once per lifetime
23 would it ever be demanded to do --

24 DOCTOR KRESS: Well, are these criteria
25 spelled out somewhere?

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1 MR. GRANTOM: Yes.

2 DOCTOR KRESS: Is there guidance given as
3 to how much --

4 MR. SCHINZEL: We'll put those slides up
5 and we'll go through that. That's included as the
6 additional information.

7 CHAIRMAN APOSTOLAKIS: Yes.

8 MR. SCHINZEL: Originally, in the graded
9 quality assurance safety evaluation report, we were
10 responding to these five questions with just a yes and
11 a no. We started into the detailed categorization and
12 looking forward at implementation, we recognized that
13 just a yes/no answer didn't give us the necessary
14 insights.

15 CHAIRMAN APOSTOLAKIS: How much time do you
16 need? I mean, shall we take a break now, because we
17 are already late, and then come back and continue with
18 you?

19 MR. SCHINZEL: Yes, that's probably good.

20 CHAIRMAN APOSTOLAKIS: Okay. Let's take a
21 15-minute break until 10:30.

22 (Whereupon, at 10:16 a.m., a recess until
23 10:30 a.m.)

24 CHAIRMAN APOSTOLAKIS: Okay, we're back in
25 session.

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1 How much more time do you gentlemen need,
2 because we have to have time for the staff. Ten
3 minutes?

4 MR. SCHINZEL: We can, it's dependent on
5 your questions.

6 CHAIRMAN APOSTOLAKIS: How much time does
7 the staff need?

8 MR. SCHINZEL: Doctor Apostolakis, we are
9 going to adjust our presentation to shorten it up to,
10 what, maybe 25 minutes. It can be even shorter. A
11 lot of what we have to say is actually the whole
12 categorization process, which has been fairly well
13 covered here. So, we just might want to highlight
14 some points and give you an opportunity to ask
15 questions.

16 CHAIRMAN APOSTOLAKIS: Well, we also have
17 a -

18 DOCTOR BONACA: We have an hour for
19 discussion anyway, we can discuss it for one hour.

20 CHAIRMAN APOSTOLAKIS: Well, maybe what we
21 could do is give you ten/15 minutes now, then go to
22 the staff, and then have a session at the end where we
23 discuss issues, you know, after we have had the chance
24 to hear from the staff as well.

25 You gentlemen will be here until 12:30?

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1 MR. SCHINZEL: Yes, we will be.

2 CHAIRMAN APOSTOLAKIS: Okay.

3 So, why don't we do that.

4 MR. SCHINZEL: Okay.

5 CHAIRMAN APOSTOLAKIS: And, you don't have
6 to go over every single vu-graph and bullet.

7 DOCTOR BONACA: We also have some questions
8 that may take some more time than just what the plan
9 is.

10 CHAIRMAN APOSTOLAKIS: Well, that would be
11 unusual.

12 Where are we now?

13 MR. SCHINZEL: The question prior to the
14 break was associated with some of the foundational
15 bases to the answers that we have for our five
16 critical questions. The slide that we have on the
17 overhead does show the weightings or the responses
18 that we can give for each of the positive responses,
19 and they go anywhere from a one, which is incidents
20 that can impact are occurring very rarely, up to a
21 five, which is high impact, or occurring frequently.
22 Now, each one of those impacts or occurrence
23 adjectives we recognize that there is subjectivity
24 associated with those.

25 We tried to offer a guideline to the

1 Working Group membership to guide them in how to
2 address what is high impact, what's occurring rarely,
3 so those are given under the frequency definitions,
4 occurring frequently, up to occurring very rarely, and
5 these are, again, guideline definitions that the staff
6 uses.

7 On the next slide, we give the same type
8 of insight for the impacts, from a high impact down to
9 an insignificant impact, and again, these help guide
10 the Working Group in the overall categorization.

11 And then, as we get toward the weighting
12 scale on the following slide, we do have the questions
13 that have a specific weight assigned to them. We've
14 already discussed that, and then how we calculate the
15 weighting factors against those scores, and come up
16 with our maximum score of 100.

17 One thing that we do want to identify on
18 the next slide, under the guidelines for the scoring,
19 we do have some exceptions that we have, and that
20 would be to ensure that there is no masking, if there
21 is a specific question that comes out with a very high
22 score. So, the exceptions that we show is that if we
23 have a single question with a weighted score of 25,
24 and that would be true for the two questions of EOP or
25 accident mitigation, even if all the other questions

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1 are answered in the negative that component or that
2 function would still be categorized high.

3 On any one question, if it's 15 to 20,
4 automatically that function is going to be medium, and
5 then nine to 12 automatically going to be low, as a
6 minimum.

7 So, those are some of the exceptions that
8 we put into place to ensure that the masking isn't a
9 problem for us as we go through the categorization.

10 So, those are kind of the backstops that
11 we have with some of the subjective insights that we
12 have.

13 DOCTOR KRESS: Would you explain that
14 bottom line again to me, with the weighted score of
15 nine to 12, on any one question it means it goes
16 automatically to low, even though it may have ranked
17 high on the other questions?

18 MR. SCHINZEL: No, that means that if we
19 have a question, one single question that would come
20 out with a score of nine to 12, and all the others are
21 something less than that, might come out zeros, or non
22 risk significant, but just because that one question
23 - yes, you may have four questions answered in the
24 negative and receive a score of zero, but this one
25 question only might receive a score of nine or 12, and

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1 normally if you looked at our scoring range that would
2 normally have us down in the non risk significant
3 area, but because one question received that type of
4 mark it would be low.

5 DOCTOR KRESS: It's a kind of a way to deal
6 with George's "or" comment.

7 MR. SCHINZEL: Yes.

8 DOCTOR KRESS: But, in a graded way.

9 MR. SCHINZEL: That's correct.

10 CHAIRMAN APOSTOLAKIS: Has the staff
11 disagreed with any of the rankings, categorized
12 components? Have you more or less agreed that what
13 they've done is reasonable?

14 MR. LEE: This is Sam Lee of NRR. Are you
15 asking, in particular, to the deterministic process
16 here?

17 CHAIRMAN APOSTOLAKIS: Yes.

18 MR. LEE: In general, we have.

19 CHAIRMAN APOSTOLAKIS: You have what?

20 MR. LEE: In general, we do agree with the
21 process.

22 CHAIRMAN APOSTOLAKIS: Okay.

23 MR. LEE: However, this has taken some
24 time.

25 CHAIRMAN APOSTOLAKIS: You agree with the

1 process or the results of the process?

2 MR. LEE: We agree with the process. We
3 are evaluating the process, so we are either approving
4 or disapproving the process.

5 CHAIRMAN APOSTOLAKIS: So, you have not
6 looked at the 40,000 components and looked at a sample
7 and said, do we agree that this is low risk?

8 MR. LEE: We have taken a look at samples.

9 CHAIRMAN APOSTOLAKIS: And, you have what?

10 MR. LEE: And, we have found that in
11 general that they have been good, and we have had some
12 questions of samples that we reviewed that we needed
13 to address, but, in general, they have been good.

14 CHAIRMAN APOSTOLAKIS: You know, this is a
15 critical point for me, because, frankly, I think the
16 methodology needs a lot to become reasonable, but if
17 you guys agree with the final result, more power to
18 everybody. That's great. I'm the performance based
19 guy, right? If you agree, I mean, why not, but I
20 can't say nice things about this.

21 Let me ask you a couple of questions that
22 I have. In your letter dated January 23rd, Attachment
23 4, you say, page six, "In general . . .," - you don't
24 have to find it, you believe me, right?

25 MR. SCHINZEL: I believe you.

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1 CHAIRMAN APOSTOLAKIS: "In general..." -
2 I've had to believe you many times today, right? "In
3 general, a component is given the same categorization
4 as the system function that the component supports."
5 When I read that, I thought of Rick. Many times he
6 was furious, you know, you can't say that, that this
7 little component here has the same safety significant,
8 safety related because the system is. So, I said,
9 what's going on.

10 "However, a component may be ranked lower
11 than the associated system function."

12 MR. SCHINZEL: That's right.

13 CHAIRMAN APOSTOLAKIS: So, Rick won.

14 Then I asked the question, how is that
15 done?

16 Then, there is another transmittal,
17 January 18th, Attachment 1, which says that - well,
18 it's a long paragraph, I don't want to read it, but,
19 "In cases where failure of an individual component
20 will not fail the function due to redundancy,
21 diversity or other factors, and where component
22 reliability has been good, the initial risk may be
23 lower." But again, it doesn't tell us how.

24 So, is there a place where you explain
25 how?

1 DOCTOR BONACA: In fact, I had a question
2 on this specifically, because the - says that you may
3 have a system that is rated, say, medium safety
4 significance, you have multiple redundant systems
5 below supporting it, you classify them as low and you
6 take them out of your cure as part of the problem. Is
7 it possible? So, you would have a system that is
8 rated medium, and yet you have components that are not
9 anymore in the quality product.

10 MR. SCHINZEL: That's correct, yes.

11 DOCTOR BONACA: It's possible.

12 MR. SCHINZEL: Yes.

13 As far as the control, we have a procedure
14 that the Working Group uses that governs the approach
15 and process for categorization, and specific for the
16 area of redundancy and diversity there is a guideline
17 in one of the addenda that tell us exactly how and
18 when we can use redundancy and diversity as factors in
19 adjusting the categorization process.

20 DOCTOR BONACA: Is it how you got the
21 certain piping systems in the auxiliary system to be
22 low safety significant? Is that how you got that?

23 MR. SCHINZEL: Yes.

24 DOCTOR BONACA: That surprises me.

25 CHAIRMAN APOSTOLAKIS: So, the scores that

1 you show this apply only to functions, not to
2 individual components.

3 MR. SCHINZEL: That is correct.

4 CHAIRMAN APOSTOLAKIS: But, function,
5 though, is something that is not well defined. I
6 mean, Rick mentioned there your draining functions,
7 other kinds of functions, why didn't you apply it to
8 the component level? Wouldn't it have been a more
9 reasonable thing to do, because you are using judgment
10 after the function is categorized to do it now for the
11 components, right? You say you are using things like
12 redundancy, diversity, or other factors. Wouldn't it
13 have been better to actually use a scoring rule to do
14 that?

15 MR. CHACKAL: The way that we do it is, we
16 - after we identify the functions, we risk rank the
17 functions using these questions, we then map the
18 components to the functions. For every component we
19 identify the functions that that component supports,
20 and, of course, in some courses more than one. We
21 then provide - we then give the component the highest
22 risk, you know, the risk of the highest system
23 function that it supports.

24 CHAIRMAN APOSTOLAKIS: Right.

25 MR. CHACKAL: Okay?

1 And, that's our baseline. And, most
2 components stay that way. But, when we discuss, when
3 we deliberate on redundancy, diversity and
4 reliability, in cases where we can take credit for
5 those, we are able to conclude that the failure of
6 that specific component will not fail the function.
7 Why is that? Well, there is another component
8 available, or there is a diverse method of
9 safeguarding that function.

10 CHAIRMAN APOSTOLAKIS: And then, how do you
11 decide, though, how far down to go and say this
12 component now, even though the function is of high
13 risk significance, this component is -

14 MR. CHACKAL: Generally, we only go down
15 one level. One level, if it's high, if it supports a
16 high risk function -

17 DOCTOR BONACA: But, you said this is a
18 deterministic process, right?

19 MR. CHACKAL: Right.

20 DOCTOR BONACA: But, the auxiliary system
21 has to be in the PRA, so for that you have a rule that
22 says when you classify something of a high level in
23 the PRA, any supporting components is as high in
24 classification as the top, but in this case you didn't
25 do it somehow. Why, I don't understand how you got to

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1 those parts of the piping system of the auxiliary
2 system as low safety significant. You told me that
3 you got through the deterministic process, but really,
4 the auxiliary system is in the PRA, therefore, you
5 don't apply that deterministic process.

6 MR. CHACKAL: Well, when we come out of the
7 deterministic process, okay, with a risk rank, we then
8 look at the PRA risk, and if the PRA risk is higher,
9 of course, procedurally we go with the higher PRA
10 risk.

11 DOCTOR BONACA: That's right.

12 MR. CHACKAL: Okay?

13 If the deterministic risk is higher, we go
14 with -- we go with the higher of the two.

15 DOCTOR BONACA: Yes, and then with respect
16 to one of the two would say the auxiliary system is
17 pretty high safety significant, or medium I mean, no
18 less than that.

19 MR. GRANTOM: Right, but there are other
20 things that come off the system, the piping that comes
21 off the system, instrument sensing lines, there can be
22 --

23 MR. LOVELL: Recirculation piping.

24 MR. GRANTOM: -- recirculation piping
25 that's small, and even in PRA, and this is common in

1 most PRAs, that's why in PRAs we don't model all of
2 these ancillary equipment, we can say, well, even if
3 you lose that pipe you can't have enough flow out of
4 that one-inch line or less to fail the system.

5 DOCTOR BONACA: So, there are specific
6 elements, all right.

7 MR. GRANTOM: And, there are some rules of
8 thumb about how, you know, we apply that in the PRA.

9 CHAIRMAN APOSTOLAKIS: But, I remember in
10 your GQA presentations, I remember vu-graphs used by
11 Mr. Grantom and Mr. Rosen, one of the very first
12 systems you looked at was the diesel generators, which
13 certainly is of high significance, the diesel, the
14 function of the diesel.

15 And, you had some very impressive numbers
16 there, that there were, what, 5,000 components
17 associated with each diesel, and an incredible number
18 were really not risk significant.

19 MR. GRANTOM: Yes.

20 CHAIRMAN APOSTOLAKIS: So, was that then
21 based on judgment?

22 MR. GRANTOM: No, a lot of it, for the
23 diesel example, we are looking at a diesel that we are
24 trying to make certain that diesel can operate under
25 the emergency mode operation of a diesel. There's a

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1 lot of other equipment that's associated with testing
2 the diesel that we use, that has a diesel generator
3 tag number associated, but it's only used for testing,
4 or it doesn't prevent the system from operating in
5 emergency mode. There's a lot of trips and other
6 things that are associated with the diesel.

7 CHAIRMAN APOSTOLAKIS: Right.

8 MR. GRANTOM: So, there's a lot of that
9 equipment, that's the equipment that falls out,
10 George, that isn't, it's the stuff that makes the
11 diesel work when it really has to work under an
12 emergency mode condition.

13 CHAIRMAN APOSTOLAKIS: The statement was
14 made earlier that if the system function is high, then
15 the most you can do is take individual components of
16 the system and put them one level down, but in here it
17 seems that you went down two, three levels.

18 MR. CHACKAL: Well, let me explain it this
19 way. For the diesel, there's probably 50 separate
20 functions, okay?

21 CHAIRMAN APOSTOLAKIS: Yes.

22 MR. CHACKAL: And, for example, one of the
23 functions is standby lube wall system heating, to
24 ensure that the lube wall is always at a certain, you
25 know, minimum temperature. That's a separate

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1 function. That function was ranked low. The
2 components that support that function, the standby
3 lube wall pump, not necessary for the operation of the
4 diesel in emergency mode, would be ranked low as well.

5 So that, just to clarify it, I guess, the
6 number of functions that we typically identify in a
7 system, typically, at least 30 separate functions,
8 it's not just the higher level functions.

9 DOCTOR BONACA: But, so much of this is
10 really outside of the PRA. I mean, the PRA - so the
11 question I have is, could your application be
12 supported by a pure deterministic process? I mean, a
13 lot of the judgments you are basing your decisions on
14 is really deterministic, it's solid, I mean, in many
15 ways.

16 CHAIRMAN APOSTOLAKIS: Another way of
17 putting it is, why is this risk informed?

18 MR. GRANTOM: Well, it's risk informed for
19 a couple of reasons. First of all, if you didn't have
20 the PRA you might have a tendency to fall back to
21 Chapter 15 in ECCS criteria, which is going to say
22 accumulators are risk significant because you have no
23 weighting of the frequency of the event. That's one
24 important element.

25 The other part of it being risk informed

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1 is the fact that you know, by the mere fact that you
2 know what's in the scope of the PRA, you know you've
3 got an analysis that's put these components at a
4 special quantifiable level, and the rest of the items
5 over here are supporting something else. That's good
6 information in and of itself.

7 Yes, you could go and do strictly what
8 we've done here on these deterministic questions, but
9 you are going to pull - well, you'll have almost
10 essentially the cross of safety related/non safety
11 related that you -

12 CHAIRMAN APOSTOLAKIS: The context within
13 which you apply the methodology is changed.

14 DOCTOR BONACA: And, you look at this
15 general - that we discussed in the beginning and ask
16 the question, like, you know, category one, bent
17 frame, test valves, there must be hundreds of those or
18 more.

19 MR. GRANTOM: Yes, thousands.

20 DOCTOR BONACA: Now, the argument you are
21 using I believe is a credible and solid argument, but
22 it doesn't need the PRA to do that, so I was wondering
23 why would any power plant today not use the same
24 argument throughout? I mean, it's just a question we
25 have to ask ourselves, because we are making this kind

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1 of step conditional on the existence of a solid PRA,
2 and yet, so many of the elements are -

3 MR. GRANTOM: It's a good question, and
4 it's question that is somewhat as a result of the time
5 we were licensed and the time that we were
6 constructed. The Q list associated with some of the
7 older plants aren't as large as the Q lists that are
8 associated with plants that are post TMI. So, you are
9 seeing - what you are seeing is an artifact of the
10 architect engineer and the licensee, in order to get
11 licensed, putting everything into safety related
12 because it was the way to get licensed. Now we've
13 overscoped it tremendously, huge O&M costs to be able
14 to do this, regulatory processes that lump on it, I
15 mean, it all carries its own 9 tons of baggage, and
16 now we are trying to extract some of that in the risk
17 informed manner, so that's the roots of where a lot of
18 that came from.

19 DOCTOR BONACA: I understand.

20 CHAIRMAN APOSTOLAKIS: The thing is that,
21 I mean, again, Regulatory Guide 1174 says that risk
22 informing the regulations means to look at the
23 integrated decision-making process and one element of
24 it is the input from delta CDF and delta LERF. Then
25 we go on and use importance measures that are not

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1 really related to delta CDF and delta LERF, and now we
2 are going one gigantic step beyond that, we don't even
3 use importance measures, we go to another methodology
4 and so on, and that's within risk informing the
5 regulations.

6 MR. GRANTOM: George, I agree with you.

7 CHAIRMAN APOSTOLAKIS: They may be very
8 valid reasons. I mean, what you mentioned earlier
9 about the Q lists and so on, I agree with you.

10 MR. GRANTOM: We are in an evolutionary
11 process right now. I would like to think that we
12 could be much further along with the acceptance of
13 these technologies in the purest sense of what the PRA
14 produces, but I don't think the culture, both within
15 the staff and even within our own utilities, has
16 reached that point to where they just readily accept
17 PRA results and enable us to move on.

18 CHAIRMAN APOSTOLAKIS: I guess the question
19 in my mind is that, when people ask us what is a risk
20 informed regulatory system, and we say read Regulatory
21 Guide 1174, is that really a fair answer? It is not.
22 This is only one part of it.

23 MR. BARRETT: I would -

24 CHAIRMAN APOSTOLAKIS: And, a small part as
25 it turns out.

1 MR. BARRETT: - I would point them to a
2 more recent document, which is SECY 00168, which I
3 think goes a step beyond Reg Guide 1.174 and talks
4 about the whole question of using different types of
5 information, such as the qualitative information and
6 how that can be appropriate in some areas and in some
7 ways, and how you have an integrated decision-making
8 process that takes into account various types of
9 information and the implication that that has for the
10 quality of PRA.

11 I think that if you look at Attachment 2
12 to SECY 00160 - I think it's 168 -

13 CHAIRMAN APOSTOLAKIS: What is it about?

14 MR. BARRETT: It's, basically, about
15 decision-making processes within the risk informed
16 methodology.

17 CHAIRMAN APOSTOLAKIS: Yes, we should get
18 a copy.

19 MR. BARRETT: I'll see to it that you get
20 a copy of that.

21 CHAIRMAN APOSTOLAKIS: Thanks.

22 Okay, what else do you have to say that is
23 extremely important?

24 MR. SCHINZEL: Well, one thing I wanted to
25 make sure that the committee understood, we have

1 general notes that we do use to support some of the
2 documentation. There's been some references made to
3 the vents drain valves. Recognize that this is not an
4 alternate categorization means, this is an aid for
5 South Texas in documenting the bases for why things
6 fall into certain families and the bases for the
7 categorization that those have. So, I just wanted to
8 bring that point up, make sure that the committee
9 understood that portion.

10 DOCTOR BONACA: So, could you have a
11 situation where a normally opened - well, that's not
12 a good example, but say a type 3 valve in a specific
13 location, in a specific condition, could, in fact?

14 MR. SCHINZEL: Yes.

15 DOCTOR BONACA: So, you do look at those.
16 So, although you do have a general classification, but
17 then you are looking at individual applications and
18 making the judgment.

19 MR. SCHINZEL: Right, we are looking at
20 each individual component and showing that its
21 classification is proper.

22 DOCTOR BONACA: Okay.

23 MR. SCHINZEL: This just aids us in
24 documenting the basis for why it is categorized as it
25 is.

1 DOCTOR BONACA: I understand.

2 MR. LOVELL: It also helps with
3 consistency, so how we started out with these in some
4 ways was, we'd say, well, how do we handle this
5 situation in the other systems. This helped us with
6 consistency, but in each case there's a specific
7 evaluation, do these apply, and is this the right
8 decision.

9 DOCTOR BONACA: Good.

10 CHAIRMAN APOSTOLAKIS: Can you go to slide
11 16?

12 MR. SCHINZEL: Certainly.

13 Slide 16 reflects two of the open items
14 that have not been fully resolved between South Texas
15 and the staff. Open item, I believe it's 3.4, deals
16 with containment integrity, and currently this was
17 discussed last week with the staff. South Texas has
18 agreed to go back, take a look at our PRA for how well
19 it deals with latent effects, and to determine whether
20 we need to do an additional sensitivity study to fully
21 integrate the latent effects into the overall
22 categorization process.

23 So, that is still an issue that South
24 Texas is working with and has yet to be resolved.

25 The other open item, open item 3.5, deals

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1 with pressure boundary categorization, and South Texas
2 had proposed for Class 1 and 2 piping that we would
3 envelope in the risk informed in-service inspection
4 categorization process on top of graded quality
5 assurance. Graded quality assurance does take a look
6 broadly at the pressure boundary categorization for
7 the system. Risk informed ISI takes a very narrow
8 look at specific segments of piping and looks at the
9 importance of those individual sections.

10 For Class 1 and 2 piping, we are doing a
11 risk informed ISI categorization for those. We are
12 going to take the highest, or we are going to factor
13 in if the risk informed ISI categorization comes out
14 higher in graded quality assurance, that's going to be
15 the categorization that we are going to use.

16 South Texas was proposing using the graded
17 quality assurance categorization only for Class 3
18 piping. Currently, our risk informed ISI process is
19 not individually categorizing the Class 3 piping.
20 What we have found is that there is good correlation
21 between the risk informed ISI results generally, and
22 the graded quality assurance categorization approach,
23 you know, in most cases we are coming out with the
24 same categorization. So, for the class rate piping,
25 we're proposing to use the GQA ranking only.

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1 The staff has recommended that we go back
2 and perform risk informed ISI categorizations on those
3 Class 3 piping, and currently that's being evaluated
4 by South Texas.

5 DOCTOR KRESS: Could you explain your
6 second sub-bullet under containment integrity to me?

7 MR. GRANTOM: Right. What we've talked
8 about here is, we used large early release frequency
9 as a figure of merit for the containment performance
10 analysis. The feeling, or the surrogates for
11 protecting against large early release, from an
12 equipment point of view we've pretty much done
13 everything we can do to protect from late over-
14 pressurization. Most of the stuff that's associated
15 in the containment event tree that we use to calculate
16 the level 2 for the release categories is
17 phenomenological stuff, at least in South Texas it's
18 PRA, there's very little equipment that's associated
19 with that, it's mostly early/late, you know, burns,
20 those type of things. The question of whether you
21 have dry or wet containments have already been
22 answered and it's coming out of the plant damage
23 states of the level 1.

24 So, we feel like LERF pretty much covers
25 most of the stuff for the latent cancer fatalities

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1 also. There has been an issue that's been brought up
2 about late over-pressurizations. We run the analysis
3 out to 48 hours. After that, we pretty much are very
4 uncertain as to what the outcomes, resources, things
5 that may happen in any given situation where you can
6 look at those.

7 DOCTOR KRESS: But here, you are not really
8 saying, none of these are surrogate for latent
9 fatality risk, because it's a surrogate for
10 everything.

11 MR. GRANTOM: Right.

12 DOCTOR KRESS: But, you are saying that it
13 encompasses latent fatality because of the next sub-
14 bullet?

15 MR. GRANTOM: Right.

16 DOCTOR KRESS: Now, does that next sub-
17 bullet deal strictly with the comparison between
18 latent fatalities and early fatalities, is that what
19 that is dealing with?

20 MR. GRANTOM: Right, the level 3 studies
21 that we have done in the past, we don't have a level
22 3, but we have taken a comparison for it and took a
23 look at that level 3 analyses, show that by and large
24 the dominant contributor to public health and safety
25 is the large early release.

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1 DOCTOR KRESS: The risk of early fatalities
2 is higher.

3 MR. GRANTOM: Right.

4 DOCTOR KRESS: But, does that - that
5 doesn't - I know there's in Reg Guide 1.174, and it's
6 in other documents, there's no risk acceptance
7 criteria for something like land contamination, but is
8 that to say it's not important, that we shouldn't be
9 thinking about it? You know, if you have late over-
10 pressurization, and late release, it may not kill a
11 lot of people, because you've already evacuated.

12 MR. GRANTOM: Right.

13 DOCTOR KRESS: It could cause some latent
14 fatalities, because you don't evacuate everybody, but
15 surely it's going to contaminate the land. Now, the
16 question is, which is the dominant consequence, or the
17 dominant risk?

18 MR. GRANTOM: Let me go back to what I was
19 saying. You are right, the land contamination, those
20 are still important issues -

21 DOCTOR KRESS: But, do you capture those
22 some way in your importance measures, or in your
23 subjective deterministic process?

24 MR. GRANTOM: No, not those kinds of
25 issues, land contamination, we don't. We are trying

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1 to categorize equipment in the station, and that
2 categorization of equipment pretty much stops at the
3 plant damage state level that leads into the
4 containment performance analysis models. And, it
5 doesn't carry on to what other equipment may or may
6 not be used to prevent land contaminations or other
7 issues that may be associated with that. It doesn't
8 go that far.

9 DOCTOR KRESS: So, if such equipment
10 exists, then it might end up in the low classification
11 or non risk significant?

12 MR. GRANTOM: It probably wouldn't be
13 classified at all. We would continue to treat it the
14 way we currently treat it, but I can't think of an
15 example of such a type of equipment. I mean, you are
16 talking about severe accident management guidelines
17 and those types of issues that come up now, and as I
18 said we are very uncertain in the quantified sense of
19 the level 2 analysis is to what types of resources
20 would be flawless in the event we really did have a
21 catastrophic event at a station. So, we pretty much
22 have a pinch point of the plant damage state, where
23 all the equipment has been statused to determine what
24 the plant damage states are in, and then the
25 containment event analysis is pretty much

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1 phenomenological, that would step you into various
2 release categories of whether you had early/late
3 melts, early/late burns, phenomenological issues that
4 are associated with that that carries to frequencies
5 of release categories.

6 We feel like by capturing the equipment –
7 we've captured the equipment of what we can do,
8 everything after that are things that are either not
9 proceduralized, which I'd be hesitant to take credit
10 for in the PRA, or they are very uncertain, or they
11 would be the result of outside resources coming in,
12 you know, beyond the 48-hour time period. We wouldn't
13 capture that. To answer your question, we wouldn't
14 capture that class of components.

15 DOCTOR BONACA: On this subject, you know,
16 on the same thing, if I look at Attachment 4 to your
17 January 18 letter, "Containment isolation valve is
18 typically characterized as low safety significant if
19 they meet one or more of the following criteria," and
20 the last one is, "The valve size is 1 inch or less,
21 that is, by definition the valve failure does not
22 contribute to large early release." And, I was
23 surprised by that in a certain way, because it seemed
24 to me that in a deterministic judgment you would still
25 say, well, it's still an isolation valve that would

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1 prevent releases maybe in the late phase of an
2 accident and we should still categorize it as, you
3 know, keep it in our Q list. I mean, that's the
4 judgment I would make when I look at that statement
5 that way, and so if you could elaborate on that a bit.

6 MR. GRANTOM: Yes, the categorization
7 process would have looked at other things associated
8 with it. It may be a 1-inch valve, but is the piping
9 line rated much higher than the containment building
10 itself. Is it in a closed system. There's even some
11 —

12 MR. CHACKAL: There's a redundant valve on
13 it.

14 MR. GRANTOM: — yes, there's a redundant
15 valve that's somewhere else that can be closed off.

16 DOCTOR BONACA: But, it says that
17 typically, if they meet one or more of the following
18 criteria, and one is this, and that's —

19 MR. GRANTOM: And, that's true, typically,
20 you know, for the definition of large early release,
21 large has typically been something that we would say
22 would have met the containment atmospheric conditions,
23 well then, you win out. This type of thing would —

24 DOCTOR BONACA: See, I'm not troubled at
25 all by the fact that you are stepping down your

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1 quality program for intermediate events, for
2 anticipated transients, although certainly we'd be
3 interested to know if there is any big penalty we are
4 going to see from that, and we don't know. I don't
5 think so, but here you are talking about a containment
6 which is - and that's why, you know, I saw this issue.
7 I mean, that's not - we may make a judgment that, you
8 know, a 1 inch release, 1 inch size is not much of a
9 release, I wonder if other people around the plant,
10 how happy they would be with the judgment. We agree
11 it's not a large early release.

12 MR. GRANTOM: Right, but this doesn't - the
13 fact that we may have categorized it to low doesn't
14 mean that it's not maintained, not - I mean, it
15 doesn't mean the controls are off of it, that it's
16 left to fail.

17 DOCTOR BONACA: Yes.

18 MR. GRANTOM: I mean, we still expect those
19 components to function and do their intended purpose.

20 DOCTOR BONACA: I understand.

21 MR. GRANTOM: So, there's nothing in here
22 that assumes that in any way that we expect components
23 to fail.

24 DOCTOR KRESS: But, you may lessen your
25 frequency of inspection or something like that.

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1 MR. SCHINZEL: We could adjust some of our
2 processes and maybe decreasing some of the
3 inspections, but we would still give ourselves the
4 assurance, the reasonable assurance that this
5 component is still going to meet its function.

6 MR. LOVELL: Yes, really what you are
7 talking about here is how much effort are you going to
8 go to verify that it will meet its function. We
9 expect it to meet its function, and we'll put an
10 appropriate level of controls on that, but it may not
11 be as full level as a larger valve, one of our 48-inch
12 valves for instance.

13 DOCTOR KRESS: Do you have a buffer system
14 to control iodine re-evolution from sump water?

15 MR. LOVELL: Yes, we have, what is it, it's
16 large - trisodium phosphate baskets in the bottom
17 containment.

18 DOCTOR KRESS: Would that be classified
19 then as non safety significant, your process?

20 MR. LOVELL: I think we rated those low,
21 just because it's a very passive system.

22 MR. GRANTOM: And, that doesn't mean that
23 we wouldn't check the basket, that doesn't mean
24 anything, it just means that the controls would be
25 commensurate with the importance and would be

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1 associated with the proper function and failure by the
2 component, that made the component important.

3 MR. LOVELL: If water touches it will work,
4 and so we do a surveillance every outage to make sure
5 it's there, and we keep that at the same level.

6 DOCTOR POWERS: Do you check the
7 dissolution of it?

8 MR. LOVELL: Pardon?

9 DOCTOR POWERS: Do you check the
10 dissolution on your tide, the trisodium phosphate?

11 MR. LOVELL: I am trying to remember the
12 text back off the top of my head, but if I remember
13 right it's just a level.

14 DOCTOR POWERS: It does cake together and
15 —

16 MR. LOVELL: Right.

17 DOCTOR POWERS: — get tough to dissolve
18 after a while.

19 MR. MOLDENHAUER: Should we move to slide
20 17, or —

21 CHAIRMAN APOSTOLAKIS: I think we should
22 move on with the staff now, and come back.

23 MR. MOLDENHAUER: The remaining two slides
24 are just summarization slides.

25 CHAIRMAN APOSTOLAKIS: Summary, yes, I saw

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1 that.

2 DOCTOR BONACA: I just have one last
3 question, and it's just a judgment on your part, you
4 clearly are proposing, you know, to take away some of
5 the pedigree and certainly step down some of the
6 quality of some of the functions, even including some
7 instrumentation that goes with the LPS, and I'm sure
8 you asked yourself the question, what is the impact,
9 if any, on the probability and consequences of
10 anticipated transients in the FSAR. That would be an
11 interesting question. Have you ever thought about
12 that?

13 MR. GRANTOM: I don't think that there's
14 very much, if any, impact on any of those things,
15 because most of -- a lot of the things that are in
16 Chapter 15 are what most of us would call incredible
17 events.

18 DOCTOR BONACA: No, I'm talking about, you
19 know, loss of flow events, you have protection for
20 that, clearly the protection is merely a focus of this
21 kind of evaluation, because, I mean, you know, you go
22 to some fueling DNB, well, some fueling DNB. I mean,
23 it has nothing to do with -- frequency.

24 MR. GRANTOM: Yes, I mean, the loss of the
25 feed water and those types of things.

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1 DOCTOR BONACA: So, what are you going to
2 do, are you going to take the equipment, for example,
3 from a specific trip and maybe put it at a low
4 quality. I mean, some of the instrumentation doesn't
5 need to be there.

6 MR. GRANTOM: No, you have to -- one of the
7 things that I kind of tend to preach on a little bit
8 is that this categorization process is intended to
9 answer the question that would be associated with
10 public health and safety, core damage frequency, large
11 early release frequency. Those components that are
12 necessary for that would include loss of feed water,
13 some of the balancing plant equipment, are included in
14 here. There is a whole different analysis sitting out
15 there that's associated with reduction in transients,
16 which I would call a balance of plant model, which is
17 a different question to ask at that point in time,
18 because now you are talking about losses of
19 generation.

20 This process is focused on the regulatory
21 application, which is focused on public health and
22 safety, and all the questions here that are associated
23 with that are to be sure that those components that
24 are necessary to ensure public health and safety are
25 afforded the proper attention and the proper

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1 awareness, and that even includes some non safety
2 related components that we've identified.

3 DOCTOR BONACA: No, I agree with you, I'm
4 only -- you realize my question went to the fact that
5 you used now two measures of performance, CDF and
6 LERF. The original design on the plant had all kinds
7 of measures of performance, okay? For certain
8 transients at a given frequency you could not have
9 more than -- you could not fuel in DNB. Well, now it's
10 not anymore a criteria, so you are going to have some
11 components by definition, and they are not
12 unsupported, I'm just trying to assess in my mind what
13 is the potential impact, if there is any, on the kind
14 of performance which is really intermediate level of
15 performance.

16 CHAIRMAN APOSTOLAKIS: But, I thought
17 that's what they were doing in the deterministic
18 categorization, didn't they say that?

19 MR. GRANTOM: We are not going to go and
20 determine that this component is important from DNBR,
21 and what's the amount of margin we are affecting on
22 DNBR. You know, the safety analyses and those types
23 of things, they stand by themselves, and the
24 components and the controls that we have in the
25 station, our DNBR curves that we use in operations are

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1 still predicated based on the safety analysis.

2 DOCTOR BONACA: I understand, but you are
3 showing me a table that you are taking one of the high
4 pressure trip in the containment and you are calling
5 it low safety significant, and I don't disagree with
6 you, it may be very much because you have redundant
7 functions there. The result of that will be that it
8 will taken out of the Q list. It will be still there,
9 most likely, okay, but you have a lot of freedom in
10 doing what you do.

11 So, I think the original question on my
12 part of saying, have you ever thought about it, just
13 to get a feeling for, you know, what are the
14 consequences of taking down some of these existing
15 defenses, which may not be important, but I'm saying
16 that -

17 MR. GRANTOM: Well, we still expect the
18 components to work, and we still intend to buy the
19 components, and procure components, and install
20 components that are capable of meeting their design
21 functions, which include accident conditions and
22 normal operations.

23 DOCTOR BONACA: So, you expected the
24 liability to be increased.

25 MR. GRANTOM: I would not expect the

1 liability to be increased.

2 DOCTOR BONACA: Although, in some cases
3 environmental quantification is not anymore a
4 requirement.

5 MR. GRANTOM: I would not expect the
6 reliability to decrease, I would expect that there
7 would be examples to where we may have availability of
8 even better components for certain areas, even though
9 they may not have Appendix B programs associated with
10 it, but for those that we still have to procure I
11 would expect that those components will still be able
12 to function. And, we have feedback processes in place
13 and corrective action programs in place to assure that
14 they -

15 DOCTOR BONACA: Yes, but I think that in
16 the long run these are important questions, because I
17 think since we are making a big change in the
18 regulation we need to - almost like a verification
19 process at the end, say, yeah, we feel comfortable
20 because, okay, the consequences of what we've done is
21 not the reincarnation of -

22 MR. GRANTOM: It goes back to belief in the
23 categorization system, if we've done the
24 categorization correctly, then if any one particular
25 component is not going to prevent the station from

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1 protecting public health and safety, or of these small
2 groups of components. So, that comes up frequently,
3 and your concern is well noted, we are certainly aware
4 of that and sensitive to it, but we believe we have a
5 robust categorization process. We put our best people
6 doing it. We put a mix of disciplines, SROs, design
7 engineers, system engineers, who know the plant very
8 well, and we believe that once it is categorized as
9 lower NRS that we can control that through our normal
10 processes.

11 DOCTOR BONACA: Okay.

12 CHAIRMAN APOSTOLAKIS: Okay, thank you very
13 much. Please, stick around so we can have a
14 discussion later.

15 MR. NAKOSKI: While South Texas is leaving,
16 I'm going to introduce the staff that's going to be
17 doing the presentation. I'm John Nakoski, I'm the
18 Project Manager responsible for facilitating the
19 review. Doing a presentation is going to be Sam Lee,
20 Steve Dinsmore, and Mike Cheok. Sam Lee is the Lead
21 Reviewer for the South Texas Exemption Categorization
22 Process. Steven Dinsmore was the Lead Reviewer for
23 the GQA submittal, and Mike Cheok is the Lead Reviewer
24 for Option 2 Categorization process.

25 And, with that, I'll turn it over to Sam

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1 Lee.

2 MR. LEE: Good morning.

3 CHAIRMAN APOSTOLAKIS: A lot of your vu-
4 graphs really are of low presentation significance.

5 MR. LEE: Doctor Apostolakis, we wanted to
6 be able to point to what we were talking about.

7 CHAIRMAN APOSTOLAKIS: I didn't use any
8 scoring scheme, I just declare them. I'm pretty
9 confident that I know what I'm talking about.

10 So, if you can skip them, or go over them
11 very quickly, that would help.

12 MR. LEE: Yes. Much of what we have here
13 is repeat of what South Texas folks has given us.

14 CHAIRMAN APOSTOLAKIS: Yes.

15 MR. LEE: If I may make a couple of points,
16 highlight a couple of points, and propose how we
17 should end our presentation, and give you an
18 opportunity to ask questions.

19 Many of the concerns that you had raised
20 regarding the two parallel processes, probabilistic
21 process, as well as the expert judgment process, if we
22 were to re-term it, in the arena of the probabilistic
23 process we share your concern about the use of
24 importance measures, but, you know, strictly using
25 that, not so much to categorize the components and

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1 that's it, we rely on them as sort of a screening
2 process, if you will.

3 And, as was discussed earlier, the
4 powerful argument really for supporting the
5 categorization is that if you put these LSS components
6 and then multiply them by a factor of ten, and look at
7 the results of the postulated increase in
8 unreliability, that's a very powerful argument, and we
9 really take comfort in the results for that.

10 CHAIRMAN APOSTOLAKIS: Would you put that
11 in the rule?

12 MR. LEE: Would we put that in the rule?

13 CHAIRMAN APOSTOLAKIS: Yes, take the
14 failure rates, multiply them by ten.

15 MR. LEE: Well, as far as I know, it's
16 currently in 1. - oh, multiply them by ten.

17 MR. CHEOK: For option 2, we haven't said
18 anything about multiplying by ten, but we did say that
19 you have to requantify the change in risk so that your
20 change in risk is comparable to what's going to be in
21 Reg Guide 1.174.

22 CHAIRMAN APOSTOLAKIS: The problem with
23 that, Mike, is that we really don't know what the
24 input from the failure rates will be.

25 MR. CHEOK: That's correct, and I think we

1 will probably suggest something like a factor of ten.

2 CHAIRMAN APOSTOLAKIS: All right.

3 So, the methods that South Texas is
4 proposing will find their way to the rule. Okay.

5 Can you go to slide 4?

6 MR. LEE: Sure.

7 CHAIRMAN APOSTOLAKIS: Now, this is kind of
8 a new definition of RAW, isn't it? I mean, RAW says
9 — there isn't such a thing as RAW pump A, plus RAW
10 common cause.

11 MR. LEE: You are absolutely right.

12 CHAIRMAN APOSTOLAKIS: There is only RAW
13 pump A, and you go everywhere and you set pump A down.
14 So, I don't understand what this is.

15 MR. LEE: You are absolutely right, and
16 maybe Steve can elaborate on this, but this goes back
17 to your December concern about how can you do this,
18 and we recognize that this is not an accepted practice
19 per se. However, it does give us some feel for how
20 contribution from common cause can be accounted for
21 when we risk rank these components.

22 CHAIRMAN APOSTOLAKIS: But, I mean, pump A
23 appears in a number of places in the PRA, one being
24 the common cause failure of redundant components,
25 another being maintenance contributions, right, and so

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1 on, so the definition of RAW says go to all of these
2 terms, set A down and recalculate the CDF and LERF,
3 right, that's the definition.

4 MR. LEE: That's right.

5 MR. DINSMORE: Yes, the stated input,
6 that's the definition, but sometimes that's difficult
7 to calculate, because what you have to do is, you'd
8 have to recalculate the PRA for each component and
9 turn all its events on to -

10 CHAIRMAN APOSTOLAKIS: True, that's true.

11 MR. DINSMORE: - and the difference, what
12 happened with this discussion between the initial GQA
13 CCF, the proposed one, and the final one, is we worked
14 together with some of the research engineers and they
15 determined that if you do that the CCF methodology
16 suggested by South Texas to use for the exemption
17 request produced a lower number than if you go in and
18 actually set each individual basic event -

19 CHAIRMAN APOSTOLAKIS: A higher number you
20 mean.

21 MR. DINSMORE: A lower number. If it
22 produced higher it would be okay, because then it's
23 conservative, but it was producing a lower number.
24 So, there was a bit of a discussion about that, and I
25 think instead of really trying to resolve that issue

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1 South Texas just decided to go back to the old
2 calculation. But, again, there's a difference -

3 CHAIRMAN APOSTOLAKIS: Oh, not, but I'm
4 talking about the old calculation, and this would
5 probably be a higher number, wouldn't it?

6 MR. DINSMORE: The old, yeah, the original
7 GQA calculation produced a higher number.

8 CHAIRMAN APOSTOLAKIS: Yes.

9 MR. LEE: Yes, this is the method.

10 CHAIRMAN APOSTOLAKIS: But, the point is
11 that RAW is a global quantity. It says RAW pump A,
12 that means everywhere where pump A appears has to be
13 down. There isn't such a thing as RAW pump A failing
14 independently, or RAW pump A failing in common cause,
15 and that implies that there is. Actually, this is
16 conservative, because you set the term of common cause
17 failure equal to one, where in - I mean, if you follow
18 the definition it should be just beta in the multiple
19 grid, right? So, Q is one beta, so that says it is
20 conservative.

21 MR. CHEOK: Unless you want to add in the
22 HEP factor of using pump A in a recovery action, then
23 the common cause does not cover that.

24 CHAIRMAN APOSTOLAKIS: That's right.

25 MR. CHEOK: Okay.

1 MR. LEE: The other point that I wanted to
2 make about the expert judgment process, without going
3 through all the pages, and surely feel free, we can go
4 to any page you like, but the other general point that
5 I wanted to make with regards to the expert judgment
6 process is that the scoring scheme that we are relying
7 on has evolved through several versions, and initially
8 the staff didn't quite know what the score of zero
9 meant, or what the score of three meant per se per
10 question, and I think as a result of further
11 discussion with the licensee what you see, and if I
12 may just put it up for your review is - South Texas
13 folks have provided this also - is anchoring, if you
14 will, of these scores, and that helps us to say, hey,
15 three means this, and two means that.

16 And, if we go further down to the overall
17 total scoring scheme, where they take 100 points, and
18 we have these ranges of score for categories, one
19 thing - or maybe one thing that I can share with you
20 that might shed some light is that if you take a
21 component per se and you rank the functions, and let's
22 say the highest ranking function had a score of two
23 for each question, and if you multiply by the
24 weighting factor and sum it up, the maximum score, if
25 you score a two, is 40. And, 40 is the high end of

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1 the LSS. So, there is some reasoning behind these
2 scoring ranges, and a score of 40 for questions that
3 you answer two for each one of those, give us some
4 level of comfort as to why they used that scheme.

5 CHAIRMAN APOSTOLAKIS: You see, this
6 methodology is the same one that SLIM MOD uses for
7 quantification of human error, and it's really
8 decision theory.

9 MR. LEE: Yes.

10 CHAIRMAN APOSTOLAKIS: That's what it is,
11 you have a number of objectives, you weigh them and
12 you rate the thing, and multiply and add them up.

13 The most important question here is not
14 whether 40 means this or that, the most important
15 question is on your slide seven, will these five
16 things represent something meaningful, or are we
17 repeating the same question five different times with
18 different words?

19 If you go to the literature and decision
20 theory, this is the key. In SLIM MOD case, instead of
21 critical questions they call them performance shaping
22 factors. The big question there is, are you using a
23 set of PSFs that are reasonably different from each
24 other. Right? That's the issue in human error
25 quantification. Here is a different one. So, this is

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1 really the fundamental question, does it really -- is
2 it really meaningful to ask the same question five
3 times?

4 And then, the next step is, of course, the
5 weighting factor. As Doctor Kress said earlier, why
6 is it a three for shutdown and so. I mean, so these
7 are the key questions here, and the bigger question,
8 of course, is why didn't the PRA find their own here
9 someplace at the function level?

10 So now, the question I have for you
11 gentlemen is, you have looked at the results of the
12 categorization, do you have any problem with the
13 results?

14 MR. LEE: When we looked at a component
15 level, and we take a component?

16 CHAIRMAN APOSTOLAKIS: Anything.

17 MR. LEE: In general, the examples that we
18 have looked at we have not had problems. Now, there
19 are a couple of issues that we are still following up
20 on that pertains to the usability of this particular
21 expert judgment process.

22 CHAIRMAN APOSTOLAKIS: No, not the process,
23 the results. How was -- maybe some of my colleagues
24 can help me -- how was the Q list developed? Was it a
25 judgment thing within the staff and the licensee?

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1 MR. SIEBER: Not really, it was the
2 architect engineer.

3 CHAIRMAN APOSTOLAKIS: Yeah, the architect
4 engineer.

5 MR. SIEBER: And, it was based on Chapter
6 15.

7 CHAIRMAN APOSTOLAKIS: It was, basically,
8 you know, you think this, we think that, and we both
9 agree.

10 MR. SIEBER: Right.

11 CHAIRMAN APOSTOLAKIS: Okay.

12 How is that different from what happened
13 here? Why can't we say the staff has reviewed the
14 results of the STP process, they find them reasonable?

15 MR. NAKOSKI: This is John Nakoski, if I
16 could answer that. What that would require is that
17 South Texas complete the categorization for every
18 single component, provide us with a list, and the
19 categorization and the classification of all of the
20 components from which we could then take a sample,
21 and, basically, inspect to ensure that those
22 classifications are correct.

23 What South Texas is proposing to do is,
24 and the staff has agreed to consider is, approve a
25 process. We have, to some limited extent, looked at

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1 a sample of the risk significance bases documents that
2 have the categorization of components, and the basis
3 for the categorization of those components, and as Sam
4 said, we generally found those were reasonable and
5 acceptable.

6 Moving forward with the exemption, though,
7 we need to rely on these processes or we need to have
8 the complete list of components that then would be
9 scoped within the exemption. At this time, we would
10 prefer to go forward with the process.

11 MR. BARRETT: Let me add something to that,
12 though. I think that if you look at the list of open
13 items, it's down to three, and, in fact, it's probably
14 down to two, really. And, you might ask yourself, are
15 there examples in those two areas of component
16 classifications that we at least have questions about,
17 and the answer, I believe, is yes. I think the
18 answer, for instance, regarding the whole issue of the
19 containment as a defense in-depth boundary against
20 late containment failure in core damage accidents, the
21 question - essentially, all of the equipment that
22 might be related to that, or that you might expect
23 would be related to that question, has been
24 categorized as low safety significant.

25 So, that raises the question in the

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1 staff's mind, and that's why that's an open issue.

2 In the area of the, I think Steve could
3 probably do a better job on this than I can, I'm
4 certain he could, but in the area related to the
5 pressure boundary, I think we've seen some examples as
6 well of cases where the categorization process has led
7 to what we would call surprising results in any event,
8 so we are pursuing areas where we believe that there
9 is a logical reason for the staff to have questions
10 about the categorization process, and where there are
11 some examples that raise questions as well.

12 But, by and large, what we see across this
13 entire process is a good process, a logically sound
14 process that we are comfortable with, that produces
15 results. When we look at those results, that we are
16 also comfortable with.

17 MR. NAKOSKI: And, just to add one more
18 thought to carry it through, many of the open items
19 that we identified were specifically the result of our
20 review of how specific components were categorized.

21 MR. DINSMORE: If I may add something, you
22 asked earlier if we could do this without PRA, and I
23 think the answer would be no, because these questions,
24 you seem to be focusing on these questions and how
25 reasonable they are, and these questions really only

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1 categorize stuff that's not in the PRA. So, we are
2 kind of assuming, and we are fairly certain, that the
3 PRA is actually modeling most of the real important
4 stuff.

5 So, we go into these questions with that
6 feeling, that, okay, most of the important stuff is in
7 the PRA, we have a way of dealing with it, we think
8 it's conservative. We are pretty sure that the LSS
9 stuff that comes out of the PRA is actually LSS. Now,
10 the question is, what are you going to do with all
11 these other thousands of components?

12 And, South Texas has proposed to deal with
13 it like this, and I think we might not approve this as
14 a stand alone, that's just kind of my personal
15 opinion. If you just did this on all the components
16 in the plant, maybe we wouldn't really be as
17 receptive, but we are just doing this with what's not
18 included in the PRA.

19 CHAIRMAN APOSTOLAKIS: But, let's look for
20 a moment at what the process that we like is. We are
21 using measures that, perhaps, are not perfect, but at
22 the end what really counts is the fact that they
23 multiplied the failure rates by ten, including common
24 cause terms, you've checked that?

25 MR. LEE: Yes.

1 CHAIRMAN APOSTOLAKIS: Okay.

2 And, it turns out that the delta CDF is
3 small.

4 Is that something now that would -- I mean,
5 for this plant, maybe this is good enough, but to say
6 that this will be the way we are going to do it in the
7 future, I mean, bothers me. Why ten and not 15? And,
8 why -- you know, and what if in some cases, you know,
9 the risk of all the sensitivity studies you find the
10 delta CDF is unacceptable?

11 MR. CHEOK: I think that all applications
12 we have to see the other side of the coin, which is
13 what kind of relaxations we are allowing. In this
14 case, it's treatment requirements, and we are going to
15 retain function. So, in this case we feel that a
16 factor of ten is, indeed, bounding. For other cases,
17 ten might not be bounding, and the way we define our
18 requirements would have to factor in this factor of
19 ten, basically. We have to relate these two
20 considerations together.

21 CHAIRMAN APOSTOLAKIS: The factor of ten
22 where, Mike? I mean, these things have distributions.
23 It's a factor of ten on the mean? That's an
24 incredibly high change.

25 MR. CHEOK: Yes, it is.

1 CHAIRMAN APOSTOLAKIS: That the mean
2 shifted by a factor of ten. So, where are you - what
3 is the point of reference of the factor of ten?

4 MR. DINSMORE: The factor of ten came from
5 discussions with the different - I guess the QA
6 engineers and -

7 CHAIRMAN APOSTOLAKIS: Yes, but ten -

8 MR. DINSMORE: - the system engineers, and
9 their opinion was that, they said, well, could it go
10 up by a factor of two if you stopped doing -

11 CHAIRMAN APOSTOLAKIS: - but, what is it
12 that goes by a factor of ten?

13 MR. DINSMORE: The failure rate.

14 DOCTOR KRESS: The mean failure rate.

15 CHAIRMAN APOSTOLAKIS: A factor of ten on
16 the mean is you are shifting the distribution way out
17 there.

18 MR. CHEOK: Probably up to the 95th
19 percentile.

20 MR. LEE: Typically, Doctor Apostolakis,
21 typically, I think for South Texas, for most
22 components, the 95th percentile is about an error
23 factor of three.

24 CHAIRMAN APOSTOLAKIS: Yes.

25 MR. LEE: So, ten really exceeds that, and

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1 it is highly conservative.

2 MR. DINSMORE: But, it was a general
3 agreement, I mean, most of these numbers, including
4 those cutoff values, the 110 and all that stuff, there
5 was very many very intense discussions between
6 different groups, and the eventual judgment, common
7 judgment was that those would bound us, those were
8 reasonable. And, that's kind of where the factor of
9 ten came from. It was just people believed that if
10 you changed the treatment like this, and now I think
11 it's a bit twisted, that people are looking to make
12 sure the treatment will keep it below a factor of ten,
13 but there was a common belief that this factor of ten
14 would bound it.

15 And, since we were interested in moving
16 forward, and everybody agreed that the factor of ten
17 would bound it, we used it, and when the result came
18 out reasonable we were very happy.

19 CHAIRMAN APOSTOLAKIS: Okay, do you do that
20 for the future, can you really put it in the rule and
21 say that in the future you want option two benefits
22 tell us which components you want to put in the low
23 risk significant category, and then do the sensitivity
24 analysis and if it works, it works.

25 MR. NAKOSKI: This is John Nakoski again.

1 I think an important part of their categorization
2 process is the feedback mechanism that takes into
3 consideration increase in failure rates of these
4 components, which I believe would keep them well
5 within the bounding analysis of increasing the failure
6 probability by a factor of ten. I think that's an
7 important aspect of their process and, Mike, correct
8 me if I'm wrong, but I think that would be a part of
9 the process that would be in the rule going forward in
10 option two.

11 CHAIRMAN APOSTOLAKIS: I don't understand
12 it. Isn't the basis of the acceptance of this the fact
13 that the sensitivity study shows the delta CDF is
14 small?

15 MR. CHEOK: That's correct.

16 I guess your question was why do we do
17 importance analyses.

18 CHAIRMAN APOSTOLAKIS: Yeah, skip it.

19 MR. CHEOK: Well, I guess the answer would
20 be -

21 CHAIRMAN APOSTOLAKIS: Or, they can do it
22 in private without submitting it to you.

23 MR. CHEOK: - that's true, but I guess the
24 answer would be, if they want the biggest group of
25 SSCs possible they would do an importance analysis,

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1 because if they are just picking and choosing they
2 could have picked some high safety significant ones,
3 and so they will be dealing with four SSCs as opposed
4 to 800.

5 So, if you want to have the most SSCs that
6 would conform to some delta risk increase, you would
7 use importance analyses. That's one.

8 The second part of this is that, we are
9 also looking for people to identify SSCs that may be
10 high safety significant, that may not be treated as
11 they should be. And, in this sense, importance
12 analysis would help us identify those SSCs, and I
13 guess importance analyses, as flawed as they may, do
14 tell you things like defense in depth. I mean, if you
15 have a high RAW, in essence, you can say, hey, look,
16 maybe this is a single event cut set. Maybe this is
17 not a event that I want to deal with in the box three
18 case. Importance analysis can also point out some
19 components that may not be performing as well as they
20 should be in the plant now, Fussel-Vesely was pointed
21 out to you, if you have a high failure rate.

22 In essence, I don't think we want to go
23 ahead and allow people to put things in box three that
24 are already risk outliers. We want to know that the
25 components they are dealing with are, indeed, low

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1 safety significant from -

2 CHAIRMAN APOSTOLAKIS: But, the RAW really
3 has nothing to do with special treatment, because it's
4 such an extreme measure, just put the thing down. I
5 mean, come on.

6 MR. DINSMORE: The RAW tells you that the
7 increase in the CDF, that this component is not
8 functioning. It gives you a piece of information.

9 CHAIRMAN APOSTOLAKIS: So, do many things.

10 MR. DINSMORE: Well, we need a couple
11 pieces, and that was one of the pieces.

12 DOCTOR POWERS: I wonder if I could come
13 back to the slide that you have up there and ask what
14 the staff thinks about those weighting factors. I
15 mean, they are kind of remarkable, if you ask me. We
16 have - functions used to mitigate an accident
17 transient we'd give it a five, but if it initiates an
18 accident we only give it a three?

19 Similarly, if a function - if a function
20 causes impact on a safety significant system it gets
21 a four, but if it initiates an accident it's still
22 only a three. I mean, that seems remarkable to me.

23 CHAIRMAN APOSTOLAKIS: See, if you want to
24 focus on the process, this is the kind of thing you
25 have, because now this has to be scrutinized.

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1 MR. BARRETT: I think -- let me say a word
2 about the whole question of the factor of ten, because
3 I think if you take -- I'll get back to this question
4 of weighting factors in a minute -- if you do a
5 sensitivity analyses using a factor of ten on the
6 unavailability, unreliability of every piece of
7 equipment that's ranked risk three, LSS or NRS, and it
8 comes out acceptable, that basically tells you that
9 somehow or other you've bounded the potential impact
10 of this, provided, provided that the treatment you
11 provide to this equipment assures its functionality.

12 And so, that result, combined with another
13 result which you didn't do, namely, that if you took
14 every piece of equipment in risk three and set its
15 unreliability to one, you know what the core damage
16 frequency there would be, it would be something close
17 to unity.

18 So, you know that you can't allow this
19 equipment -- the treatment of this equipment to be such
20 that it would have a high probability of failure, and
21 you know that you have to concentrate, therefore, on
22 things like environmental qualification, where the
23 question might be functional versus non-functional, as
24 opposed to reliable versus unreliable.

25 So, there's a very important result there,

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1 it's a qualitative result that comes out of the
2 quantitative answer, and, yeah, you can certainly
3 question whether there should be a factor of three or
4 a factor of ten in the end reliability, but the
5 important thing is that you are not -- is that if you
6 set the unreliability to a factor of ten you can make
7 reasonable choices about the treatment of this
8 equipment in order to stay within those bounds. And
9 so, you have a decision process that allows you to
10 make a coupled decision, a decision that couples the
11 categorization process with the treatment process.

12 Now, the question of whether we are
13 comfortable with the weighting factors, I think it's
14 fair to say we didn't focus on these weighting
15 factors. I think this is a sufficiently qualitative
16 process that they could have come in with weighting
17 factors that were different. I think probably if we
18 had seen weighting factors that were off by orders of
19 magnitude we might have focused on it a little more,
20 but since this is, essentially, a qualitative process
21 I think we kind of glossed over the difference between
22 a five and a three, and I think that's probably a fair
23 statement.

24 MR. LEE: Yes, that would be a fair
25 statement, but if I may add to that, the difference

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1 between, say, a function -- is the function used to
2 mitigate accidents or transients that has a weighting
3 factor of five, versus number five, does the loss of
4 the function in and of itself directly cause an
5 initiating event. I guess an example that I can think
6 of is, if you lose the turbine, which initiates
7 reactor trip, does that really contribute a whole lot
8 to reactor safety, and the answer is there are safety
9 systems there to mitigate that particular initiating
10 event.

11 However, if we are talking about, say, a
12 safety injection pump, or any other safety equipment
13 that is used to mitigate an accident initiating event,
14 I think in general that we would find that to be a
15 little bit more important than equipment that would
16 cause an initiating event. So, there is some sense as
17 to why these weighting factors are the way they are.

18 DOCTOR POWERS: It makes no sense to me at
19 all, absolutely no sense to me at all. There's an
20 initiating event, I get excited. The fact that the
21 safety injection pump goes out, and there is no
22 initiating event is something I can handle. I mean,
23 it seems to me that if something initiates -- I mean,
24 it's like saying, ah, we lost the integrity of the
25 steam generator tube, oh, well, darn. Come on, I

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1 mean, why did it get a ten?

2 CHAIRMAN APOSTOLAKIS: That's what RAW is
3 supposed to do, actually. I mean, if you do RAW with
4 initiating events consistently they run very high.

5 MR. DINSMORE: This is for non PRA
6 components.

7 CHAIRMAN APOSTOLAKIS: Presumably, there is
8 some correspondence. I think Doctor Powers is right,
9 I mean --

10 DOCTOR SHACK: Yes, but I think the answer
11 was, you know, that, one, this really isn't meant to
12 be used on components that really -- that's not the
13 function that's being assessed here really, you know,
14 as Mr. Dinsmore pointed out, that's really been
15 addressed in the PRA itself, in the truly functional
16 sense. The functions we are talking about here are
17 the sort of auxiliary functions of the system.

18 The other answer is, you know, when they
19 do go through the PRA and this, they seem to come up
20 with comparable answers.

21 MR. CHEOK: And, a good test of this system
22 would be for STP to bring this system up for all their
23 PRA components and see if using this scheme they would
24 come up with similar rankings, or if not more
25 conservative rankings. That would be a good test of

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1 how robust this system would be, or these weighting
2 factors would be.

3 CHAIRMAN APOSTOLAKIS: It's a bit late now
4 for that, because the assessment will not be -

5 DOCTOR SHACK: They've mentioned the
6 numbers, they've actually made the comparison
7 themselves, it's 800 and 846 or something like that.

8 MR. DINSMORE: It's also, we weren't sure,
9 as Rich implied, you know, are we going to argue that
10 the first one should be four and the third one should
11 be five? I mean, once we start down that path, it
12 would be, you know, we should -

13 CHAIRMAN APOSTOLAKIS: Doesn't double
14 counting bother you guys at all? Those things overlap
15 like hell.

16 MR. LEE: Is double counting conservative?

17 CHAIRMAN APOSTOLAKIS: I don't know that it
18 is. I don't know that it is. How could it not be?

19 DOCTOR KRESS: It could not be because of
20 where you put the thresholds.

21 CHAIRMAN APOSTOLAKIS: Yes. I mean, the
22 obviously important ones will be counted four times,
23 so they will be up there, and then the ones that are
24 not that important, necessarily, will go down. These
25 are relative, aren't they?

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1 MR. DINSMORE: These aren't relative, these
2 are absolute. They get the score for each function.

3 CHAIRMAN APOSTOLAKIS: The way they do the
4 rankings it's relative, when the assessors do it.

5 MR. CHEOK: The relative part of it comes
6 from the single component, but once you start adding
7 them, I guess you go away from the single component
8 aspect of it. So, when you talk about masking the
9 relative part of it, you are doing it at the PRA
10 importance measures level. At that point, that's
11 relative, but as soon as you take the single
12 importance out of it and start adding them, they are
13 no longer - they wouldn't affect the rest of the
14 rankings of the rest of the components.

15 MR. DINSMORE: It's an absolute score.

16 CHAIRMAN APOSTOLAKIS: It's an absolute
17 score, so some components, which are important, appear
18 in all five categories, or four of them.

19 MR. DINSMORE: But, these are functions.

20 CHAIRMAN APOSTOLAKIS: So, they get the 70
21 - they are functions, yes. So what, what difference
22 does it make?

23 MR. DINSMORE: Well, they do the scoring at
24 the function level and they come up with a score for
25 the function.

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1 CHAIRMAN APOSTOLAKIS: Right.

2 MR. DINSMORE: And, the function is, for
3 example, control and ventilation, which is one which
4 we looked at, and they get a score for that function
5 and they give that a category based on their merits,
6 and then they start - when they start going through
7 the individual components that support that function
8 they start with that function safety significance, if
9 it's medium or if it's high, and then they have this
10 process to include diversity and reliability and
11 include that ingoing from the function to the specific
12 component.

13 But, each function is an absolute score,
14 and they assign the highest function safety - when
15 they start going through the components, they start
16 with the highest function safety significant for each
17 component. So, I would say that it has more - it's
18 more likely to be somewhat conservative than to double
19 count.

20 CHAIRMAN APOSTOLAKIS: Well then, they
21 themselves don't trust the process, and they say if in
22 any particular category you get a high score, right,
23 forget about the total, you look at it.

24 MR. DINSMORE: Well, again, it's a judgment
25 process, and these little catches that keep you from

1 maybe doing -

2 CHAIRMAN APOSTOLAKIS: Yeah, and it says I
3 really don't trust my process.

4 MR. DINSMORE: - or I don't trust my
5 process to that fine a degree.

6 DOCTOR KRESS: Why did we settled on these
7 particular five questions? For instance, would not the
8 defense in depth question in there that says, does
9 this function serve to preserve the containment
10 integrity, for example, either late or early.

11 MR. LEE: That's a question that the staff
12 has asked to the licensee also, and for that
13 particular issue we are - hopefully, we are in the
14 resolution path in addressing that. But, you are
15 right, that is not explicitly asked in this
16 deterministic process, and -

17 DOCTOR KRESS: And, it doesn't show up in
18 the PRA process -

19 MR. LEE: That's exactly right.

20 DOCTOR KRESS: - because you are focusing
21 on large early release.

22 MR. LEE: That's exactly right.

23 MR. DINSMORE: We are guided by 1.174,
24 which actually doesn't promote this.

25 DOCTOR KRESS: But, 1.174 does say you

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1 should preserve defense in depth, which gives you a
2 1.174 handle to grab a hold of.

3 DOCTOR BONACA: Although, I mean, the
4 presentation from South Texas shows that they also
5 have a list of questions which has to do with defense
6 in depth, and that's why we are asking the question
7 about containment, because it seems like that slipped
8 through.

9 CHAIRMAN APOSTOLAKIS: Well, that's later
10 for the components.

11 DOCTOR BONACA: I understand that.

12 CHAIRMAN APOSTOLAKIS: So, we have a
13 situation here where none of the methods used can
14 really withstand scrutiny, but the total results
15 somehow is okay, right?

16 MR. LEE: No, that is -

17 CHAIRMAN APOSTOLAKIS: Isn't that true?

18 MR. LEE: - no, we have an open item that
19 addresses this very question about the containment.

20 CHAIRMAN APOSTOLAKIS: Yes, but there are
21 so many others.

22 MR. LEE: And, we are looking at a path in
23 addition to these schemes - methods, I should say - to
24 address and highlight the importance of containment
25 systems.

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1 MR. DINSMORE: I think each individual
2 point you could obviously argue about. You could
3 argue about whether number one should be five, and you
4 could argue about whether the cutoff should be ten,
5 and you could argue about whether change in
6 reliability should be a factor of ten, and earlier you
7 said why do we go through this whole process, why
8 don't we just get a delta CDF from them, and if that's
9 okay we say fine, do it. And, I think what we are
10 approving is, we are approving kind of everything
11 together. So, you can always find individual points,
12 but I think, at least for the GQA stuff, in the end
13 everybody that had to agree agreed that it was a
14 reasonable process, in toto.

15 DOCTOR KRESS: Would that reasonableness
16 encompass the concept that this is reasonable because
17 you showed this consistency between the PRA and the
18 deterministic results for a significant number of
19 components that have already shown up in both, and
20 does this reasonableness also encompass the fact that
21 when you take the low safety significants and increase
22 them by a factor of ten in this case, because it's
23 special treatment, that you still don't impact the CDF
24 very much or the LERF very much. I mean, is that part
25 of the package of why this is reasonable, and would be

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1 incorporated in the thinking for the next one that's
2 coming in, which may not be, you know, it may have
3 different things, it may not just be for special
4 treatment, it may be for -

5 MR. DINSMORE: That would be reasonable,
6 it's also reasonable, it includes the sensitivity
7 studies that make the PRA results a little less
8 sensitive to some of the more questionable modeling
9 techniques. It's kind of everything, because, again,
10 each individual one, each individual item one could
11 discuss for a long time, but eventually you have to
12 make a decision, which could be no.

13 DOCTOR POWERS: Doctor Kress, you are an
14 expert on defense in depth, let me ask you a question.
15 If I have an initiating event, do I challenge my
16 safety systems?

17 DOCTOR KRESS: Yes, you do.

18 DOCTOR POWERS: And, is that considered
19 within the context of safety regulations a challenge
20 to the defense in depth?

21 DOCTOR KRESS: I would consider it as such,
22 yes. I don't know, I am not expert enough to know how
23 -

24 DOCTOR POWERS: If I discover, say, a
25 failed system, a failed safety system, do I challenge

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1 the safety systems?

2 DOCTOR KRESS: Yes.

3 DOCTOR POWERS: If I discover it, I don't
4 think so.

5 DOCTOR KRESS: Not if you discover it.

6 DOCTOR POWERS: I discover it, if I don't
7 discover it maybe I do, but - so I don't - I mean, it
8 seems to me that if I operate from a defense depth
9 perspective, not only do I turn this table upside
10 down, I change the magnitude of the numbers as well.

11 DOCTOR KRESS: Yes, I think that's always
12 my - that was one of the reasons I brought for
13 bringing defense in depth in as an explicit criteria.

14 MR. LEE: Doctor Powers, in the events
15 assessment arena, when we have an event at a plant,
16 whether it be an initiating event or unavailability or
17 a failure of a safety equipment, we actually quantify
18 those risks for the initiating event frequency, where
19 the initiating event has occurred we calculate a
20 condition of core damage probability for that event.
21 Whereas, in a situation where you have a safety
22 equipment that's unavailable due to some sort of
23 failure, and you have no initiating event, that still
24 basically reduces your safety margin, and you
25 calculate a condition of core damage probability for

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1 that event. And, depending on which equipment we are
2 talking about, one could be higher or lower.

3 DOCTOR POWERS: I think probably if you
4 went through that and did it that you could make an
5 argument to defend those tables, in the sense - in
6 just the sense that you mentioned earlier, that all
7 the initiating events that are liable to be triggered
8 by this table are going to be relatively mild ones
9 because you caught the big ones already in the PRA,
10 but it may be also true of those things that are item
11 two, you may have already caught the big ones there,
12 too, but it still may turn the table upside down.

13 MR. LEE: We did not do that.

14 DOCTOR POWERS: It's a futile exercise to
15 carry out.

16 CHAIRMAN APOSTOLAKIS: I suspect that the
17 real use of these five questions is in an "or" sense.
18 If you go back to one of the back-up slides from South
19 Texas, where they say exceptions, I would say that's
20 the rule. If a weighted score of 25 on any one
21 question it's high, weighted score between 15 and 20
22 is medium, that probably would make much more sense to
23 treat those five questions as being analyzed that way,
24 and then the expert panel takes over and discusses it,
25 and the medium may become high and so on. But, when

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1 you take the sum you are really doing things that fly
2 in the face of a lot of people and their work, and I'm
3 not one of them by the way.

4 So, this is - you see, that's what I'm
5 saying, I mean, Steve makes a point that it's the
6 total, and this and that, but you can't ignore the
7 fact that individual pieces cannot be scrutinized.
8 You can't ignore that. I mean, I understand - that's
9 why I'm trying to find a way out, that maybe the final
10 result is okay, but this is not the weighted sum, this
11 is probably treated as an "or" in practice, and then
12 it works because you don't have to worry about
13 overlapping.

14 DOCTOR SHACK: An "and" is more
15 conservative than an "or."

16 CHAIRMAN APOSTOLAKIS: No, no, no, let's
17 not put conservative arbitrarily, I don't know what
18 conservative means in this case. "Or" is more
19 conservative, because they are telling you if in any
20 category you do this -

21 DOCTOR SHACK: But, the and/or.

22 CHAIRMAN APOSTOLAKIS: - you are out.

23 Oh, yeah, and then what is the other one,
24 not, let's put that one, too.

25 MR. DINSMORE: It's inscrutable insofar as

1 you can go back and look -

2 CHAIRMAN APOSTOLAKIS: It's inscrutable to
3 me.

4 MR. DINSMORE: - insofar as you can go
5 back and find out why they put this thing -

6 CHAIRMAN APOSTOLAKIS: Even if it's wrong.

7 MR. DINSMORE: - well, that's right. When
8 we did the audit, at least this provides us with a
9 point of discussion. We say, well, why did you put
10 the two -

11 CHAIRMAN APOSTOLAKIS: Yes, but shouldn't
12 you guys scrutinize this and say, well, gee, it's
13 really an "or" situation here, I mean, instead of
14 saying, no, that sounds reasonable, let's accept it,
15 and what's worse, put it in the rule.

16 And then, let's take number three, does
17 the loss of the function directly fail another risk
18 significant system? What is a risk significant
19 system? Something that has already been evaluated
20 with the five questions or what? What is a risk
21 significant system in a methodology that is intended
22 to identify risk significant systems? Isn't that kind
23 of circular there? See, that's the kind of scrutiny
24 you have to survive. I don't understand question
25 three.

1 MR. DINSMORE: Well, they were supposed to
2 do the - these are maintenance rule questions, so that
3 we maybe didn't look a whole lot at the actual
4 questions, since they were already in the rules.

5 Again, what I was trying to say was, it
6 makes it inscrutable insofar as you can go back and
7 say, if they just said this safety significant - this
8 function is high, and you say why, well, you know, we
9 sat around and we talked about it and we decided it
10 was high. But, when they break it out like this, when
11 we did the audit we could go back and ask exactly what
12 you asked, for example, well, why is number four in
13 this particular function two? Why isn't it three, or
14 why isn't it zero? And, we did that back and forth a
15 bit.

16 So, in that respect it provides a path for
17 review, and understanding why they chose - why they
18 ended up where they were.

19 CHAIRMAN APOSTOLAKIS: And, I fully agree
20 with you. I think that's the great value of these
21 methodologies, but that doesn't mean that we cannot
22 question the premise and the basic - I mean, the fact
23 that it gives you an opportunity to go back, I mean,
24 is very commendable and it's good, but again, I mean,
25 we have five questions, if they are treated in an "or"

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1 gate I would be much more comfortable with that. And,
2 the fact that these are the maintenance rule
3 questions, I mean, so what, this is not a maintenance
4 rule here.

5 MR. DINSMORE: Well, it gives them some
6 validity.

7 CHAIRMAN APOSTOLAKIS: Yes, some validity,
8 but, I mean, we are doing something else here.

9 And, I'm really bothered by this factor of
10 ten, Mike. I really don't know where it came from,
11 and this is the perennial problem with sensitivity
12 studies. It's like in the old days, you know, boy the
13 core damage frequency is ten to the minus 90, and then
14 it turns out it is not, and we have to try to prove to
15 people that it really didn't matter that it was ten to
16 the minus 90.

17 As long as sensitivity studies work,
18 everybody seems to be happy, without thinking ahead
19 that maybe some time they will not work, and then what
20 do you do? If you have a precedent that you have to
21 multiply all your failure rates by ten, which is
22 ridiculous in this case. Ten, wow.

23 DOCTOR KRESS: It would make more sense to
24 have a distribution and do a Monte Carlo and get an
25 uncertainty, wouldn't it?

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1 CHAIRMAN APOSTOLAKIS: A lot of other
2 things would make much more sense, but somehow — so,
3 that's what I'm saying, that I'm really torn here. I
4 think each method cannot stand scrutiny, yet the final
5 result seems to be reasonable.

6 MR. BARRETT: George, let me —

7 CHAIRMAN APOSTOLAKIS: Explain to me how
8 one writes a letter that says that. One sits down and
9 writes it, right?

10 MR. BARRETT: — let me make a suggestion
11 that in a sense what we are talking about here is two
12 separate issues. We're talking about whether the
13 staff has a technical basis for granting these
14 specific exemptions for this specific plant.

15 CHAIRMAN APOSTOLAKIS: Yes.

16 MR. BARRETT: And, South Texas is a unique
17 plant in many ways, unique in the quality of its PRA,
18 in the redundancy of its systems, and the size —

19 CHAIRMAN APOSTOLAKIS: Yes.

20 MR. BARRETT: — of its containment, and
21 all that sort of thing.

22 CHAIRMAN APOSTOLAKIS: And, the sensitivity
23 study worked in this case.

24 MR. BARRETT: In this case, I think — I
25 hope you feel comfortable, as we do, that having

1 resolved the open issues regarding the categorization
2 that this is a good categorization as the basis for
3 these exemptions for this plant.

4 The second thing on the table, however, is
5 that this plant is a first pilot or a proof of
6 principle for option two, and a lot of the questions
7 you are raising are questions that we should really
8 throw in the hopper for option two.

9 CHAIRMAN APOSTOLAKIS: And, I think you
10 stated it in a way that I cannot disagree. I think
11 this is exactly the issue. What worries me is that
12 these things will be approved for the future. My
13 concern is not so much here, I mean, you can change
14 the words here, because they've already done a lot of
15 things that are complimentary, overlap a lot, and they
16 give you that warm feeling, but for the future,
17 though, I mean, I'm really troubled by this. Just
18 because it worked for one of the more recent plants
19 that well run and very redundant and so on, that
20 doesn't mean we put it in the rule.

21 Anyway, are there any other comments or
22 questions? Well, first of all, do you gentlemen want
23 to add anything?

24 MR. LEE: Well -

25 CHAIRMAN APOSTOLAKIS: At the risk of

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1 raising more questions.

2 MR. LEE: - that's about the extent of our
3 presentation. At the end there, we have a couple of
4 open items that we can go over with you if you wish.

5 CHAIRMAN APOSTOLAKIS: But, these are the
6 results.

7 MR. LEE: But, the South Texas folks
8 already have -

9 CHAIRMAN APOSTOLAKIS: Can you tell us a
10 little bit about - I mean, one of you, I think it was
11 you, Sam, said that you actually looked at random
12 samples of components to see whether you agreed with
13 the classification.

14 MR. LEE: As you know, we have quite a few
15 staff members working on the review of this, and not
16 just us, but from other branches, they have looked at
17 this.

18 CHAIRMAN APOSTOLAKIS: Yes, but did anybody
19 find cases where there was disagreement, significant
20 disagreement, not minor.

21 MR. LEE: And, actually, this was actually
22 what led to the open item 3.4, I believe, which is the
23 containment systems, and we've looked at those
24 components and they were ranked to be low, and we
25 didn't understand why they were ranked low, so now we

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1 are further reviewing where -

2 CHAIRMAN APOSTOLAKIS: But, again, this is
3 only because they were using different criteria.

4 MR. LEE: That's correct.

5 CHAIRMAN APOSTOLAKIS: But, for the
6 components where the criteria were common -

7 MR. LEE: Yes.

8 CHAIRMAN APOSTOLAKIS: - did you find any
9 differences?

10 MR. LEE: We have not.

11 CHAIRMAN APOSTOLAKIS: Well, that's good to
12 know.

13 Maybe you can make that a little more
14 formal, pick up random components and look at them and
15 see, because I think this has to be based on the
16 results.

17 Any comments from my colleagues? Staff?
18 South Texas?

19 MR. SCHINZEL: A couple of comments.

20 Doctor Apostolakis, you made the comment
21 about South Texas didn't trust our categorization
22 process because of the need for -

23 CHAIRMAN APOSTOLAKIS: You are scrutinizing
24 my every word now?

25 MR. SCHINZEL: You are scrutinizing our's.

1 CHAIRMAN APOSTOLAKIS: You have to take my
2 comments in toto.

3 MR. SCHINZEL: We do want to say that we
4 have full confidence and trust in our categorization
5 process. We feel it's very robust, and the exceptions
6 where identified were really identified more as
7 backstops to ensure that there would be no masking in
8 the overall categorization process. We recognized as
9 we were going through the categorization process that
10 there could be the potential where a single question
11 could end up with high significance, but because of
12 the total score could come out low. And, we kind of
13 treat individual questions both as "or" gates and
14 "and" gates.

15 CHAIRMAN APOSTOLAKIS: Isn't it true,
16 though, that what you are doing is you are looking at
17 all five categories and the scores and then you
18 deliberate? That's really what you are doing.

19 MR. SCHINZEL: We do stand back and say
20 does it make sense.

21 CHAIRMAN APOSTOLAKIS: Exactly, which is
22 what you should do.

23 Now, let me ask you, would you take your
24 methods, everything you've done, edit it a little bit
25 and say this is a new rule for option two, for all

1 plants around the country?

2 MR. SCHINZEL: Well, I would say that we
3 would have to look - to work with the industry to make
4 sure that a process similar to this is going to be
5 workable.

6 I think what we've proven is that, for
7 South Texas, this works well. I can't say explicitly
8 that this exact same process, exactly how South Texas
9 did it, is going to work equally as well for every
10 other plant in the industry. But, I do think it's a
11 very sound process, it's a robust process. It's a
12 conservative process, and it's coming up with the
13 right end result. And, I think based on it coming up
14 with the right end results, that's the springboard for
15 moving into option two, and adjusting the treatments
16 on these components. It goes back to the original
17 intent of 98.300 that said for the components that are
18 low safety significant you ought to be able to reduce
19 that treatment and go down to commercial practices. T
20 hat's what we certainly feel confident of we can do.

21 MR. GRANTOM: Doctor Apostolakis, we do
22 need to take this - and realize, this is the first
23 out, first of a kind effort to do this, we are going
24 to have lessons learned out of this. Some of the
25 points you brought up are good points. I think when

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1 you look at our process of categorization, the key
2 elements of it, I think, are translatable to any case.
3 There may be some refinements, some positions, some
4 other areas that maybe need to be looked at from a
5 lesson learned point of view, but from the overall
6 structure of how we are doing this I think it's a very
7 good process to go and regroup these components for
8 any station, I'd say for any industry.

9 CHAIRMAN APOSTOLAKIS: Any other comments?

10 MR. LEE: I'd just like to make one
11 correction.

12 CHAIRMAN APOSTOLAKIS: Sure.

13 MR. LEE: In your page five graph, we
14 actually graphed the RAW versus Fussel-Vesely that was
15 used. That number should be 100, not ten.

16 CHAIRMAN APOSTOLAKIS: All right.

17 Now, there are two mediums there, which
18 one is the medium-R?

19 MR. LEE: Medium-R is this one.

20 CHAIRMAN APOSTOLAKIS: Okay.

21 MR. LEE: But, for all practical purposes
22 in the multiple exemption case, medium is the same as
23 the highs, and really the exemption applies only to
24 the LSS components.

25 CHAIRMAN APOSTOLAKIS: Any other comments

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1 from anyone?

2 MR. SCHINZEL: I have a couple comments I'd
3 like to make.

4 CHAIRMAN APOSTOLAKIS: Sure.

5 MR. SCHINZEL: From the standpoint, I think
6 we recognize that there is conservatism in the
7 categorization process. I don't think necessarily
8 that should be viewed as a negative. It ought to
9 garner some additional confidence in the results that
10 South Texas is gaining, and based on those results it
11 ought to have confidence that we are truly segregating
12 those components that are important to safety and
13 those that are not important to safety, and then based
14 on that go in and adjust the treatments as specified
15 in SECY 98-300.

16 So, you know, we recognize the
17 conservatism, and I think that that conservatism is
18 adding to the confidence of the results that we're
19 receiving.

20 CHAIRMAN APOSTOLAKIS: Any other comments
21 from anyone?

22 DOCTOR POWERS: I wonder if they had any
23 response to my question about an initiating event
24 versus some obscure piece of equipment that shows up
25 in the Ops.

1 CHAIRMAN APOSTOLAKIS: Is that question
2 asked to STP?

3 DOCTOR POWERS: Yes.

4 CHAIRMAN APOSTOLAKIS: I don't think they
5 followed it.

6 MR. SCHINZEL: Could you repeat the
7 question, please?

8 DOCTOR POWERS: Well, if you are looking at
9 something that is called - a loss of some function
10 that's called out in the emergency operating
11 procedures but doesn't show up in the PRA you weight
12 it a five, but if there's some loss of function that
13 will produce an initiating event then you have
14 weighted three. I guess I don't understand that.

15 MR. SCHINZEL: There are some functions
16 that can be lost at a station that could create an
17 initiating event for which some safety systems would
18 not be required, a general transient turbine generator
19 trip would not require the actuation of any safety
20 systems. So, there could be a whole category of
21 components that you'd say, yes, you get an initiating
22 event, but you might be able to answer no on the other
23 questions.

24 DOCTOR POWERS: So, really, the defense of
25 that table is that your PRA is sufficiently big that

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1 it gets all of those initiating events, you have the
2 safety of systems rule reactivated.

3 MR. SCHINZEL: Yes.

4 DOCTOR POWERS: And, that this is really -
5 I mean, I think this is a good answer, is that those
6 things that are categorized three truly are three. I
7 mean, they are very inconsequential things, and they
8 shouldn't be there, whereas, not having something
9 available in the procedures that the operator
10 anticipates being available, whether he needs it or
11 not, is going to be disrupting to him.

12 MR. SCHINZEL: Exactly, yes.

13 DOCTOR POWERS: I think that's a good
14 answer, but what it does is, it makes that table
15 conditional upon having a sufficiently high quality
16 PRA.

17 MR. SCHINZEL: Yes.

18 CHAIRMAN APOSTOLAKIS: One of the lessons
19 learned, Rick, is, I think, the presentation of the
20 methodology. I think what is actually being done and
21 what you are inviting are not quite the same. I think
22 what is being done is much more comprehensive and
23 integrated. It doesn't rely on any one of - any
24 single approach to really make a decision, because
25 even with the scores, you look at the individual

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1 scores, you add them up, you look at that, too, God
2 knows what else you are doing. I mean, that's
3 different, that's different from just the presentation
4 that says, and we add them up and if it's between 70
5 and 100 it's this, because that's not really what you
6 do. You are looking at a lot of things, and I think
7 a lesson learned is that when you go to methodologies
8 like this, which are really trying to structure the
9 process of making judgments, the presentation is very
10 important.

11 MR. GRANTOM: I agree.

12 CHAIRMAN APOSTOLAKIS: Okay, any comments
13 from the public, members of the public?

14 This is it, thank you very much.

15 (Whereupon, the meeting was concluded at
16 12:11 p.m.)

CERTIFICATE

This is to certify that the attached proceedings
before the United States Nuclear Regulatory Commission
in the matter of:

Name of Proceeding: ACRS Plant Operations
and PRA Subcommittees

Docket Number: (not applicable)

Location: Rockville, Maryland

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