

ORIGINAL ACRST-3118

**OFFICIAL TRANSCRIPT OF PROCEEDINGS
NUCLEAR REGULATORY COMMISSION
ADVISORY COMMITTEE ON REACTOR SAFEGUARDS**

**Title: MEETING: 472ND ADVISORY
COMMITTEE ON REACTOR
SAFEGUARDS**

Docket No.:

TRO4 (ACRS)
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Work Order No.: ASB-300-1281

LOCATION: Rockville, MD

DATE: Friday, May 12, 2000

PAGES: 267 - 442

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ADVISORY COMMITTEE ON REACTOR SAFEGUARDS

May 12, 2000

The contents of this transcript of the proceeding of the United States Nuclear Regulatory Commission Advisory Committee on Reactor Safeguards, taken on May 12, 2000, as reported herein, is a record of the discussions recorded at the meeting held on the above date.

This transcript had not been reviewed, corrected and edited and it may contain inaccuracies.

1 UNITED STATES OF AMERICA
2 NUCLEAR REGULATORY COMMISSION

3 ***

4 MEETING: 472ND ADVISORY COMMITTEE ON REACTOR SAFEGUARDS

5
6 U.S. NRC

7 Two White Flint North, Room T2-B3

8 11545 Rockville Pike

9 Rockville, MD

10 Friday, May 12, 2000

11
12 The committee met, pursuant to notice, at 8:30
13 a.m.

14
15 MEMBERS PRESENT:

16 DANA A. POWERS, Chairman

17 GEORGE APOSTOLAKIS, Vice-Chairman

18 JOHN J. BARTON, Member

19 MARIO V. BONACA, Member

20 THOMAS S. KRESS, Member

21 ROBERT L. SEALE, Member

22 WILLIAM J. SHACK, Member

23 JOHN D. SIEBER, Member

24 ROBERT E. UHRIG, Member

25 GRAHAM B. WALLIS, Member

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P R O C E E D I N G S

[8:30 a.m.]

CHAIRMAN POWERS: The meeting will now come to order. This is the second day of the 472nd meeting of the Advisory Committee on Reactor Safeguards.

During today's meeting, the committee will consider SECY 0000-62, risk-informed regulation implementation plan.

An operating event at E.I. Hatch Nuclear Power Plant Unit 1 is particularly interesting to us because I believe Hatch will be the next plant coming in for license renewal. Reconciliation of ACRS comments and recommendations, physical security requirements for power reactors, future ACRS activities, report of the Planning and Procedures Subcommittee, and we will examine some proposed ACRS reports.

A portion of the session associated with physical security requirements for power reactors will be closed today to discuss safeguards information. There will be some special procedures we will have to follow for that process.

The meeting is being conducted in accordance with the provisions of the Federal Advisory Committee Act. Mr. Sam Duraiswamy is the Designated Federal Official for the initial portion of the meeting. We have received written comments and requests for time to make oral statements from

1 Mr. Edwin Lyman, of the Nuclear Control Institute, regarding
2 physical security requirements for power reactors.

3 A transcript of portions of the meeting is being
4 kept and it is requested that speakers use one of the
5 microphones, identify themselves, and speak with sufficient
6 clarity and volume so they can be readily heard.

7 As an item of interest, it is my understanding
8 that Mr. Bohnert is now doing fine, for the members that
9 might be interested.

10 With that, I will ask if any of the members have
11 comments that they would like to make as an opening
12 statement. Seeing no pressure to do so, I will turn to the
13 first item of our business, which is the risk-informed
14 regulation implementation plan. I believe this is a name
15 change for something we used to call the PRA implementation
16 plan.

17 Professor Apostolakis, I believe you are going to
18 lead us through this.

19 DR. APOSTOLAKIS: Thank you, Mr. Chairman. The
20 staff is here, Mr. King and Mr. Cunningham, to talk about
21 the comprehensive strategy, that includes the objectives,
22 goals and timeframe for the transition to risk-informed
23 regulation.

24 With that, we are very anxious to hear your story.
25 Mr. King?

1 MR. KING: Though his name is not on the
2 viewgraphs, we invited Mr. Holahan to join us, as well.

3 DR. APOSTOLAKIS: As long as he identifies
4 himself.

5 MR. KING: For the record, my name is Tom King,
6 from the Office of Research. This is Mark Cunningham, the
7 PRA Branch Chief from Research, and Gary Holahan, Division
8 Director from NRR.

9 What we want to talk about today is sort of an
10 information briefing. We're not asking for a letter from
11 the committee on this. What we're talking about is a
12 program that's work in progress right now.

13 As you mentioned, this used to be called the PRA
14 implementation plan, and I'll get into that a little further
15 as to why we've changed the name and what the objectives and
16 so forth of this document are.

17 Even though there's only three of us at the table,
18 this does involve all the major offices, Research, NMSS,
19 NRR, and will also involve the folks in Admin, the training
20 people. We will involve their help in putting together a
21 communications plan and I think certainly the international
22 activities of the agency, there's a lot of international
23 interest in risk-informed regulation, so this plan will also
24 be of interest to them.

25 So there's more than just the three of us sitting

1 up here.

2 CHAIRMAN POWERS: Let me ask you, do the senior
3 reactor analysts in the regions get involved in this
4 planning activity?

5 MR. KING: Say that again.

6 CHAIRMAN POWERS: Do the senior reactor analysts
7 in the regions get involved in this planning activity?

8 MR. KING: So far, they have not gotten involved
9 in this planning activity. I think somehow we're going to
10 have to get them involved.

11 CHAIRMAN POWERS: They seem like a very central
12 component in all of this, especially with the new oversight
13 process.

14 MR. KING: They've certainly been involved in the
15 new oversight process and the training and communications
16 that go along with that. In terms of the option two and
17 option three work, they have not been involved in the option
18 three work. I'll let Ed talk about the option two work.

19 MR. BARRETT: I don't know that we've had them
20 involved at this level of planning, but we do have regular
21 counterpart meetings with the SRAs to discuss issues related
22 to the -- mostly to the oversight process and to the process
23 for risk evaluation of events.

24 We have twice-yearly counterpart meetings with
25 them and, of course, we have regular communications on a

1 day-to-day basis on specifics.

2 MR. KING: I think that's a good point. It
3 probably would be worthwhile specifically getting their
4 feedback and input on this.

5 DR. APOSTOLAKIS: Why don't you call these
6 risk-informed, performance-based regulation implementation
7 plans? Why do you leave out performance-based? I mean, the
8 oversight process does utilize performance-based metrics.

9 MR. KING: And there is a performance component.
10 One of our five principals is performance monitoring.
11 Basically, we left it out because even though, in
12 risk-informed regulation, we're going to look, if we make a
13 change to a regulation or requirement, we're going to look
14 and see if we can do that in a performance-based fashion.

15 There is another activity taking a look at other
16 things that are not risk-informed to see if they can be made
17 performance-based. So we didn't want to imply that this
18 plan included the other plan that's underway, as well.

19 DR. APOSTOLAKIS: So it's a bigger issue then.

20 MR. KING: It's a bigger issue than just
21 risk-informed activities. What we've worked out with the
22 folks leading the other plan, the performance plan, is that
23 if we're going in and looking at a regulation to be
24 risk-informed, we will also look at the performance-based
25 aspects of that, so they don't have to do that. They're

1 really going to focus on the things that aren't being
2 touched as part of the risk-informed activities.

3 DR. SEALE: Is there the reciprocal of that
4 agreement, that if the performance-based people find a
5 potential indicator that might have risk implications, that
6 you will somehow coordinate with them?

7 MR. KING: I think if they find something that
8 they feel we should look at in a risk-informed fashion, yes,
9 they will bring that to our attention.

10 Just as far as the organizational aspects of this
11 plan, Research is the keeper of the plan, but we're
12 certainly not the full author of the plan. As I said, it's
13 going to involve a number of offices.

14 Just by way of a little background, as you
15 mentioned, the PRA implementation plan has been around since
16 1995. It basically was organized by office and it listed
17 the things the office, the various offices were doing in the
18 risk-informed world. It had been updated --

19 CHAIRMAN POWERS: Would you call that a plan or
20 would you call that a listing of activities?

21 MR. KING: I call it a catalog.

22 CHAIRMAN POWERS: That's what I would call it.

23 MR. KING: Part of the problem was that you could
24 look it and see what was being worked on today, but you
25 couldn't tell where did you want to go in the future and how

1 did these things cut across the offices and how are they
2 being coordinated and integrated.

3 We had an audit from GAO on the risk-informed
4 regulation last year. They issued a report that basically
5 said the agency doesn't have a strategy for where it wants
6 to go on risk-informed regulation. It has a lot of
7 discussion, but where do they want to go. So they suggested
8 we develop what they called a strategy.

9 The Chairman, Chairman Jackson, at the time,
10 agreed to do that. We provided the Commission an outline in
11 January of this year.

12 Then in SECY 0062, we provided to the Commission
13 some example sections of what that document might look like
14 in terms of its scope and depth, and we'll talk a little bit
15 more about the scope and depth and content of this thing.

16 We had a Commission briefing in March. We got an
17 SRM from the Commission in April that basically said give us
18 a complete draft in October of this year. That should
19 include a communications plan, it should include
20 identification of those important factors that affect
21 planning. We'll talk a little bit about that, also. And it
22 also asked a question on PRA quality, which we're going to
23 have to respond to in June, sort of separate from the
24 implementation plan.

25 What are the objectives of this document? We

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1 changed the name, for one thing, to get away from -- to
2 really use the terms the agency is using, risk-informed
3 regulation and call it what we intend it to be, an
4 implementation plan.

5 The idea is that it is going to provide an
6 integrated plan for the agency's risk-informed activities
7 and really if you start at the top -- actually, I think what
8 I will do is put on slide four and talk about how this fits
9 in the overall structure of what the agency has in terms of
10 documents.

11 They've got the strategic plan, which is sort of
12 the top level document, and if you look, it has basically
13 four performance goals for each of the arenas; maintain
14 safety, improve public confidence, reduce unnecessary
15 burden, improve effectiveness and efficiency.

16 If you look at those performance goals, they use
17 the word risk or risk-informed in there, that you'll do
18 things in a risk-informed fashion. But beyond that, it
19 doesn't get into any details as to what does that mean.

20 At a high level, the intent of this risk-informed
21 regulation implementation plan is to lay out what is the
22 agency going to do to implement those high level goals and
23 those high level statements in the agency's strategic plan.
24 It sort of is a link between the strategic plan and the
25 detailed operating plans that each of the offices has that

1 covers the major arenas that the agency works in.

2 It feeds into putting together the operating plans
3 for each of the arenas, just like other things feed into it.
4 The risk-informed regulation implementation plan isn't the
5 only thing that drives the work of this agency. There are
6 things called program assumptions, that includes things like
7 how many plants do we expect to come in for license renewal
8 and so forth.

9 So when we're planning and budgeting, there's a
10 number of things that are considered, and the risk-informed
11 regulation implementation plan will be one of those things
12 that will provide information that's considered when the
13 budgets and the detailed operating plans for each office are
14 put together.

15 DR. KRESS: Tom, when this gets approved, say, by
16 the Commission, would it, in effect, serve the same purpose
17 as if you had a Commission policy statement on risk-informed
18 regulation?

19 MR. KING: I know you have a letter to the
20 Commission suggesting such a policy statement. I don't
21 know. But the response to that letter would be -- I can
22 give you my personal opinion. I think this document could
23 go a long way to doing what you recommended in your letter,
24 if not totally. That's my personal opinion.

25 Anyway, this is how we view this implementation

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1 plan fitting into the larger scheme of how the agency
2 decides what it's going to do. Getting back to slide three,
3 really, at a high level, what this document will do is lay
4 out a process and some guidelines as to how we should take a
5 look at and decide what should be risk-informed, given that
6 you want to go risk-inform certain whether it's regulations
7 or activities that the agency does, what do you need to do
8 to accomplish that, and then that will lead to what should
9 be the priority in the schedule for accomplishing that.

10 DR. WALLIS: Tom, it seems there's something long
11 before this, that is, why would you want to risk-inform
12 anything and what criteria would you use in deciding.

13 MR. KING: Slide five, we're going to talk about
14 the guidelines or criteria.

15 DR. WALLIS: There must be some sort of motivation
16 that says risk-informing is being there in order to achieve
17 something.

18 MR. KING: You should risk-inform an activity,
19 basically, if it's going to help you accomplish your major
20 agency performance goals. It's going to lead to helping
21 maintain safety or improve effectiveness or efficiency or
22 reduce unnecessary burden, then it would be a candidate to

23 --

24 DR. APOSTOLAKIS: Actually, maintaining safety
25 will not be a goal. That's a boundary condition, really.

1 If you want to maintain the established goal, why move to
2 something else. It's just that the benefits are increasing
3 effectiveness and location of resources, under the condition
4 that safety will be maintained.

5 That's the way I would look at it. Not that it
6 really matters much.

7 MR. KING: I would disagree a little bit. I think
8 in the sense that risk-informed is going to make you focus
9 on the things that are important, and maybe today's
10 regulations don't really cover those things or some of those
11 things very well, I think it does help you maintain safety.

12 CHAIRMAN POWERS: When I speak to older hands in
13 the design of regulations, about risk-informed regulation,
14 they say we always did risk-informed regulation. We didn't
15 create regulations for things that we didn't think were
16 risky.

17 So I think there's a question here that comes up,
18 and maybe it's in your second question up there, is how
19 risk-informed is risk-informed. I mean, is it intuition
20 that this is a hazardous train or an important train to
21 prevent hazard or is it detailed quantitative analysis that
22 gives you a specific risk achievement worth or risk
23 reduction worth?

24 MR. KING: It can be both. It doesn't always to
25 have a --

1 CHAIRMAN POWERS: I guess what I'm asking is does
2 this plan line that out for these various activities, on how
3 risk-informed you want to be in each one of these
4 activities?

5 MR. KING: The intent of this plan is to lay out
6 what are the goals that you're trying to achieve in
7 risk-informing an activity, what are the tools, the data
8 that you need to do that, guideline documents.

9 DR. WALLIS: See, now you've changed the name.
10 When it was PRA implementation plan, the question was what
11 can PRA tell us about what the regulations are doing now and
12 how they might be improved. Now you've changed the name and
13 it's become more nebulous what you really mean by
14 risk-informed.

15 DR. APOSTOLAKIS: I think the understanding is
16 that when we say risk-informing something, we mean to use
17 quantitative risk information.

18 DR. WALLIS: That wasn't the implication of Dana's
19 question, though. It seemed to be that there is another
20 kind of risk-informed, which is sort of semi-intuitive.

21 DR. APOSTOLAKIS: That's not what this plan is all
22 about, in my view. I mean, yes, the regulations have always
23 been risk-informed, but that's not what most people
24 understand by risk-informed.

25 Risk means, in this context, quantitative

1 information coming out of performance assessments or
2 probabilistic risk assessments. Otherwise, I don't see how
3 this is any different from what the agency has been doing
4 before.

5 Do you agree with this?

6 MR. KING: I agree with that. I wouldn't exclude
7 use of qualitative information.

8 DR. APOSTOLAKIS: That's why it's informed.

9 MR. KING: But the heart of it is going to be
10 quantitative.

11 DR. APOSTOLAKIS: That's why it's informed.

12 MR. KING: Yes.

13 DR. APOSTOLAKIS: But the new thing now is this
14 quantitative information, and quantitative, let's not take
15 it too literally. I mean, having the dominant accident
16 sequences in itself might not be quantitative information,
17 but it comes from quantifying frequencies and ranking
18 things.

19 PRA and PA, that's what we mean.

20 CHAIRMAN POWERS: My concern is that's what we
21 think they mean, but do they really mean that.

22 DR. APOSTOLAKIS: He agreed, Tom agreed.

23 MR. KING: I agree. I agree.

24 DR. WALLIS: So without use of a PRA, it's not
25 risk-informed. It's a sine qua non.

1 DR. APOSTOLAKIS: Yes, I would say that.

2 DR. WALLIS: It is not.

3 DR. APOSTOLAKIS: Now, PRA, you include the
4 performance assessment, right? PRA is interpreted in the
5 broadest sense. I mean, if it includes statistical
6 calculations and so on, you don't necessarily have to see an
7 event tree, for example, to call it a PRA.

8 MR. KING: I think the main thing that such a plan
9 as this will do that the PRA implementation plan didn't do
10 is it's going to provide a systematic structured look at
11 where does the agency want to go in risk-informing its
12 activities and how does it plan to get there, what does it
13 need to get there, what are the priorities of getting there.

14 DR. APOSTOLAKIS: Tom, in my mind, the most useful
15 result of this activity will be this plan, will be to
16 prioritize which regulations to risk-inform first and to
17 identify needs for doing so, the most important needs first.

18 Is that the correct perception?

19 MR. KING: Yes, I think that's true.

20 DR. APOSTOLAKIS: I mean, goals and objectives, I
21 don't know, it creates a lot of paperwork.

22 MR. KING: I think it will also be a good
23 communications vehicle, too. We talk about risk-informed
24 regulation, but we don't have anything that can hold up to
25 external stakeholders or internal stakeholders that really

1 ties it all together and says this is what we mean by
2 risk-informed and this is what we're trying to do.

3 We give presentations, talk about some specifics
4 that are going on, but there's no document that ties it all
5 together.

6 DR. APOSTOLAKIS: So communicating the agency's
7 objectives and activities, you don't necessarily mean risk
8 communication.

9 MR. KING: No, no. I'm talking about the
10 programmatic type things.

11 DR. KRESS: Do you have anybody from NMSS working
12 with you on this?

13 MR. KING: Yes. NMSS is going to have the lead
14 for two of the major arena chapters on this. We'll talk a
15 little bit about them.

16 DR. APOSTOLAKIS: Are they here?

17 MR. KING: There's one NMSS person back there in
18 the back row who is involved.

19 MR. HOLAHAN: And Joe Murphy and I have been
20 invited to be on the steering committee for NMSS' actions to
21 risk-inform their various areas of responsibility.

22 DR. WALLIS: In this first question, what should
23 be risk-informed, it seems to me you're implying that
24 risk-informing means changing the regulations in some way,
25 and it seems to me that the first thing that's got to be

1 risk-informed is the agency and the public and look at what
2 the regulations are now, use the insights of risk to figure
3 out what kind of risk reduction they are achieving in terms
4 of the measures, PRA or whatever you're going to use.

5 That's risk-informing your knowledge about what
6 you're doing now, before you try to change anything.

7 MR. KING: I agree. You start with what you have
8 today.

9 DR. WALLIS: Right. And this would also let you
10 and the public know what's sort of the real value of what
11 you've been doing over all these years.

12 DR. KRESS: The risk achievement worth of a
13 regulation, that's going to be pretty tough.

14 DR. WALLIS: Do that first, before you try to
15 change anything, to know what you're doing now.

16 DR. KRESS: I'm not sure we know how to do that.

17 MR. KING: But in effect, for reactors, that's
18 what option three is doing. We're looking at 50.44, for
19 example, and saying do the things that it requires really
20 mean much in a risk assessment. Hydrogen recombiners were
21 coming out saying, yeah, they really don't mean much in the
22 risk world. Maybe we ought to think about changing the
23 requirements on those things.

24 MR. HOLAHAN: And to a certain extent, the IPE
25 program and IPEEE program did the same thing. They took the

1 reactors licensed with the existing rules and the existing
2 processes and tested what level of risk was a result of that
3 process.

4 DR. KRESS: You could get an overall integral, but
5 to take one regulation and say, now, what's the risk
6 achievement worth of this particular regulation is going to
7 be a little tougher, I think. You might be able to do it
8 for some of them.

9 DR. APOSTOLAKIS: Let's go back to slide four.
10 One issue that bothers me sometimes is that we are very
11 willing to use risk information in certain instances, but we
12 approach it in a very prescriptive way and we get lost in
13 the details. I would say that yesterday's discussion here
14 on MISSED surveillances is one example of that.

15 Where in this framework will you attempt to look
16 at the whole thing from a broader perspective and say, well,
17 gee, there are certain things that traditionally we have
18 been regulating to extreme detail, but now in the risk
19 context, maybe we should relax a little bit and not worry
20 about you missed one surveillance or about other things,
21 that don't come to my mind now.

22 But in other words, we are preserving, it seems to
23 me, the detailed, prescriptive regulatory approach from the
24 old days. We are simply changing the tools, but what is
25 applying to these is the same thing.

1 Now, I'm not saying that all missed surveillances
2 don't count or are risk insignificant, but some are there
3 and we have to change our views how we -- it's more than
4 just having a new mathematical tool or some analytical
5 methodology for doing something.

6 On the other hand, I can see the counter-argument
7 coming that what do you do, you just look at things that are
8 important to core damage frequency? Obviously not. Do you
9 look at things that are more important to the cornerstones?
10 Well, I don't know. Maybe we start talking now.

11 So is there an activity that would address this if
12 it is an issue? It's the cultural thing that we mention all
13 the time, in other words.

14 MR. KING: I'm not sure this plan would get -- my
15 intent is not to have it down to the detailed level that
16 we're going to be looking at surveillance requirements or
17 allowable outage time requirements.

18 I mean, I would view this at the level of we want
19 to risk-inform the technical specifications and we'll have
20 some key milestones and infrastructure needs to go do that.

21 Now, the actual work as to which technical
22 specifications, does it include surveillance requirements
23 and so forth would be a level of detail that would be too
24 much for this plan. That would be something that would show
25 up down in the detailed operating plans that each office has

1 for doing their day-to-day work. I'm not sure.

2 MR. HOLAHAN: I agree with Tom that when you pick
3 out individual issues at that level, you might not find
4 them, but those issues are related to programs and missed
5 surveillances are part of the oversight process, plays into
6 technical specifications, and we're working on those issues.

7 There's an activity to risk-inform the technical
8 specifications and there's a list of things that we are
9 doing in that area. I think this plan will put some of
10 those things into context.

11 They won't go out and deal with a thousand
12 individual issues, but where those issues are pieces of
13 other programs, this plan will touch those programs.

14 MR. BARRETT: There was an interesting discussion
15 yesterday. I'm Richard Barrett, with the NRR staff. An
16 interesting discussion from NEI about the evolution of
17 configuration control, starting back in the early days of
18 the industry with custom tech specs, and the basic point
19 that NEI was trying to make was that we're moving gradually
20 to a point where there is a risk-informed way of controlling
21 configuration, which will be some sort of combination of
22 50.36, the technical specifications, and the A-4.

23 I think that's the kind of thinking that you want
24 to have in this plan, where are you heading, but not just
25 jumping to where you're heading, what are the interim steps,

1 and one of the interim steps in getting to what NEI sees as
2 a risk-informed configuration control is these specific
3 risk-informed technical specification initiatives, including
4 the one regarding missed surveillances.

5 DR. APOSTOLAKIS: Jack?

6 MR. SIEBER: I was wondering if your plan
7 considers what I think is one of the fundamental things that
8 ought to happen first, which is there are a bunch of rules,
9 different rules that have a risk basis to them. For
10 example, the PTS rule has a risk basis to that. ATWS has
11 one. Station blackout has one, backfit rule, Reg Guide
12 1.174.

13 They're all different than the safety goal policy
14 statement and they're different from each other.

15 Is there going to be some attempt someplace along
16 the line to consolidate the opinion of what is risky and
17 what is not and modify those rules and set the basis for
18 everything else that we do or are we just going to do this
19 piecemeal, one at a time, pull out a criteria that seems
20 fitting at the time?

21 I'm not sure if I'm clear about my question.

22 MR. KING: I understand your question. Are we
23 providing some framework to provide some consistency as to
24 what risk level we're trying to achieve by the regulations
25 and what changes need to be made to do that?

1 MR. SIEBER: That states my question.

2 MR. KING: And I think my view, to answer that, is
3 yes. Certainly, in the option three work on the reactors,
4 we've laid out a framework that provides some risk
5 guidelines as to what we would like to see for mitigating
6 systems, for containment and so forth, that we would go
7 through and use when we look at the regulations to see are
8 they achieving that or not.

9 And maybe they're over-achieving it or maybe
10 they're under-achieving it, but the idea is to bring them to
11 some more uniform level than they are today. In the NMSS
12 side of the house, I don't think they're that far along yet,
13 but my own personal view is, yes, that's the kind of thing
14 that should be done, I think it is being done in the reactor
15 side, and I think this plan could certainly lay out, at a
16 high level, some guidelines as to that approach ought to be
17 taken across the board whenever we're risk-informing
18 something.

19 MR. SIEBER: It seems to me that in some cases,
20 the risk value of some rules is such that it creates a
21 penalty, a licensee, whereas some other ones may not be
22 tough enough.

23 I think that part of this process should be to
24 sort of make a level playing field.

25 MR. KING: I agree. I think this plan could

1 certainly, at some level, put forth guidelines to do that.

2 MR. HOLAHAN: But I'd have to say that I think
3 we're already doing some things to move in that direction.
4 When we look at recent initiatives, like the oversight
5 process and Reg Guide 1.174 and what Research has put
6 together, the framework for risk-informing the regulations,
7 there's a lot of consistency now, but the further back in
8 time that you go, the less consistency you see.

9 We had a meeting, for example, last week on the
10 PTS rule and there is an activity, in fact, to look at the
11 PTS rule and one of the issues is was the PTS rule picked to
12 achieve the right level of safety, is it too high or too
13 low.

14 I think what we're seeing is not a clean sweep and
15 starting over again. What we see is going to each rule and
16 sort of normalizing it back to -

17 MR. SIEBER: Try to converge it.

18 MR. HOLAHAN: Right, make them converge.

19 CHAIRMAN POWERS: I think that's one of the
20 questions. I'd maybe come back to Graham's question. It
21 suggested that you get an overall assessment of what you
22 achieve with the current rules by looking at the IPEs for
23 normal operating events and the IPEEEs for external events,
24 including fire. I think that's true.

25 Of course, I look at that panoply and I

1 immediately say, now, what's left out of that.

2 MR. KING: Like shutdown, you mean?

3 CHAIRMAN POWERS: Maybe, yes. And that raises a
4 question, in my mind, when I think back to option three, and
5 I'm operating a little bit from memory, and the framework
6 document, I say, gee, those things look like they're going
7 through and they're looking at the current rules and they're
8 looking at them kind of individually and saying what do I --
9 how do I change this current rule to make it a little more
10 risk-informed, things like that.

11 And I say, gee, those rules were written with a
12 presumption that a shut-down reactor is a safe reactor, and
13 indeed that was the staff's point when they put together a
14 draft of a shutdown regulation rule.

15 I'm wondering why is it that option three doesn't
16 go through and also look at those assumptions that are
17 behind the current regulations.

18 MR. KING: I think option three does look at the
19 assumptions behind the current regulations and you will find
20 some words on shutdown in our framework document. The piece
21 that's missing is the body of risk, quantitative risk
22 information to go along with the shutdown condition.

23 Now, there's some, but we're not ignoring the
24 shutdown condition.

25 DR. APOSTOLAKIS: This raises some interesting

1 questions.

2 MR. HOLAHAN: Can I go back to Dana's question?
3 Because I think the Commission spoke directly to this issue
4 when it voted not to support the staff's recommended
5 shutdown rule. Clearly, the Commission intended to maintain
6 safety during shutdown. I think it wanted it done through
7 the maintenance rule and other activities and it directed
8 the staff to inspect and to monitor those shutdown
9 activities to see whether the level of -- what level of
10 safety was being achieved.

11 So the new oversight process has pieces in it that
12 address shutdown and a lot of those are the same issues that
13 we talked about in the NEI guidance and in the proposed
14 rule. In fact, I think the Commission has left the staff
15 with the -- even before there was an option three, left the
16 staff with the role of, sort of on a continuous basis,
17 determining whether the existing regulatory structure is
18 maintaining safety during shutdown and I think that option
19 three is just another opportunity to test that.

20 DR. APOSTOLAKIS: My question is related to this,
21 because this raises a very interesting question. I believe
22 that one of the arguments or perhaps the main argument the
23 Commission made was that the risks from shutdown and low
24 power operations are managed adequately by the existing
25 tools.

1 At the same time, there is, I think, widespread
2 concern that these risks have not been quantified. Even if
3 we accept the premise that they are managed well, we still
4 don't know the level of risk.

5 Now, is that something that the risk-informed
6 regulatory system can live with? In other words, if you
7 convince yourself, not necessarily for low power operations,
8 that a particular activity is managed reasonably well, then
9 you will say then I really don't care about quantifying the
10 risk from that activity.

11 Is that something that this system will allow?

12 MR. HOLAHAN: I think that's not enough, because
13 if you go back to the strategic plan and its goals, the
14 agency's goals are more than just maintaining whatever
15 particular topic area it is, maintaining it to be safe.

16 I think there are other issues that the
17 risk-informed approach can address and there is a public
18 confidence issue, how do you know what level of safety; you
19 might be satisfied, but how do you know that other people
20 are satisfied? How do you know that you're not maintaining
21 that safety at an extraordinary cost that isn't worth it?

22 So there are other opportunities to test the other
23 objectives.

24 DR. APOSTOLAKIS: I find this situation very
25 interesting, because why do you do a PRA? Well, you do a

1 PRA because you want to make sure that the risk is managed.
2 And now you have someone who says, well, you know, the risk
3 is already managed. So he's short-circuiting the process
4 and says I don't need to do the PRA, because I know the risk
5 is already managed.

6 How do you know? Well, you know, I'm convinced.
7 I'm convinced they manage their configuration, they have
8 these software tools.

9 So I think now it's an interesting philosophical
10 question. Do you then abandon the quantification because
11 somehow you convince yourself that the risk is managed or
12 you still go through the process? I don't know myself, but
13 it's an interesting question and maybe by setting the goals
14 and all that stuff, you should address these questions, so
15 people will be sensitized to these things.

16 I don't know what the answer is myself, because --

17

18 DR. KRESS: Yes, you do.

19 MR. KING: Well, we don't need this plan to get
20 into that question. We've got plenty on our plates with
21 option three.

22 DR APOSTOLAKIS: But don't you think it's an
23 important question?

24 MR. KING: Of course it's an important question.

25 DR. APOSTOLAKIS: Let's assume that they are

1 right. I'm willing to grant that. Then we don't do the
2 PRA? You can have pros and cons. Some guy might say, well,
3 gee, yeah, but, look, if you look at the history of PRA, we
4 thought we managed certain things well and then PRA showed
5 there is an interface with system LOCA or this or that, so
6 there are always surprises that come out.

7 On the other hand, the other side might say, look,
8 it's a matter of prioritizing things. Right now, I'm fairly
9 confident I'm managing the risk reasonably well and I have
10 other areas where I really don't know. So I will use my
11 resources to attack those areas first.

12 I think both arguments have merit, but it seems to
13 me if we are to have a strategic plan, somehow we have to
14 get into this.

15 DR. WALLIS: I was going to suggest you use PRA,
16 where you can get the most leverage from it. You don't get
17 into the marginal areas where you're quibbling about whether
18 or not it's going to help. So you work on things where it's
19 really going to make a difference.

20 DR. APOSTOLAKIS: Yes, but you don't know that,
21 because the other side is telling you --

22 DR. WALLIS: You must have some idea.

23 DR. APOSTOLAKIS: Well, you have strong opinions
24 on both sides. One side says, no, I'm managing the risk and
25 the other side says, well, you know, you are doing something

1 very good, but I still don't know whether you're managing it
2 very well. I think both arguments have some validity.

3 Anyway, I just raise the issue, because I find it
4 really a very interesting question. PRA is the way of
5 managing the risk and then somebody says but I'm already
6 managing it, so I don't need to go that way. It seems to me
7 a strategic plan has to some -- wherever you plan to have
8 overall guidelines, objectives and so on, that question has
9 to come up.

10 Okay. Why don't you go ahead?

11 MR. KING: Moving on to slide five. Dr. Wallis
12 asked the question what are your criteria for deciding what
13 you want to risk-inform or what don't you want to
14 risk-inform. There are some example criteria in the draft
15 we sent, the partial draft we sent to the Commission in the
16 00-62 SECY. They basically say what we want to do is take a
17 systematic look across all three arenas at the regulations,
18 at the activities, like inspection program, enforcement
19 program, see would risk-informing them contribute to helping
20 the agency achieve any or all of its four performance goals.

21 But there's also some other factors that need to
22 be considered; do we have tools and data that provide
23 sufficient information, where you could go risk-inform the
24 activity; is there licensee interest or capability in doing
25 this; can it be done at a reasonable cost.

1 DR. WALLIS: We said in our research report that
2 you kept invoking these goals, and that's fine, but a lot of
3 work needs to be done if you say maintain safety. Okay.
4 Now, first of all, we need know what kind of safety we're
5 getting and all this stuff. You need to develop that and
6 see how does PRA fit in there.

7 Just invoking some high level goal doesn't tell
8 you very much until you begin to analyze what you would need
9 to do in order to determine whether or not there is going to
10 be any influence on maintaining safety by risk-informing. A
11 huge amount of structure has got to be put in there.

12 So I think what we would look for is that you
13 built that structure, not just invoked some high level goal,
14 which is fine, but that's like saying, you know, I served in
15 the U.S. and I support the Constitution or something.

16 MR. KING: I think in the reactor area, where you
17 have quantitative risk information, it gets a little easier.
18 In the NMSS area, where there's a lot of different things
19 that they regulate and you don't have PRA quantitative risk
20 information to look at those, it gets more difficult.

21 NMSS had a two-day workshop in April where they
22 brought in a number of their stakeholders and they asked
23 these kinds of questions.

24 DR. WALLIS: The biggest question on maintain
25 safety is this is -- it's not clear what that means. You

1 can argue forever. When you say if it's the existing
2 regulations, well, how do they maintain safety. It seems to
3 me that risk-informing has a tremendous amount to contribute
4 to determining how well the regulations maintain safety.

5 When you know that, then you can, okay, this is
6 the one which is worth tweaking, because we can really gain
7 something there.

8 DR. APOSTOLAKIS: I think in connection to this
9 slide and also in the context of building public confidence,
10 many, many times, we hear public stakeholder groups saying
11 the whole purpose for risk-informing the regulations is to
12 relax regulatory burden, and people forget that for the last
13 25 years, really, risk-informing the regulations meant
14 increasing the burden.

15 So I would suggest that whenever you talk about
16 the agency performance goals, you have slides or public
17 meetings or whatever in the report, you immediately show a
18 few examples where you have maintained safety, like the
19 station blackout rule or ATWS or whatever, as a result of
20 PRA, because apparently people need to be reminded of these
21 things, that you are not just changing the tech specs and
22 all that.

23 We get letters from public groups that say, well,
24 all they are doing is this. And maybe give examples in
25 other areas that you have improved effectiveness and so on.

1 In fact, we wrote a letter, with your help, some
2 time ago, how PRA has been used in the past. It wouldn't
3 take more than two or three lines to show examples like
4 that; that perhaps we have done a lot on improving safety
5 using PRA, and now we are also addressing issues of
6 unnecessary burden.

7 But let's not forget we have already done a lot of
8 that, because people forget or they don't know perhaps. In
9 fact, that was a major complaint of the industry that
10 happened till now, all you were doing was adding burden.

11 MR. KING: Right. I agree with your statement and
12 I think one of the things that this document could do is
13 show that risk-informed is a two-edged sword.

14 DR. APOSTOLAKIS: Yes.

15 MR. KING: And you could do that with some
16 specific examples. You can also do it with talking about
17 the philosophy behind risk-informed. Just the fact that
18 you're not spending resources on unimportant things does
19 improve safety or at least maintains safety.

20 DR. APOSTOLAKIS: Yes. But I think giving
21 specific examples from the past will go a long way.

22 MR. SEALE: To belabor the obvious, you haven't
23 made the one point here, I don't think, I didn't find it
24 anyway, that the PRA provides a rational basis for ranking
25 the risk and that is certainly one of the more important

1 things that you are interested in if you are going to make
2 your regulations efficient and attack the necessary things
3 in a straightforward way.

4 So sometimes you have to -- the PRA covers things
5 you've already evaluated, but you didn't have that
6 evaluation in the context of other risks, as well. And now,
7 with the PRA, you have a thermometer, if you will, that
8 you've looked at all of these different things and now you
9 have comparisons and that's important to your resource
10 allocation process.

11 DR. WALLIS: In terms of public confidence, some
12 of the most important public consists of your own employees.
13 If this gives a way of doing things which gives your
14 employees more confidence they're doing the right thing,
15 it's worthwhile, it's worth putting energy into, there's
16 going to be a tremendous contribution.

17 I would like to see more evidence of that, that
18 people have great enthusiasm for PRA, because it makes their
19 job better and so on.

20 And the other confidence is, of course, in
21 industry, the whole -- that's another kind, that these
22 regulations make some sense, because they have this logic of
23 PRA or something behind them.

24 MR. KING: When we talk about communications in
25 this plan, we're talking internal and external, and internal

1 is very important.

2 DR. WALLIS: The public, and there's lots of parts
3 of the public that can be really influenced by this
4 initiative, it seems to me. It's not just some public
5 interest group. Everybody with some stake in nuclear
6 energy, as well.

7 DR. KRESS: In your previous work on the
8 possibility of redoing the safety goal policy statement, you
9 had a number of very interesting questions or issues, things
10 like should land interdiction be a goal, should you deal
11 with risk spikes, are CDF and LERF the right things to use,
12 should you quantify adequate protection.

13 You had a number of very interesting, I thought,
14 questions that seem to me to be important to the issue of
15 how you risk-inform regulations.

16 Will you face up to those questions and try to
17 provide some sort of answers to them in this particular
18 document here or will you skate around them some way?

19 MR. KING: One of the things we talked about
20 having in this document were what are the risk goals that
21 you're trying to achieve all of the various things you may
22 want to look at in this plan in the reactor area. I didn't
23 envision this document as dealing with the land
24 contamination issue or risk spike issue or some of those
25 things.

1 DR. KRESS: It certainly might come up in the NMSS
2 area, because that may be your risk goal there.

3 MR. KING: NMSS, they have on their plate a task
4 to come up with safety goals for the things that they
5 regulate. In what form, whether that's going to be a policy
6 statement or some other document, I don't know at this
7 point. I would envision whatever comes out of that effort
8 will be reflected in this document, but I didn't view this
9 document as the document that's going to establish those
10 goals.

11 I do view this document, though, as providing some
12 what I call guidelines, this bullet right here. By that,
13 what I had in mind was so that there's some consistency in
14 the way we implement our risk-informed activities, I think
15 things like the definitions from the Commission's white
16 paper on risk-informed regulation ought to be in here, like
17 our principles from Reg Guide 1.174 probably ought to be in
18 here, maybe we ought to come up with some consistent
19 definition of defense-in-depth and safety margins, what do
20 we mean by performance-based, those kinds of things.

21 DR. KRESS: How do you deal with uncertainties.

22 MR. KING: How do you deal with uncertainties,
23 yes.

24 DR. KRESS: Those are the kinds of things I would
25 assume you're looking for.

1 MR. KING: I thought that kind of stuff, to me,
2 made sense to put in here, so that everybody, when you're
3 talking treatment of uncertainties, we're doing it in a
4 consistent fashion.

5 DR. WALLIS: Could you also have some vision of
6 where you're going? When you reach the delectable mountains
7 of risk-informed regulation, whatever they are, what do they
8 look like? Some kind of objective out there, like
9 Eisenhower is going to get to Berlin or something, some kind
10 of -- where are we going, where would you like to be if
11 everything works out right?

12 MR. KING: I think there's two aspects to that
13 question. One is laying out our plans for those areas in
14 schedules and priorities for accomplishing risk-informed
15 changes in those areas and then we have a section in the
16 plan called measures of success, how do you know you achieve
17 what you want to achieve.

18 That's sort of a nebulous thing at this time as to
19 exactly what those measures of success will be.

20 DR. WALLIS: I think if anything that's been
21 planned in the past, any major human activity, then one of
22 the major things is a view of where you're going. We're
23 going to climb Mt. Everest and that becomes most important.
24 The plan is very important, but unless you have this purpose
25 up there, some view of what constitutes success, then all

1 the plans are kind of muddled.

2 MR. KING: I agree.

3 DR. BONACA: I'd like to throw in just one more
4 thing in support of what Dr. Wallis is saying. I believe
5 that we're all looking at these plans, but I think we have
6 probably all different visions of what this future would be
7 out there, and when we -- we haven't discussed this and I
8 think we will, probably as a committee, reflect on this at
9 some point, but it seems to me that there are certainly some
10 people who would think that we could have, at some point, a
11 50.59 process under which you could remove, for example,
12 defense-in-depth commitments by 50.59.

13 Other people think that that will not be
14 acceptable for their own reasons. I mean, there are reasons
15 for whatever.

16 The point is that I think there is a fractured or
17 maybe inexistent sense of a common vision about where we're
18 going with the plan and a plan typically would have some
19 elements of vision of what we envision out there that will
20 resolve some of the problems that existent.

21 I'm just supporting what Professor Wallis is
22 saying, that that would be very useful.

23 MR. KING: You could picture it, we have the four
24 big agency performance goals, you could say, well, I'm going
25 to go risk-inform something because it's going to help me

1 achieve those performance goals and you could go back and
2 then say set a success measure, whether it's how much
3 efficiency improvement did I achieve, you could put some
4 monetary or staff year reduction goal for that or how much
5 unnecessary burden did I reduce, whatever it may be.

6 You could do that and then come back and monitor
7 did I actually achieve those reductions when I risk-informed
8 this activity or didn't I, and that's sort of what I had in
9 mind in the success measure section, although we haven't
10 come up with any firm recommendations in that area at this
11 point.

12 DR. WALLIS: That's incremental. That's so that
13 when I fight this battle, what's the body count, did I gain
14 something. But it doesn't give you the overall objective
15 out there somewhere which makes the whole thing worthwhile.

16 DR. BONACA: I think in the oversight area, we
17 have some vision now, because we have an implementation plan
18 and it's being implemented now. We're beginning to see the
19 elements of it, with the cornerstones and things of that
20 kind, and we can or we have commented on individual aspects,
21 maybe been critical of some elements, but, in general, we
22 have a good understanding and a buying-in into a process
23 that is becoming risk-informed, but it can be improved, too.

24 It's just that there are so many other elements of
25 regulation out there and particularly we're talking about

1 with existing plants, how they are operating today, what is
2 effective and what is not effective, and how risk
3 information can improve the effectiveness of these plants
4 today.

5 I think that that's an element. We will have a
6 common vision of what is going to be.

7 MR. KING: I think the common vision is certainly
8 qualitative vision, focus on the things that are important,
9 that we're going to be more effective and efficient. I
10 didn't envision we would set numerical goals for that.

11 But certainly we'd be interested in any thoughts
12 anybody has as to how we could approach that.

13 DR. BONACA: I'll give you an example. To me,
14 50.59 is an important issue, because it's the process under
15 which power plants are allowed to make changes. So I would
16 say that if I look at the existing power plants, they are
17 hesitant about what they are going to do in the future; are
18 they going to come under this changed regulation, under
19 risk-informed or not.

20 As you know, there is reluctance there. The
21 reluctance is because they don't understand, they don't know
22 what's going to be. And clearly there are big issues about
23 what you would be able to change in power plants under
24 risk-informed 50.59, for example.

25 I think we had discussions here about

1 defense-in-depth and balance, but we never -- and that's an
2 important element, however.

3 MR. KING: If you just want to set some overall
4 agency goal for risk-informing 50.59, other than some
5 qualitative statement that I want it to be risk-informed,
6 I'm not sure what else I would say.

7 DR. BONACA: I'm not expecting that you have. I'm
8 just expressing some of the issues that I believe are
9 clouding a little bit where we're going with all this.

10 MR. KING: I guess you could say I want to
11 risk-inform it to the point where I only get half the number
12 of license amendment requests that I normally get, you could
13 set some goal like that.

14 DR. KRESS: I would try to avoid quantitative
15 goals in this type of exercise. I think you just get
16 yourself in trouble.

17 MR. KING: Yes. But you could also say a measure
18 of success would be am I getting fewer license amendment
19 requests because I've risk-informed 50.59, without saying it
20 has to be --

21 DR. KRESS: That's the way I would try to do it,
22 that sort of thing.

23 DR. WALLIS: This looks like solutions for
24 problems. If someone is to create that risk-informing is a
25 blessed activity, therefore, you should engage in it, then

1 --

2 DR. KRESS: I think we all believe there is a
3 problem with the regulations.

4 CHAIRMAN POWERS: They have, that has happened.

5 DR. WALLIS: But if you could say here is 50.59,
6 and the reason that there's all this anxiety in industry and
7 so on, and so on, and so on, and, gee whiz, risk-informing
8 is the solution to those problems, that would be more
9 convincing, rather than saying here we've got this tool and
10 we get points for applying it, using it.

11 MR. KING: I think we should move on.

12 DR. APOSTOLAKIS: Let's move on, yes.

13 MR. KING: Slide six is just, at a high level,
14 what the outline of this plan would look like and some
15 executive summary. There will be some introductory material
16 that will discuss the relationship of this plan to the other
17 strategic plan and other documents and processes the agency
18 has. These overall guidelines we talked about to add some
19 consistency in risk-informed treatment of uncertainties and
20 so forth.

21 Then there will be sections for the three major
22 arenas that will get into more of the details of what's to
23 be done.

24 Then on the next page, a little breakout of what
25 one of those arena sections would look like.

1 Again, like I said, this is work in progress.
2 This may change as time goes on, but at this point, what I
3 envisioned was for each arena, you talk about the guidelines
4 that you've developed and applied to decide what are you
5 going to risk-inform and what the priorities are, and then
6 the results of applying those, what have you decided to
7 risk-inform, what are the priorities, what have you decided
8 not to risk-inform.

9 And then for each thing where you've made a
10 decision to go do some risk-informed work, sort of lay out
11 what the major milestones are and what the -- what I call
12 the infrastructure needs, the responsibilities, training
13 needs, what kind of communications plan, internal and
14 external. And some of these, for each activity, a
15 communications plan may be -- it may cover a number of
16 activities. It doesn't always have to be each one has to
17 have its own.

18 And then these measures of success, how would you
19 know that what you did was an improvement. So at a high
20 level, this is sort of what I envisioned to have in there.

21 DR. APOSTOLAKIS: How would you make sure that
22 certain principles that really apply to more than one arena
23 are, in fact, stated clearly? Defense-in-depth, for
24 example, is one.

25 MR. KING: That was back -- where I envisioned

1 that was back here in the introductory section to the entire
2 plan. That would be a lead-in to each of the three arena
3 chapters and this last item, overall guidelines, that's
4 where I envisioned we would talk about maybe the Reg Guide
5 1.174 principles.

6 DR. APOSTOLAKIS: How do we define them? How do
7 we make sure we have all of those? From the experience of
8 trying to implement the risk-informed system or we will have
9 some sort of a structured process that would identify those
10 high level issues that apply to all of them?

11 MR. KING: I think at this point, we've probably
12 done enough in the reactor area where we know what issues
13 we've had to face, policy issues, implementation issues,
14 that we could probably make a good cut at laying some of
15 those things out that are applicable across the board, that
16 others are going to have to face if they want to go
17 risk-inform things.

18 Through interactions with this committee and other
19 interactions on the staff, with stakeholders, we may
20 identify some more.

21 DR. APOSTOLAKIS: But there will be some high
22 level body monitoring all this.

23 MR. KING: Well, later on.

24 DR. APOSTOLAKIS: Later on.

25 MR. KING: I guess I didn't put it on the

1 schedule. The agency has a PRA steering committee and we've
2 run this presentation by them in terms of what our vision is
3 for this document, just to make sure we have alignment
4 between the office directors and ourselves, and we continue
5 to come back to them as this thing evolves.

6 DR. WALLIS: This is all internal NRC people.

7 MR. KING: It's all internal NRC people. One
8 thing you'll see when we get later on, the suggestion is
9 maybe we want to take this document as a draft and go out
10 and get stakeholder comment and feedback on it -- external.

11 DR. WALLIS: It would seem to me you could benefit
12 from having an advocate for PRA with expertise. You know,
13 if there's another George out there, who is not tied up with
14 all the regulation, all the habits of the NRC, and look at
15 what you're doing, could give you good advice.

16 MR. HOLAHAN: I thought we had one of those.

17 DR. WALLIS: Apart from ACRS, but someone who
18 works with you daily or whatever when you need this person.

19 DR. SEALE: More than that, I think we've all been
20 impressed upon occasion that the quality of PRA work that's
21 been done by some of the utilities and attaching specific
22 problems, and I think we would be remiss not to try to get
23 their input. They may even have a good idea or two that
24 would help out.

25 MR. KING: I think it would be worthwhile sending

1 this out as a draft once we've got the sections filled in.

2 DR. WALLIS: I was thinking actually in the
3 production of it, not just the formal business of you guys
4 work on it and it goes out for comment, but someone actually
5 in the creative process of deciding what to do.

6 CHAIRMAN POWERS: What are you looking at them to
7 do?

8 DR. WALLIS: I would look for someone like a
9 George who has ideas, can be critical, can say, well, how
10 about this and talk about the bigger vision than you guys
11 maybe have, to contest you as you develop the thing.

12 It seems to me there are lots of things here which
13 are of that type. There are creative activities involved
14 and there are visions of what you might be able to achieve
15 that maybe you haven't thought of.

16 DR. APOSTOLAKIS: You can use consultants. Is
17 there anything that says you can't use consultants?

18 MR. KING: No. We can use consultants.

19 DR. APOSTOLAKIS: Then select one or two people
20 and whenever you feel you need them, give them the thing and
21 say what do you think. It doesn't have to be a big deal.

22 CHAIRMAN POWERS: I guess I'm still struggling
23 with what it's supposed to provide here.

24 DR. APOSTOLAKIS: I think Graham's point is that
25 there are experts out there that can, not from the

1 regulatory side of the business, but perhaps they have done
2 PRAs -- like Gareth Parry, before he joined your staff, was
3 out there doing good work, and these people may have --

4 CHAIRMAN POWERS: As opposed to now?

5 DR. APOSTOLAKIS: But these people would bring a
6 different perspective, I agree with you.

7 CHAIRMAN POWERS: I agree that it would bring a
8 different perspective, I agree that they may have done a
9 PRA. I don't think doing a PRA is what is necessary right
10 now. It seems to me that coming in with no knowledge of the
11 regulatory process is the last thing you need. You need to
12 know exactly what the regulatory process is.

13 DR. KRESS: That's what I think. That's much more
14 important than knowing the PRA.

15 DR. APOSTOLAKIS: But, guys, we're not talking
16 about turning over this activity to them. All we're saying
17 is before you finalize this, give the guy the document and
18 get some comments.

19 CHAIRMAN POWERS: George, I could sit here and
20 say, gee, there are an awful lot of good quantum candidates
21 out there that know a lot about second quantization.
22 Maybe you ought to show it to them. I'm just not sure they
23 would help very much.

24 DR. APOSTOLAKIS: And I would agree with you. I
25 still think that if you select the people carefully, who

1 have also --

2 CHAIRMAN POWERS: I think I would be much more
3 interested in talking to somebody who has attempted cultural
4 change in an organization. I'd like to get their advice on
5 things much more than somebody that's just done a PRA for a
6 plant.

7 DR. WALLIS: That's not to say who the person is,
8 but maybe we could agree that some sort of external view of
9 this would give you some checks and balances and help which
10 might be useful.

11 DR. APOSTOLAKIS: Yes. We're not talking about
12 the guy who does fault trees for a living. That's not the
13 issue.

14 DR. KRESS: I would be interested in a guy you
15 could ask questions of, like I'm concerned if one stuck with
16 just LERF and CDF, for example, that you're missing
17 something, and you're missing things like 10 CFR 100, which
18 talks about a dose from an unfailed containment, which is
19 one of your objectives, as regulatory.

20 And we have other similar things like that that
21 LERF -- CDF addresses to some extent, but LERF doesn't. The
22 question I might have is if I come up with some objective
23 that might, for example, be the frequency, an allowed
24 frequency of exceeding a certain dose, which might be
25 particularly an NMSS activity, can a PRA give you that

1 number and how does PRA have to be structured to give you
2 that and to give you the uncertainties in it and is it
3 possible.

4 That sort of thing you might --

5 MR. KING: But I think what you're talking about,
6 to me, is a level of detail lower than what I envisioned
7 this plan to have. Those are certainly questions you have
8 to face at some point, but I didn't view this plan as
9 getting down into every technical issue that has to be dealt
10 with in all the things we want to risk-inform.

11 I viewed this plan as, for example, risk-informing
12 Part 50, there would be a schedule for option two, there
13 would be a schedule for option three, some of the major
14 milestones and deliverables and so forth, but not getting
15 into the individual regulations that we're looking at in
16 option three.

17 That's dealt with through separate papers and
18 discussion.

19 DR. APOSTOLAKIS: Anyway, we seem to be getting
20 into management issues here.

21 MR. HOLAHAN: Before we leave this subject, let me
22 go back and say it again, since no one agreed with me when I
23 said it before. I agree completely with Professor Wallis,
24 but I think we already have a group of independent, vocal,
25 knowledgeable experts sitting around this table and I don't

1 see any reluctance on their part for giving us good advice.

2 DR. WALLIS: We see you once every three to six
3 months or something. This is someone you could turn to as
4 part of your team, it seems to me. That might be useful.

5 DR. APOSTOLAKIS: I think we should leave it up to
6 them.

7 DR. WALLIS: Leave it up to you guys.

8 DR. APOSTOLAKIS: This is a management issue.
9 Would you move on? I mean, we've expressed our differing
10 views, which we're happy to do.

11 MR. KING: The nice thing about this committee, we
12 get all these differing views, we pick the one we like.

13 DR. WALLIS: There's no sense in our expressing
14 views unless some of them are useful to you.

15 DR. SEALE: There's no quality control on our
16 suggestions.

17 MR. KING: All right. Schedule. We need to get
18 this thing done and a complete draft is due to the
19 Commission the end of October. What we had envisioned was
20 NMSS has already had their workshop with stakeholders.
21 We're talking with NRR about having a similar workshop to
22 take a look at what they're doing and should they be doing
23 more in the risk-informed area.

24 Developing some draft arena sections in August,
25 coming back to this committee and the joint ACRS/ACNW

1 committee in the fall to talk about those. And then after
2 the draft goes to the Commission, at least my view is we
3 ought to recommend to them that that go out for public
4 comment.

5 CHAIRMAN POWERS: Your schedule and your need to
6 get to the Commission has a problem interfacing with our
7 schedule in the sense that we don't have an August meeting
8 and September then becomes kind of jammed up and things like
9 that.

10 Let me ask, is there a time in there where we
11 should -- we want to help and I think even participate and
12 give you all this wonderful advice that you can pick and
13 choose from in a fairly explicit fashion.

14 Should we be looking to a period of time for like
15 a subcommittee meeting, where we can plunge into the details
16 and things like that? Is there an appropriate time for
17 doing that? Should we look at arena papers in detail?

18 MR. KING: I think it would be worthwhile to have
19 this committee look at the arena chapters once they are
20 developed and I think a subcommittee would be a good idea.

21 DR. APOSTALAKIS: Timeframe.

22 MR. KING: Maybe the August timeframe. Are you
23 permitted to have subcommittees in August?

24 CHAIRMAN POWERS: Yes, we have a bunch of them.
25 We have a bunch of them in August.

1 DR. APOSTOLAKIS: August is very hard, because my
2 vacation is in Europe.

3 MR. KING: I don't want to make it too early,
4 because then you're wasting --

5 CHAIRMAN POWERS: It's nothing that we need to
6 sort out now, but it's something that I think we want to
7 sort out with you as the time comes closer to that schedule,
8 just because it would be nice if we could do it on the
9 October meeting.

10 So that when you go to the Commission on the 27th,
11 they at least have our input on it.

12 MR. KING: I think clearly the October full
13 committee would be a time where, if you want to write a
14 letter, that would be the meeting --

15 CHAIRMAN POWERS: I want things pretty well --
16 have an idea of what we're going to write at that October
17 meeting, rather than --

18 MR. KING: Which means subcommittees before that.

19 DR. APOSTOLAKIS: But not a week before.

20 CHAIRMAN POWERS: Yes. That's what I'm trying to
21 avoid.

22 DR. APOSTOLAKIS: First of all, I'm impressed that
23 ACRS' view is not followed by CRGR.

24 MR. KING: This is not CRGR material.

25 DR. APOSTOLAKIS: Second, is the ACRS/ACNW that

1 joint subcommittee?

2 MR. KING: Yes. And maybe we need to go to the
3 full ACNW. We'll have to sort that out.

4 DR. BONACA: There will probably be an ACNW
5 letter, with some input or something.

6 DR. APOSTOLAKIS: Okay. We can work out the
7 details.

8 MR. KING: Okay. The last slide I have is what I
9 call issues. There are several things, and this list will
10 probably grow as time goes on. We got an SRM from the
11 Commission in April that resulted from the briefing we gave
12 them on the 0062 paper. What they said was when we give
13 them this draft at the end of October, what they want is an
14 identification of those internal and external factors that
15 are affecting our planning process, and they listed some
16 examples.

17 Availability of pilot plants was one that they
18 listed in their SRM. I think there's probably some others.
19 I think licensee interest and participation in this whole
20 risk-informed process is one.

21 There's questions of maybe you could go
22 risk-inform some regulation, but under a voluntary system,
23 if licensees aren't interested in it, why bother.

24 MR. SIEBER: Do you have any indication at this
25 point in time as to what licensee interest really is?

1 MR. CUNNINGHAM: NEI did a survey of what
2 licensees were particularly interested in, I guess they --
3 in the winter time. As I recall, the top two that they were
4 very interested in are changes in 50.44 on hydrogen control
5 and 50.46 on ECCS requirements.

6 They had a list of other things, but those are the
7 two that jumped out.

8 MR. KING: But I think your question is even if we
9 would make those changes, how many licensees are actually
10 going to take advantage of it.

11 MR. SIEBER: Well, and beyond that, which ones are
12 going to build the infrastructure that they need in order to
13 participate in risk-informed regulation, because that's a --
14 you're going to end up with, as I see it, two mountains.
15 One is the traditional deterministic way, the other one is a
16 risk-informed way, and it's not clear to me that that
17 reduces burden.

18 MR. HOLAHAN: I think these things haven't sorted
19 out yet, but I think my vision of the future is licensees
20 will put the infrastructure into a risk-informed approach,
21 because they need to do that because of the way the
22 maintenance rule is structured and for the oversight
23 process, and I think that the nature of the oversight
24 process will have an enormous effect on the way licensees do
25 their own work.

1 And when they get to that point, at least what I'm
2 imagining is, in fact, it will be those activities and not
3 the examples of would you like to change 50.44 that are
4 going to pull the licensees into the risk-informed world,
5 and once they're there, more than they are now, some of them
6 are well into this arena now, but all of them, by the very
7 nature, have to participate in the oversight process.

8 They need to understand the significance of their
9 activities and their performance issues. That is going to
10 be the arena that gets them into this world and once they're
11 there, I think that will open up to a lot more than 50.46
12 and 50.44.

13 MR. SIEBER: I sort of look at that, though, as
14 like a marathon race. There's the guys out in front and the
15 guys who are walking back and there's going to be some kind
16 of a distribution of degrees of participation.

17 I'm not sure whether that's going to help you or
18 hurt you in the process of truly risk-informing regulation.

19 MR. HOLAHAN: I think the oversight process is
20 going to establish some minimum speed, which, in a practical
21 way, where a licensee can continue to survive.

22 DR. KRESS: Not everybody crosses the finish line.

23 MR. KING: When I've asked this question on the
24 reactor side of industry people, the answer I get back is
25 there's a lot of licensees sitting on the fence. If we get

1 a few successes under our belt, that will get them off the
2 fence and having a lot more step forward and want to
3 participate and implement risk-informed changes.

4 If we don't get some successes under our belts,
5 corporate management may not be willing to support PRA
6 activities at plants. So it remains to be seen at this
7 point.

8 MR. SIEBER: There's another constituency here and
9 it's probably in the details that you're not wanting to
10 discuss at this time, but there is a group that will be
11 running with peg legs in this marathon of yours and that's
12 the aspect of NMSS activities that are under the direct
13 supervision or regulation by agreement states.

14 I just don't see where there's very much here, at
15 least at first, that's going to be attractive to those
16 people at all, because there are 49 constituencies, unique,
17 in a sense, that don't have the resources to build a support
18 structure.

19 MR. KING: Gary and I both sat in on the NMSS
20 workshop, where they had state people, they had medical
21 community, they had citizens groups, of course, represented,
22 and I came away with the sense that most people were
23 interested in this, from the NMSS side of the house, the
24 licensees and the states.

25 There's always some that are against it, but I

1 thought that -- there was a statement made by the
2 representative of the medical community, a gentleman from
3 San Francisco General Hospital, that I thought was very
4 enlightening in terms of what risk-informed means for them.
5 It really means protecting public health and safety in a
6 much better way than it's being done now, because if it can
7 reduce the cost of medical procedures and so forth, that
8 means it's available to more people and that's real risk
9 reduction on real health issues.

10 DR. APOSTOLAKIS: I was looking at the General
11 Accounting Office report. There are a couple things here
12 that I don't understand. Some utilities do not have current
13 and accurate design information for their nuclear plants
14 which is needed for the risk-informed approach. Is that a
15 big thing?

16 I mean, have you found this to be a big problem?

17 MR. HOLAHAN: Did you ask me whether I agreed with
18 that statement?

19 DR. APOSTOLAKIS: Yes.

20 MR. HOLAHAN: I don't agree with that statement.

21 DR. APOSTOLAKIS: I don't either.

22 MR. BARTON: Maybe that was true a few years ago.

23 DR. APOSTOLAKIS: Well, it's '99.

24 CHAIRMAN POWERS: I think if you go back and you
25 look at the kinds of things that utilities had to do for the

1 fire protection functional inspection pilots, that you might
2 agree better with that statement.

3 DR. APOSTOLAKIS: But I don't consider this an
4 impediment to make it number one.

5 MR. HOLAHAN: That's right. On the contrary, what
6 I've found is that getting involved in risk-informed
7 activities has been helpful in identifying issues in the
8 design basis and getting them sorted out.

9 It's not as though you can't do the PRA until you
10 learn the design basis issues better. In fact, it's helpful
11 in addressing those issues where there are problems.

12 CHAIRMAN POWERS: I'd certainly agree with that.
13 But that there are problems in understanding the design
14 basis of things becomes very clear when you look at the fire
15 protection.

16 DR. APOSTOLAKIS: Anyway, any other comments from
17 the members on this issue? Members of the public?

18 [No response.]

19 DR. APOSTOLAKIS: Hearing none, back to you, Mr.
20 Chairman.

21 CHAIRMAN POWERS: Thank you, gentlemen. Look
22 forward to seeing your plan. It should be most useful.

23 I will recess us until 10:15.

24 [Recess.]

25 CHAIRMAN POWERS: Let's come back into session.

1 We are now going to turn to a discussion of an event that
2 occurred at the Hatch Unit 1. John, you're the one that
3 brings all these terrible things to us.

4 MR. BARTON: Thank you, Mr. Chairman. The purpose
5 of this session is to hear presentations and hold
6 discussions with representatives of the NRC staff regarding
7 the operating event at E.I. Hatch Nuclear Power Plant Unit 1
8 this past January. We will also hear from the licensee
9 following the staff's briefing.

10 A description of the event, on January 26 of this
11 year, Hatch Unit 1 was at 100 percent power, when the
12 reactor pressure vessel water level began to decrease as a
13 result of a valve in the feedwater line going closed.

14 The valve closure caused a large reduction in the
15 feedwater flow. Reactor water level decreased, automatic
16 reactor trip occurred, as expected.

17 We've been spending a lot of time on risk-informed
18 regulations, where we're going in the risk arena, and
19 incidents, transients, shutdowns, et cetera, effects of CDF
20 and LERF, et cetera.

21 Now, from a risk aspect, this event was not
22 significant in that it did not result in core damage.
23 However, it was a serious event in that several areas of
24 weaknesses in overall operation and programs were
25 identified, and I'm sure we'll hear about them from the

1 staff.

2 So at this point, I'd like to turn it over to the
3 staff, Mr. Tad Marsh, to make introductory remarks prior to
4 the staff's briefing.

5 MR. MARSH: Thank you, Mr. Barton. Good morning.
6 My name is Tad Marsh and I'm Chief of the Events Assessment,
7 Generic Communications and Non-Power Reactor Branch in NRR.

8 I have with me today several representatives of
9 the staff who will be presenting to you the Hatch event. I
10 would like to introduce Mr. Wert, from Region II, who is the
11 team leader on the augmented inspection team, and Mr. Vern
12 Hodge, from my staff, who will also discuss with you the
13 generic implications and our follow-up actions.

14 So, gentlemen, let's go ahead.

15 MR. WERT: As Mr. Marsh stated, I was the
16 augmented inspection team leader, the Hatch scram that
17 occurred in January, with some complications that occurred
18 on January 26, in the year 2000. Next slide.

19 Just briefly, there's a list of our team members
20 that participated in the team. I'm not sure how much you
21 want to hear about that. But internally, as a region, we
22 always review closely successes and ways that we can improve
23 augmented inspection teams.

24 One thing that we did note on this team is we felt
25 we had the right combination of technical capabilities to

1 review this. All the inspectors were extensively
2 experienced in boiling water reactors from a resident
3 inspector perspective and additionally, we had Mr. Gary
4 Hammer, a member of the NRR staff, who was very
5 knowledgeable and aware of the SRV issues, safety relief
6 valve issues.

7 Just a brief outline. This is a composition of my
8 presentation today. Overall event sequence, and I won't
9 spend a lot of time with that. You have the inspection
10 report in which that sequence was laid out. Equipment
11 issues, because it's a very convenient way to talk about
12 this event.

13 Performance of licensed operators. As we got into
14 the event, I think you'll see that we became more concerned
15 or just as concerned about performance of the licensed
16 operators as we did about some of the equipment issues that
17 initially were considered to be problems. Health and safety
18 assessment and NRC actions.

19 Hatch Unit 1 is a GE BWR-4, with a MARK-1
20 containment. That's the light bulb-shaped dry well with the
21 separate Taurus. Commercial operation began September '97.
22 The licensed full power is 2763 megawatts thermal. They did
23 undergo two, in recent years, two upgrades to extend our
24 power operation rating, full power rating.

25 The event occurred with Unit 1 at 100 percent

1 power. It had operated for about 213 days continuously
2 prior to this event. The event also occurred at 6:51 a.m.
3 It was during a shift turnover, and we'll talk about that a
4 little bit more.

5 A feedwater heater inlet isolation valve closed
6 when a control switch unexpectedly actuated, and we'll talk
7 a little bit more about that switch in the presentation
8 later. And automatic scram on low reactor water level
9 resulted as expected.

10 High pressure coolant injection, HPCI, and reactor
11 core isolation cooling initiated. The reactor vessel water
12 level was rapidly recovered. I might add that in this
13 event, both feedwater pumps were also running during this
14 time. So the water level was rapidly restored.

15 High pressure coolant injection tripped about 67
16 seconds after the reactor vessel high level trip set point
17 was initially reached. The RCIC and the feedwater pumps
18 tripped at their set points, as expected. Reactor vessel
19 water level was high enough to cause water to enter the
20 steam lines, and I'll talk a little bit more about what we
21 thought contributed to that level in the steam lines.

22 The operators closed the main steam isolation
23 valves in accordance with the emergency operating
24 procedures, and I might add that the procedures say -- I
25 would phrase it as at 100 inches, shut the main steam

1 isolation valves.

2 The reactor operator did ask for concurrence to
3 shut the valves after he noticed the level was slightly
4 above 100 inches and they were actually shut at about a plus
5 108 inches indicated level.

6 The highest level during the transient was about
7 plus 110.8 inches that we got off the data.

8 DR. KRESS: What is it about this particular valve
9 closing that causes the water level to decrease?

10 MR. WERT: Sir, this valve that closed was one of
11 the two -- one of two valves in the main feedwater flow
12 paths to the reactor vessel. There's two main lines coming
13 into the reactor vessel. They do tie back together into one
14 line upstream of that, but where this was, that effectively
15 reduced momentarily 50 percent of the feedwater flow.

16 DR. KRESS: Fifty percent of the feedwater flow.

17 MR. WERT: Initially. Then you would have both
18 feedwater pumps still injecting into the vessel through the
19 remaining flow path. But initially you get a large
20 reduction in feedwater flow.

21 DR. KRESS: So it's an initial reduction.

22 MR. WERT: And even subsequently, but I wouldn't
23 say 50 percent.

24 MR. BARTON: You're still basically steaming at
25 full power rate and reducing feed flow by half.

1 DR. KRESS: Steaming at full power and flowing in
2 at half the flow.

3 MR. BARTON: Yes. Feed level goes down pretty
4 fast.

5 DR. WALLIS: What is water level, the two-phase
6 mixture? What is the water level in the two-phase mixture?
7 Is this a collapsed level or what is it? You have boiling
8 water, but the level is not a determined thing, is it?

9 DR. BONACA: It is not the collapsed level.

10 DR. WALLIS: It's not a collapsed level. But it's
11 a level of some sort where there's a transition from mostly
12 water to mostly steam.

13 DR. SEALE: This is above the separators.

14 DR. WALLIS: Yes, it's way up there. So it's a
15 two-phase mixture, but I wonder what you mean when you say
16 level is 110 inches. What detects that level?

17 MR. WERT: These are water level indication
18 systems.

19 DR. WALLIS: Usually that's a hydrostatic thing.
20 It's just a collapsed level measurement. So the actual
21 level where there is water is higher than that.

22 MR. WERT: I was referring to the water level
23 indicated at the annulus of the vessel.

24 DR. WALLIS: I think it measures a collapsed
25 level. There's actually water higher than that.

1 MR. WERT: I think that's true in the interior of
2 the vessel.

3 DR. WALLIS: There is water a lot higher than just
4 110 inches probably.

5 MR. WERT: Yes, sir.

6 DR. WALLIS: Because it's bubbling and all kinds
7 of stuff going on.

8 MR. WERT: Yes, sir. We were just concentrating
9 on the level that would then go into the steam lines.

10 DR. WALLIS: But we at least have a picture of
11 what's going on. There's actually a lot of water above
12 that, as well, tossing around.

13 MR. SUMNER: My name is Lewis Sumner, I'm the Vice
14 President for Plant Hatch. At this point in the sequence,
15 when this level was this high, the reactor has already
16 scrambled. The void collapse has already occurred and you
17 are reading true level.

18 DR. WALLIS: So it is true level.

19 MR. SUMNER: Yes, true collapsed level.

20 DR. WALLIS: Thank you.

21 MR. WERT: At this point, the operator initially
22 attempted to control pressure with the safety relief valves.
23 That's in accordance with his operating procedures, to open
24 a relief valve.

25 You would do that because you have the reactor

1 essentially isolated here and the pressure is slowly
2 increasing due to decay heat.

3 The expected control panel indications were not
4 received. What I'm referring to there is there's three
5 lights under each control switch for these safety relief
6 valves. There is a green light that tells you there is
7 power being provided to the solenoid valve that supplies
8 pneumatic air to operate the valve electrically.

9 There is also a yellow light that tells you that
10 the pressure in the discharge pipe going to the Taurus from
11 this valve has reached greater than 85 pounds, the set
12 point. It varies from plant to plant. But it detects
13 pressure in the tailpipe.

14 And the final indication is a red light that tells
15 you only that the solenoid has been energized, either by
16 switch operation or through operation of the low load set or
17 the ADS system.

18 The operator was looking for the amber or yellow
19 light that told him I have a high discharge pressure in my
20 discharge line, and he did not get that light at this point.

21 So he then, in turn, manipulated the control
22 switches for several other SRVs and then he obtained an open
23 indication and the SRVs were subsequently used to control
24 reactor pressure.

25 Reactor pressure peaked slightly above normal

1 operating pressure in this event, approximately 1,085
2 pounds. After the event, the licensee determined that the
3 SRVs had actually opened when they were actuated. The SRV
4 tailpipe, and that's the discharge line to the Taurus,
5 again, there's a temperature recorder on the back panel in
6 the control room that showed clearly that the valves had
7 opened.

8 There are some other indications, as well. You
9 can look at the Taurus temperatures in the area around the
10 SRV discharge line spargers inside the Taurus, and we did
11 that as a team. One thing we were concerned about was
12 possibly that the valve, the pilot assembly lifted and maybe
13 not the main portion of the valve, and we looked at that and
14 that gave us a good indication that, in fact, the main seat
15 had actually opened on the valve when we expected to.

16 DR. WALLIS: So you could see this by looking at
17 the record afterwards, but the operator, in order to see
18 this at the time, would have to go and look at some back
19 panel.

20 MR. WERT: Yes, sir.

21 DR. WALLIS: So this isn't really information
22 that's available to the operator at the time, unless he
23 makes a big effort to go and get it.

24 MR. WERT: Unless he makes --

25 MR. BARTON: Not really, and especially, during

1 this event, it happened at shift turnover, they had an
2 abundance of people in the control room. They also have a
3 shift technical advisor who is supposed to help the
4 operators through transients to understand what's going on
5 in the plant.

6 So there are some questions here as to why that
7 wasn't looked at, I think, and I don't think it's that.

8 DR. WALLIS: It's a question of time. When he's
9 looking for the yellow light, that's right in front of him.
10 But looking for these other indications would take more
11 effort to go and look for them.

12 MR. WERT: Right. And the other indication he's
13 looking for is a reduction in pressure at the same time when
14 he expects the valve to open, obviously, and he didn't see
15 that either.

16 MR. SIEBER: Who is the manufacturer of the safety
17 relief valve and what type of --

18 MR. WERT: I was going to get to that. These are
19 Target-Rock two-stage pilot initiated valves.

20 MR. SIEBER: Thank you.

21 MR. WERT: The operators subsequently used a high
22 pressure coolant injection and reactor core isolation
23 coolant for inventory control. There were several early
24 attempts to restart reactor core isolation cooling, and this
25 was after the initial transient, that did not succeed.

1 Approximately four times, the reactor core isolation coolant
2 system was attempted to be restarted and it was unsuccessful
3 and that was attributed to the procedure or the process that
4 was used to restart the turbine, and we'll get into that a
5 little bit later.

6 DR. WALLIS: The heat sink then is just whatever
7 is coming out the relief valves. The heat sink is the
8 steam.

9 MR. WERT: At this point, that's correct. They
10 have other systems that they could use. But RCIC was
11 successfully used later in the event. They had auxiliary
12 operators down in the spaces actually draining the water out
13 of the steam supply lines to the reactor core isolation
14 coolant system and one of our team members interviewed those
15 operators and there was a significant amount of water
16 obtained out of that line.

17 High pressure coolant injection was manually
18 operated several times and tripped properly at its high
19 level set point on two occasions.

20 DR. WALLIS: What two occasions? Those were the
21 only two occasions?

22 MR. WERT: Yes, sir. In this event, subsequent to
23 this event.

24 DR. WALLIS: So it tripped properly every time its
25 high level set point was reached.

1 MR. WERT: With the exception of the initial --

2 DR. WALLIS: The first one, it didn't.

3 MR. WERT: Yes, sir.

4 CHAIRMAN POWERS: Can you give me an idea of what
5 the flow rate is from the high pressure injection?

6 MR. WERT: The high pressure coolant injection
7 system is thousands of gallons per minute, as compared to
8 the reactor core isolation cooling, which is several
9 hundred.

10 Safety relief valves, while the safety relief
11 valves were passing water or a steam-water mixture, the
12 pressure in the discharge line did not get high enough to
13 actuate the pressure switch.

14 Our conversations with the GE and also the
15 Target-Rock personnel that were there at the time, they also
16 indicated that there some reliance on I'll call it impulse
17 loading of this pressure switch. So they contributed that
18 also to part of the effect of why the pressure switch did
19 not actuate.

20 Alternative open SRV indication, and that is
21 referring to the discharge line temperature recorder, was
22 available, was not used. We do know that in training, when
23 we looked at the training plan, that it is described in the
24 training plan, the use of this temperature recorder, as one
25 indication of SRV operation.

1 We'll talk about this during our discussion of
2 operator issues, but the gentleman that discussed the STA's
3 involvement in this event, I think that's where it properly
4 involves.

5 DR. WALLIS: Temperature would seem to be a more
6 direct indication, because pressure depends upon the flow
7 rate and how much is water and how much is steam and other
8 things like that.

9 MR. WERT: Yes, sir. I would point out that the
10 indications that are available on SRV indications vary from
11 plant to plant considerably. Some of the plants have
12 acoustic monitors. Some of these indications were
13 originally designed to detect SRV leakage passed. Back in
14 the early days, there was a lot of problems or a number of
15 problems with SRV leakage. So these indication systems are
16 set up differently from plant to plant. They vary
17 considerably.

18 Our understanding of a discussion about the
19 acoustic monitor, not to depart too much from the
20 discussion, was, with the vendor representatives, indicated
21 that they would have to, in fact, also be precisely adjusted
22 and set. In other words, the water might have affected even
23 those indications in this event, an acoustic indication.

24 Five of the pilot actuated Target-Rock SRV
25 assemblies were later satisfactorily set point tested. This

1 is the routine testing that's done at Wyle Laboratory.

2 In this case, of course, it was not a routine
3 test, but it's the same test that's done routinely.

4 One pilot valve assembly was inspected. It was
5 totally dismantled and inspected. The Wyle facility is
6 familiar with this. There is a corrosion bonding issue
7 that's still an issue with these Target-Rock SRVs. So
8 they're pretty familiar with what these cartridges, pilot
9 valve cartridges should look like when they disassemble
10 them.

11 We also had an NRC inspector there to watch
12 disassembly who has some familiarity also with these SRVs.
13 He is assigned to the Browns Ferry facility, which is
14 located within 20 minutes of this facility, so it was easy
15 for us to do.

16 There were no unexpected conditions found. There
17 were some indications that water level had, in fact, reached
18 the SRV elevation. You could tell this by the types of
19 contamination that were found in the valve.

20 Subsequent General Electric and Target-Rock
21 analysis supported operability of the safety relief valves,
22 the discharge lines and the components in those discharge
23 lines, and I'm referring there to the vacuum breakers that
24 are located in these discharge lines and also the pressure
25 switches that we had talked about before.

1 Those pressure switches serve as an indication to
2 the operator of pressure in the tailpipe for the valve
3 lifting, but they also are used to arm a system called
4 low-low set that exists at Hatch, and that system is
5 designed to minimize the forces on the Taurus if you have
6 repeated lifting of these SRVs. So that pressure switch is
7 important.

8 MR. MARSH: If I could add something at this
9 point. The agency was concerned that the initial parts of
10 this event and up until perhaps this point about the ability
11 of the SRVs to operate in this type of an environment and
12 what he over-pressure analysis and the transient analysis
13 remained intact, whether it would, in fact, represent what
14 the plant would respond.

15 In this analysis that we're discussing here showed
16 the staff that the transient analysis and the over-pressure
17 analysis was still valid, that the SRVs may have had a
18 different type of performance, but, in fact, over-pressure
19 was protected. So this is an important key point in how the
20 team was progressing through the inspection.

21 MR. WERT: I didn't go into the details there, but
22 the licensee and General Electric and Target-Rock supplied a
23 very conservative analysis with very conservative
24 assumptions on how much water could be in these steam lines
25 and how long it would delay the opening, actual operation of

1 the pilot valve, and then, in turn, the main seat, and then
2 relieve the function from the valve.

3 They used very conservative assumptions, like I
4 said before. They assumed that only one SRV would function
5 and the difference -- the ability to mitigate the pressure
6 increase was very significant. They could do it in a matter
7 of just over a minute as compared to requiring several
8 minutes before the pressure would become a problem.

9 The next equipment issue was reactor core
10 isolation cooling. As I said before, several of the
11 attempts to restart reactor core isolation cooling were not
12 successful, and this was not early in the event, but
13 subsequent developments during the event.

14 They let the head -- the procedure left the
15 reactor core isolation cooling steam emission valve fully
16 open and under some plant conditions, such as water in the
17 steam supply line, the turbine can over-speed if this
18 restart procedure is used.

19 It's not understood precisely why this occurs.
20 There's two different explanations. One involves steam
21 carry-over or water carry-over into the steam actually
22 through the turbine control system and another one is that
23 the water that's actually contained in the line flashes to
24 steam as it goes -- as it approaches the final part of the
25 turbine supply system.

1 In either case, it affects the operation of the
2 turbine control system and you are susceptible to over-speed
3 trips.

4 Additionally, the licensee's event review team
5 identified that the simulator training did not accurately
6 reflect the reactor core isolation cooling performance, and
7 what I mean by that is that this attempt could be -- this
8 procedure could be used successfully in the simulator.

9 It might not have been necessarily a simulator
10 modeling problem as much as just a training issue, where the
11 operators could, in fact, successfully use this repeatedly
12 in the simulator, but it wouldn't work in the plant.

13 MR. BARTON: Is it a training issue or is it a
14 simulator fidelity issue?

15 MR. WERT: It really depends, sir, on how the
16 facility decides to handle it. I think that the facility
17 has, in fact, changed the modeling of the simulator and
18 Lewis could probably tell us that or not. I know that
19 they've done some corrective actions, but I don't mean to
20 hedge my answer, but you could, in fact, just satisfy this
21 by having your simulator training personnel, in fact, insert
22 failures into the system. You don't necessarily have to
23 create the modeling to exactly perform this way.

24 I believe the senior resident inspector told me
25 that they have changed the modeling of the function of the

1 valve.

2 MR. SUMNER: The model has been changed and the
3 procedures have been changed and the training has been
4 changed.

5 MR. BARTON: Thank you.

6 MR. SUMNER: But there are still probably other
7 deeper issues than that as we look at the RCIC performance.

8 MR. BARTON: Thank you.

9 MR. WERT: And our final bullet up there, licensee
10 promptly revised these reactor core isolation cooling
11 procedures, and they did that prior to restart of the unit.

12 There is some operating experience data available
13 on this phenomenon, I call it on stream-driven turbines, but
14 they largely are constrained to auxiliary feedwater systems
15 in PWRs and they involve long runs of piping. A little bit
16 different than the arrangement at Hatch.

17 High pressure coolant injection, the high reactor
18 water level most likely resulted from the high pressure
19 coolant injection system not tripping immediately when the
20 high level set point was reached. Additional factors
21 contributed to the high water level and what I'm referring
22 to there is that just essentially the swell of the reactor,
23 of this inventory of water that is inserted at 90 to 100
24 degrees, then heating up inside the vessel due to decay heat
25 is significant.

1 Then, also, in this event, both feedwater pumps
2 were operating and early in the transient, one of the
3 operators placed the master feedwater level control switch
4 into manual and due to some complexities in the way the
5 controller works, this resulted in the feedwater system
6 operating at a very high capacity.

7 MR. BARTON: Was this by procedure? Are operators
8 allowed to take automatic functions out and go to manual?
9 Was that allowed by procedure or is that something that was
10 done in violation of a procedure?

11 MR. WERT: It is permitted by procedure and we'll
12 talk about that a little bit later. The licensee has
13 initiated some actions to review that.

14 But I just wanted to point out that that's one of
15 the factors in the high level, that it makes it difficult to
16 ascertain exactly why the level got that high.

17 DR. WALLIS: You spoke about time, you said not
18 immediately. What sort of times are we talking about here
19 from when it should have tripped and how long it stayed not
20 tripped and how long the level was rising after it should
21 have not -- what sort of times are we talking about?

22 MR. WERT: Our review of the data indicated at
23 just over a minute, 67 seconds, that the system operated, it
24 continued to inject after it reached high level --

25 DR. WALLIS: After it should have tripped.

1 MR. WERT: Yes, sir.

2 MR. MARSH: The feed pumps had tripped by that
3 point, you had RCIC by that point.

4 MR. WERT: The feedwater pumps and the reactor
5 core isolation coolant system had both tripped as expected
6 at their trip set points.

7 The operator should have manually tripped high
8 pressure coolant injection when it was indicated that the
9 system did not automatically trip. The licensee did not
10 conclusively determine why high pressure coolant injection
11 system did not immediately trip during the initial
12 operation.

13 Subsequent extensive testing supported the
14 operability of the trip function. I don't want to go into
15 the whole logic path here. There's essentially several
16 contacts in series. There's two sets of Agastat relays in
17 series that initiate the trip. Both of those were sealed
18 functions; in other words, the Agastat relay was inside a
19 sealed case. It's not commonly a type that you see have
20 problems due to intrusion from material.

21 MR. BARTON: I take it the licensee has never been
22 able to repeat this failed switch since the event.

23 MR. WERT: We could not. The licensee or our
24 efforts could not conclusively identify exactly why it did
25 not trip initially, and that's why I was making the point

1 that it tripped twice subsequently successfully. We think
2 that affects the ability to troubleshoot the problem.

3 Then after the two contacts, it goes to an HGA
4 relay, in turn. Now, one thing that also contributes to
5 this is not all these contacts and relays are monitored in
6 the licensee's data gathering system. So it was difficult
7 to just point out a certain relay and detect exactly how far
8 the signal got through the process. That varies from plant
9 to plant.

10 The feedwater valve control switch is our next
11 area of discussion. Southern Nuclear determined that a
12 GE-type CR-2940 control switch failure caused the feedwater
13 heater valve to close unexpectedly and the way they
14 discovered this was after the scram had occurred, operations
15 noted that the feedwater heater temperatures were diversion.
16 They had noted indications on their feedwater temperatures
17 that they were not expecting.

18 They investigated that. They found on the local
19 control switch in the turbine building the fifth stage
20 feedwater heater inlet valve on the Bravo side had closed,
21 and that was subsequently traced to the switch.

22 The licensee did quarantine the panel. They did
23 extensively try to determine what could have happened with
24 the switch. For example, they did a lot of work in the area
25 of security access records to that area and tried to

1 determine if someone had, in fact, entered that area or had
2 been carrying material, for example, through that area or
3 had bumped the switch or bumped the panel, and they did not
4 conclusively come up with an explanation of that.

5 MR. BARTON: Where is this switch located?

6 MR. WERT: The switch is actually located on a
7 local control panel in the turbine building. It's on the
8 middle floor of the turbine building. It's not in a
9 particularly narrow passageway and it does not protrude into
10 the passageway past other components on the same panel.

11 There was a General Electric service information
12 letter, commonly called a SIL, 217, which was issued in
13 1977, that states that the switch contacts for these
14 switches may close prematurely from slight movement of the
15 selector switch and the service information letter
16 recommended that the switches be replaced with a less
17 sensitive model.

18 This failure that we're referring to in the switch
19 does not involve the contacts in the interior of the switch.
20 It involves the cam mechanism on the hand switch operator
21 itself. It's a plastic molded component.

22 There is an improved model that was subsequently
23 developed that has a small notch in this plastic rotating
24 assembly that engages the protruding operation of the
25 contactor, the portion of the switch that actually works the

1 contacts.

2 So when we say a switch failure, that's what we're
3 referring to, simply the very slight movement, a very slight
4 agitation, maybe even a vibration in the area would cause --
5 could cause the switch to operate.

6 Two of the switches had failed at Hatch in 1996.
7 They were both in non-safety-related applications, and after
8 this event, this particular event, the licensee developed a
9 list of all the affected switches, including the
10 safety-related applications, and they made a prioritization
11 list and replaced some of them. We were satisfied that they
12 had addressed the important located switches prior to plant
13 startup.

14 MR. BARTON: This recent startup.

15 MR. WERT: Yes, sir.

16 DR. WALLIS: How did they prioritize it? Did they
17 use some sort of risk information and select the ones that
18 they ought to fix?

19 MR. WERT: They looked a lot at safety-related
20 applications, and Mr. Sumner could probably address exactly
21 how they prioritized it, but they also did use risk because
22 they looked at what could cause a transient, which failure
23 could result in a transient.

24 So I'm not sure that they used risk explicitly,
25 but at least that was part of their factor.

1 MR. BARTON: This switch could cause a transient.

2 MR. WERT: Yes, sir. Main steam line
3 instrumentation, another consequence of this event is that
4 there were some problems with a few pressure transmitters
5 connected to the main steam line. The licensee assessed the
6 potential effects of the transient, such as localized
7 flashing or water hammer on the instrumentation connected to
8 the main steam line.

9 Obviously, there's, I think, over 40 pressure
10 transmitters connected to these steam lines and the
11 licensee's testing identified that four pressure
12 transmitters were affected by the transient. Two were
13 significantly damaged. Their on two assembly portion of the
14 pressure transmitter was, in fact, physically deformed.

15 Two other pressure transmitters were involved in a
16 failure of reactor core isolation cooling to automatically
17 isolate during the subsequent plant cool-down, and that was
18 the subject of a separate 50.72 notification.

19 DR. WALLIS: Were these water hammer events that
20 damaged the transmitters?

21 MR. WERT: We believe it could be characterized as
22 a water hammer event, localized flashing of the water.

23 DR. WALLIS: Flashing is not as dramatically -- it
24 doesn't produce high pressures like water hammer. Flashing
25 may lead to water hammer later on, but it's usually the

1 hammer that produces the high pressure that damages
2 something.

3 MR. WERT: Right. I think we were stating that
4 there was no large water hammer event occurring over the
5 whole entire steam line.

6 DR. UHRIG: At what point did this occur
7 time-wise, this damage?

8 MR. WERT: I don't think it's well known exactly
9 when this damage to these pressure transmitters occurred.
10 I'm not sure.

11 The affected transmitters were replaced prior to
12 startup and the licensee did some extensive actions, as
13 reviewing the application of the pressure transmitters,
14 whether they were suited for the purpose that they should
15 accomplish and there was no necessary corrective actions
16 found in that area. In other words, they replaced the
17 switches, the pressure transmitters with a like component.

18 CHAIRMAN POWERS: Significantly damaged is often
19 in the eye of the beholder. Can you give us a good feeling
20 for what you mean by significantly damaged in this case?

21 DR. WALLIS: They didn't work?

22 MR. WERT: I was referring to the two that were
23 significantly damaged, I was referring to their Bordun
24 assembly had been physically deformed, but, in fact, I would
25 say that we said that four pressure transmitters were

1 affected and by that, I mean that they were -- when tested,
2 they failed calibration and they could not be placed back
3 into calibration.

4 MR. MARSH: The team was convinced, I guess, and
5 I'm asking the licensee, as well, through you, that these
6 transmitters were damaged in this event. There wasn't any
7 question about them being inoperable prior to this event?

8 MR. WERT: I'm not aware of any question at all
9 prior to the event.

10 MR. SUMNER: Let me comment on that. It's our
11 belief that of the transmitters that we're talking about,
12 that the transmitters on RCIC, one clarification is that
13 these transmitters isolate RCIC on low pressure, less than
14 50 pounds. So we're talking about a low pressure isolation
15 of the steam supply to RCIC.

16 Now, what you also need to understand is only one
17 RCIC line valve failed to isolate. The other one isolated
18 properly, like it's supposed to, just like the plant design
19 would call for. You have an in-board and an out-board
20 valve. Only one valve failed to close because of the damage
21 that Len referred to on the transmitters.

22 And I think Len has characterized it correctly.
23 When you pulled these transmitters out, they would not
24 calibrate. They would not reach the procedural tolerances
25 for putting them back in.

1 Where they physically failed, we could see the
2 Bordun-2s were physically deformed to the point where the
3 transmitter would not respond properly. Was there any
4 mechanical damage outside of that? No, there wasn't.

5 We do believe that on the attempts to run RCIC,
6 that the water in the RCIC supply line, and, as Len referred
7 to earlier, as you tried to start it up, there probably was
8 some localized flashing as the pressure was rapidly relieved
9 as the turbine stop valve came open.

10 And it could have happened then or when the stop
11 valve went shut, when it over-speed tripped. So in any of
12 those operations there, if there is a water hammer or
13 flashing, that's when we postulate when the damage to the
14 transmitters occurred.

15 MR. WERT: Thanks, Lewis. The next area of
16 discussion involved the performance of the licensed
17 operators, and we touched upon that several times.

18 The event occurred during a shift change or a
19 shift turnover. The shift supervisors had already turned
20 over, but the reactor operators were in the process of
21 changing over, and the senior reactor operator was outside
22 the, quote, at the controls area when the event initiated.

23 And at Hatch, the turnover process involves
24 largely -- it's done somewhat sequentially. The senior
25 reactor operators turnover, I'll say, independent of the

1 reactor operators, and they usually turn over well ahead of
2 the reactor operators.

3 The oncoming watch, if you would, assumes their
4 duties and then they, in turn, brief the reactor operators
5 as a combined crew and then they go in and the reactor
6 operators officially take over the duties from the actual
7 on-watch reactor operators.

8 When this event occurred, the oncoming senior
9 reactor operator or unit supervisor would then, in turn, go
10 into the -- went into the control room with the on-watch
11 reactor operators, just after the event had initiated.

12 And when I say he was not at the control areas, we
13 mean he was in a room just adjacent to the controls area,
14 just a few steps, but that is somewhat important in an event
15 like this.

16 MR. BARTON: But the operators that were on the
17 control board were the operators that were on-shift. They
18 had not been relieved.

19 MR. WERT: That's correct, sir.

20 MR. BARTON: Okay.

21 MR. WERT: The reactors did not properly monitor
22 reactor vessel water level and injection system operations,
23 and we've talked about that previously. The tripping of the
24 high pressure coolant injection system. And as a team, one
25 of our team members was actually a senior reactor operator

1 at a boiling water reactor for several years and we reviewed
2 this aspect critically from the perspective of is it a
3 realistic expectation at the time with the events that were
4 occurring in the control room that they should have detected
5 the fact that the high pressure coolant injection system had
6 not tripped off and also the main steam isolation valve
7 isolation was somewhat delayed.

8 In both of those decisions, our subjective
9 conclusion was that they should have recognized it. We did
10 not see that there was a large number of events going on.
11 Obviously, our resident inspector was in the control room
12 shortly after this event, but we didn't actually observe the
13 actual sequence at this point.

14 MR. BARTON: Let me ask you a question. At the
15 time of the transient, you said that the control room
16 operators had not been relieved, but yet in the AIT, so
17 there was shift turnover still going on outside in an office
18 or something outside at the controls area.

19 The AIT report talked about an excessive number of
20 people at the control area and the control room. Now, how
21 did that happen?

22 MR. WERT: What we're referring to there, sir, was
23 that essentially you have almost two crews there. You had
24 the oncoming crew and the off-going crew in the control
25 area.

1 Now, all these people were not in the at the
2 controls area. They were immediately adjacent to the at the
3 controls area at a back panel held out at a desk, I would
4 say, 20 to 30 feet away, but they were not right in the at
5 the controls area.

6 However, there was a larger number of people in
7 the at the controls area itself proper than there normally
8 would be on an event like this.

9 Does that answer your question?

10 MR. BARTON: Partially. Where did these extra
11 people come from?

12 MR. WERT: Some of them were the oncoming crew.

13 MR. BARTON: So there was a mix of oncoming crew
14 and the crew that was still on watch.

15 MR. WERT: Yes, sir. Also, in addition, there are
16 several operations supervisory personnel that participate in
17 turnovers that were also present at the time and I think
18 maybe not at this point in the event, but shortly
19 thereafter, also some management personnel were also in the
20 control room; again, not in the at the controls area, but
21 immediately adjacent to it.

22 And one of those individuals, of course, would
23 also be our resident inspector.

24 The next bullet, the shift technical assistant did
25 not provide timely assistance to the operators, when

1 unexpected SRV indications were observed and as commented by
2 one of the gentlemen earlier, we considered that to be a
3 problem.

4 Training sessions had described the availability
5 of the tailpipe temperature as an indication of SRV
6 performance and we're not expecting that the operator
7 necessarily would turn the switch and then run around to the
8 back panel, but with all the people that were available and
9 certainly the shift technical assistant.

10 MR. BARTON: Does the STA at Hatch have collateral
11 duties or is he full-time STA?

12 MR. WERT: He is a full-time STA, at least --
13 well, Mr. Lewis will correct me if I'm wrong. I'm speaking
14 from my knowledge of about five years ago when I was the
15 senior resident there. He was a full-time STA. He does
16 have other duties that he performs on watch.

17 MR. BARTON: But during a transient, what is his
18 role?

19 MR. WERT: During a transient, his role is the
20 classical shift technical assistant role, assist the
21 operators and particularly analysis of indications, but
22 largely constrained to reactivity and inventory issues.

23 Is that how you would characterize it, Lewis?

24 CHAIRMAN POWERS: I have to admit I'm a little
25 confused about who was where when. Do we happen to have a

1 diagram that could show us who was where?

2 MR. WERT: I don't have one.

3 CHAIRMAN POWERS: Maybe at some time we can.

4 MR. WERT: Yes, sir. I can draw one shortly after
5 this discussion.

6 CHAIRMAN POWERS: Sometime later.

7 MR. BARTON: Lew, do you want to address the STA
8 issue?

9 MR. SUMNER: Yes. The collateral duties that Len
10 was referring to is that during normal power operations, the
11 STA does the classical shift technical advisor
12 responsibilities, as well as he has primary responsibility
13 for reactivity monitoring of the reactor core, core
14 management.

15 In an event, in a transient, he is the classical
16 shift technical advisor, where he has no other collateral
17 duties than to assist the crew and analyzing the indications
18 that they are seeing when the event is transpiring.

19 MR. BARTON: So in this event, he failed to
20 fulfill his STA role or, in your opinion, failed to give
21 advice to the operating crew? In other words, could the STA
22 have helped the operators in helping to identify whether the
23 SRVs were operating or not and why didn't he do it?

24 MR. SUMNER: I would say that I would like to
25 clarify that during an event like this, the STA is looking

1 at a lot of parameters, not just the operation of the safety
2 relief valves.

3 MR. BARTON: I understand that. That would be one
4 of the things -- if the operators are trying to operate SRVs
5 and they're not sure whether they're operating or not in
6 some -- either the SRO or the STA or somebody should be able
7 to see that the operators are having difficulty and provide
8 some advice, guidance, assistance, how about looking at
9 backup indications, et cetera, et cetera.

10 MR. SUMNER: It is reasonable to expect an STA,
11 when he sees that the operator is not getting the expected
12 indication, that he could go around to the back panel
13 recorder and try to, from an engineering point of view,
14 determine that the indications that he is seeing do indicate
15 that the SRVs are operating and he could come back and
16 provide that advice to the operators to continue what you're
17 doing, the valves are operating, but you're not seeing the
18 right indications.

19 Yes, that is a reasonable expectation. I'm not
20 going to say he failed in his duties, because he had a lot
21 of duties to do, but he could have assisted the crew more
22 than he did in this particular activity.

23 MR. BARTON: Do you also have a management
24 expectation at shift turnover, if the plant goes into a
25 transient, how the transient is handled with respect to who

1 takes control, who backs up and doesn't get involved? Is
2 that a management expectation written down at the station?

3 MR. SUMNER: Well, the management -- what you have
4 to -- the picture you have to understand is that during the
5 turnover that Len is referring to, the entire crew that is
6 oncoming, as well as some members of the off-going crew, are
7 turning over in an adjacent room to the control room, to
8 minimize the distractions that occur as you're doing a shift
9 turnover, because there is a lot of discussion about what
10 occurred over the last shift, what is to be done in this
11 shift, are there any conditions that need to have special
12 attention paid to them.

13 At that point in time, in the at the controls
14 area, the operators are monitoring the operation of the
15 plant. Should an event occur, as in this case here, then
16 the supervision comes out to take control of the shift and
17 the expectation would be that the operators who are at the
18 controls at that time would assume responsibility for
19 management of the transient.

20 In this event here, out of, I think, concern to
21 help out other operators, we had some of the oncoming
22 operators also assist in performing activities that you
23 normally do to manage a transient.

24 That's not the way we train, and certainly we have
25 changed our management policy to require that operators now

1 have to ask permission to become involved in the management
2 of the event. It has to get direct supervisor permission to
3 assist in the event.

4 MR. BARTON: And this is a change you've made
5 since this event.

6 MR. SUMNER: Yes, sir.

7 MR. BARTON: Yes, sir.

8 MR. WERT: Next page. As referred to earlier, the
9 operator took manual control of the feedwater flow
10 controller and this affected the controller's response to
11 the feedwater transient. I think it's pretty much
12 understood that the industry has made some advances over the
13 recent years in controllers on these systems.

14 This is, in recent years, an upgrade. This is a
15 complex digital control system, very I'll call it smart
16 logic, looks for failures, looks for differences in their
17 inputs and automatically drops out default inputs, that type
18 of thing, and the operator took manual control of this.

19 It's not against his procedures to do that, but
20 the licensee is reviewing that policy and looking at that
21 closely. Certainly, an operator would be expected to take
22 manual control of an automatic system if he understood what
23 was happening that was incorrect with that system.

24 In this case, it's not clear that what exactly had
25 happened was understood at the time when he took manual

1 control.

2 MR. BARTON: Is this because maybe the operator
3 didn't have a lot of confidence or familiarity with this
4 system?

5 How long was this system installed in the plant,
6 digital feedwater control?

7 MR. WERT: It had been installed for several
8 years.

9 Lewis, I guess, could again help with that.

10 I think -- I would characterize it for at least
11 four years.

12 MR. BARTON: Okay.

13 MR. WERT: So, I don't think it was a confidence
14 in a new system issue.

15 MR. BARTON: Okay.

16 MR. WERT: Reactor core isolation coolant restart
17 guidance and simulator training were not adequate for the
18 conditions of the event, and we talked about that earlier,
19 and the licensee has initiated comprehensive corrective
20 actions in that area.

21 I mean, as my next bullet implies, the licensee
22 promptly completed several corrective actions, including a
23 revision to the turnover process, and Lewis describe some of
24 that.

25 For example, they have revised their procedures so

1 a senior reactor operator is in the control room.

2 The licensee has also initiated broader corrective
3 actions to address operations performance issues, and for
4 example, one of those is the operation of manual and
5 automatic controllers. I think they're looking at that
6 across the board.

7 We noted that, during this event, there were a few
8 other issues that came up with these automatic controllers.
9 The HPCI flow controller was actually taken automatic at one
10 portion during the event, or placed into manual, instead of
11 left in automatic and dialing back the flow set-point, for
12 example.

13 So, it's an area that the licensee is reviewing.

14 Health and safety assessment -- we discussed that
15 there was no adverse effect on public health and safety as a
16 result of this event, was no radiological release, and no
17 approach to operational safety limits.

18 The safety-related systems remained operable,
19 although there were some problems with the important plant
20 equipment, were experienced, and that's like we described
21 with the reactor core isolation coolant system.

22 NRC actions -- Region II dispatched inspectors to
23 the site and initiated -- initially we initiated a special
24 team inspection on January 26th. An augmented inspection
25 team was dispatched to the site January 30th to February

1 4th, and the exit was attended by several members of the
2 public that we had on February 4th.

3 The NRC staff contacted the BWR owners group,
4 discussed the event with INPO during its weekly call, and
5 also, there was a response by telephone to an informal Union
6 of Concerned Scientists inquiry on this event.

7 Region II continues to monitor the licensee's
8 implementation of corrective actions through out baseline
9 inspection activities, essentially the resident inspectors.

10 On May 17th of this year, the licensee is going to
11 come in and discuss corrective actions with Region II
12 management in a meeting, and we suspect that there will be a
13 lot of discussion of broader corrective actions in some of
14 these areas that we talked about earlier.

15 Next slide.

16 The augmented inspection team was tasked in the
17 charter to identify candidate generic issues, and we did
18 identify what we considered to be some potential generic
19 issues, and we initiated an information notice, and this
20 information notice was issued on February 11th highlighting
21 three issues.

22 We talked about the fact that SRV operation is
23 slowed, and the indication, depending on tailpipe pressure,
24 is affected when the valve was passing water instead of
25 steam. We talked about that earlier.

1 It's just information to all the licensees. All
2 the licensees' different indicating systems would depend on
3 what they necessarily would do with this data.

4 Procedural guidance for MSIV closure and
5 set-points for the high-level trips of injection systems may
6 not prevent complications due to water collecting in the
7 main steam lines, and we're referring to there that we had
8 noted that there was several -- there have been several
9 reactor vessel over-fill events in previous years at BWRs.

10 In one event, the operators, in fact, did not
11 close the MSIVs, and our review has indicated that the
12 guidance on closure of the main steam isolation valves is
13 somewhat inconsistent between the facilities.

14 At Plant Hatch, it's a note in the emergency
15 operating procedures.

16 We know that, at another Region II facility, it's
17 in a procedure, not in the emergency operating procedures,
18 and at another facility in Region II, we know that -- our
19 review indicates that the operators are trained to shut the
20 MSIVs, but there is no explicit procedure set up to do that.

21 CHAIRMAN POWERS: I think this is the really
22 generic conclusion here; this is the really important one,
23 to my mind.

24 MR. WERT: And the last issue we -- again, in the
25 information notice, we wanted to highlight the reactor core

1 isolation coolant performance issue.

2 Next slide.

3 And my last slide is that we have initiated a
4 memorandum on April 14th from my Division Director to the
5 Events Assessment Branch Chief here in NRR requesting review
6 of two issues, and we anticipate that this will probably
7 involve interaction with the BWR owners groups and maybe
8 General Electric, as appropriate.

9 The two principle questions: To what degree
10 should water be allowed to enter the main steam lines at
11 boiling water reactors, and should -- I'm referring to it
12 loosely -- universal guidance be developed for BWRs, with
13 specific criteria directing when the MSIV should be closed?

14 You know, for example, in this event, if you get
15 all your major injection systems -- high-pressure coolant
16 injection and reactor core isolation cooling systems and
17 feedwater systems tripped off and you know that you're not
18 injecting and the water level is just slightly increasing,
19 do you want to shut the MSIVs, for example? That's one of
20 the questions.

21 DR. WALLIS: Where is the water going? There's a
22 turbine somewhere downstream, isn't there?

23 MR. WERT: Yes, sir, there is a turbine, and
24 there's some other, I think, considerations also on analysis
25 of the steam lines, as far as whether they can handle the

1 weight and forces of the water, and we have noted that
2 that's dependent on the plant, it varies from plant to
3 plant.

4 And the other question was the significance and
5 the specific impact of the water and the main steam lines
6 relative to considerations in the design and licensing
7 basis, and one of the major factors that we're looking at
8 there is the instrumentation, the potential instrumentation
9 effects.

10 If you get water in the steam lines, then you
11 affect the instrumentation attached to those steam lines.
12 That could complicate events.

13 We also know that there is variations, for
14 example, in set points and the level trip systems of the
15 injection systems between the different BWRs.

16 We know the high-pressure coolant injection system
17 at one facility is actually a one-out-of-two logic used
18 twice type of thing on the high-level trip, which kind of
19 sounds surprising on an injection system, but that's the way
20 it is.

21 So, there are some differences out there that need
22 to be looked at.

23 Our team could not conclusively determine if the
24 design basis for the set point on the injection systems --
25 whether it was based on simultaneous operation of different

1 injection systems or whether it just assumed that one
2 injection system was running at a time, for example. We
3 didn't get that far.

4 That's all I have for my presentation.

5 MR. MARSH: The next part of the presentation is
6 Vern Hodge is going to discuss the NRR safety assessment.

7 MR. HODGE: Thank you, Tad.

8 I am from the Events Assessment Branch in NRR. We
9 were assisted in evaluating the risk of this event by the
10 Probabilistic Safety Assessment Branch, and Mr. Dan O'Neal
11 is in the room to assist in the discussion.

12 The dominant sequences -- first of all, we used
13 the risk model for the Hatch plant and applied it to this
14 event by making some assumptions, found that the dominant
15 sequences included losing the condenser as a heat sink,
16 failing to provide adequate high-pressure coolant makeup,
17 and failing to de-pressurize the reactor to allow
18 low-pressure makeup.

19 We're not saying these things happened in the
20 event but that the risk is evaluated considering the
21 probabilities of these events.

22 The probability for losing the heat sink, the
23 condenser as a heat sink, is modeled by taking little credit
24 for recovering the power conversion system in relatively
25 short recovery times.

1 DR. WALLIS: If you close the steam line, how does
2 the condenser act as a heat sink?

3 MR. HODGE: It doesn't.

4 DR. WALLIS: So, you have lost it.

5 MR. BARTON: You take away your heat sink, there's
6 no question of probability; you've actually lost it.

7 MR. HODGE: Yes. We're talking about the
8 probability of recovery.

9 MR. FARRUK: Anees Farruk from Southern Nuclear.
10 You are right, you could recover the secondary
11 side by opening MSIVs.

12 MR. HODGE: Concerning the HPCI and RCIC systems,
13 we did not change the failure probabilities for those, but
14 consider that conditional probability for HPCI failure, the
15 recovery is assumed to be in the plant, not in the control
16 room.

17 This was in an effort to model the event that HPCI
18 did not trip at the high-level set-point but tripped later,
19 and the idea here was to assume that the probability would
20 be increased by considering the field recovery rather than
21 the control room recovery, assumed to be easier, and if the
22 HPCI and RCIC system were to fail simultaneously, we did not
23 consider the water coming into the reactor from the control
24 rod drive pumps.

25 To account for the AIT finding that the control

1 room was crowded, we increased the probability for operator
2 failure slightly.

3 DR. WALLIS: How do you decide how to do that? I
4 mean "slightly" doesn't sound very much. Someone makes a
5 judgement? Does this have any effect anyway? Does this
6 probability make much difference to the conclusion?

7 MR. HODGE: I'd like to ask Dan to consider that
8 question.

9 MR. O'NEAL: This is Dan O'Neal.

10 There is a HRA work-sheet, a human reliability
11 work-sheet that's used for these -- modeling these types of
12 events, and due to the general confusion and the operator
13 not being aware of their areas of responsibility, we modeled
14 that as a work process -- a poor work process, where if
15 operator is needed to emergency de-pressurize the reactor,
16 there could be possible delays, and so, we increased the
17 probability of failing to de-pressurize a reactor slightly
18 due to the general confusion and lack of awareness of areas
19 of responsibility.

20 DR. WALLIS: Well, "slightly" sounds as if it's a
21 very small thing. How do you decide the probability of
22 failure?

23 MR. O'NEAL: We use the HRA work-sheet, which
24 considers --

25 DR. WALLIS: Gives you sort of a formula that you

1 apply?

2 MR. O'NEAL: Yes. There's basically a process you
3 follow, and we determined that we could increase the
4 probability of failing to de-pressurize by a factor of two.
5 The probability is normally low, and increasing by a factor
6 of two, it still remains low.

7 MR. FARRUK: This Anees Farruk again from Southern
8 Nuclear.

9 The way we considered that was basically, when we
10 do the HRA, we take a look at all the -- you know, the
11 factors which could influence an operator's action, like --
12 you're talking about stress training, you know, the
13 pre-conditions, post-conditions.

14 So, all these things are originally looked into
15 the PRA, you know, as part of the HRA.

16 So, it's nothing new that you go through this.
17 That's the way we look at it, you know.

18 The only time we will change anything that is in
19 the PRA in terms of operator actions is if there is
20 additional events which caused some of the systems to be
21 degraded. Then you would use a different operator action.

22 MR. HODGE: So, factoring in these assumptions,
23 the calculated conditional core damage probability is 1.6
24 times 10 to the minus 5.

25 We are considering this event as a significant

1 event because of several complicating factors: water
2 filling the main steam lines to the main steam isolation
3 valves, also the condenser heat sink on manual closure of
4 the main steam isolation valves, inadequate indication of
5 safety operation, faulty operation of two steam-driven
6 injection systems, unclear lines of responsibility in the
7 control room, and excessive sensitivity to mechanical motion
8 of the feedwater control switch.

9 CHAIRMAN POWERS: Let me ask a question about this
10 "unclear lines of responsibility in the control room." What
11 precisely leads you to that concern?

12 MR. HODGE: We're depending on the AIT report.

13 CHAIRMAN POWERS: Right. I understand. I'm just
14 asking you to remind, out of the AIT report, what leads you
15 to say the words "unclear lines of responsibility."

16 MR. HODGE: We're just thinking about the large
17 number of people at the controls area and the time of the
18 turnover as general considerations.

19 DR. WALLIS: How about testimony from the people
20 there?

21 I mean if someone had actually said one reason I
22 was confused was that my supervisor was not here because he
23 hadn't yet taken over or something and therefore I was
24 confused -- did you get testimony from individuals that
25 there was reason to believe there were unclear lines of

1 responsibility?

2 MR. WERT: I can address some of that.

3 First, I don't think there was any operator at the
4 time that was confused. I don't think we'd use that term.

5 DR. WALLIS: Was unclear about lines of
6 responsibility.

7 MR. WERT: Right. It connotes a different
8 understanding.

9 I think what we're referring to there -- and I'll
10 give you an example of some interviews that we had with some
11 of the operators that will help bolster this, but what we're
12 referring to there is normally, as Lewis said earlier, the
13 on-shift crew, the dedicated crew, if the event had
14 occurred, there's specific responsibilities on who's
15 observing and who's watching and monitoring operator of
16 injection systems, and in this case, there was some
17 indications that some of the oncoming crew got involved with
18 those operations, and it was an assumption on some -- the
19 different members crew -- of the crew that another member
20 was doing something when, in fact, they may not have been,
21 and where that would have been -- I guess one of the
22 indications of that -- when we initially interviewed the
23 senior reactor operator, initially, before the licensee had
24 time to have a detailed session in the simulator where they
25 went over what they thought had happened during the event

1 with the operating crew and discussed the failure of HPCI to
2 trip and some of these other events that had occurred, the
3 operator had indicated to myself and another team member
4 that he thought they did a fairly good job of handling the
5 event, and after his review in the simulator session, he
6 indicated to us that he had not realized some of the things
7 that had occurred during the event.

8 Now, I still think they adequately controlled the
9 event, but he didn't understand some of the things that had
10 occurred.

11 Now, we would expect a little bit of that to occur
12 just because of how many activities are occurring at the
13 time, but that would -- does that help give an indication of
14 what we're talking about?

15 DR. WALLIS: That was a different subject from
16 unclear lines of responsibility.

17 MR. WERT: Right.

18 DR. WALLIS: The fact that he thought things were
19 fine and they weren't quite so fine -- that really has
20 nothing to do with lines of responsibility.

21 MR. WERT: I was just trying to couple it to an
22 actual --

23 DR. WALLIS: Line of responsibility -- it's almost
24 conjecture that this might have been why someone didn't
25 quite realize what was happening as much as he might have

1 done, or it really is traceable to a line of responsibility?

2 MR. WERT: In answer to your question, sir, I
3 don't remember an exact circumstance in which an operator
4 said I assumed that someone else did that. I think you're
5 correct.

6 CHAIRMAN POWERS: It seems to me that the line is
7 just misstated. I think you've got a human operational
8 environment issue here, but I'm not sure that it's unclear
9 lines of responsibility. I think it has to do with
10 distraction and things like that.

11 You may have -- and it sounds to me like the
12 corrective action that the licensee has taken to work on his
13 shift change-over rule is appropriate responsibility. He's
14 not changing his lines of responsibility.

15 MR. BARTON: Do you want to address that?

16 MR. LEWIS: Well, let me give you an example, I
17 think, as what Len is probably trying to refer to.

18 When you train with the minimum crew members and
19 you assign crew members -- one crew member has
20 responsibility for reactor water level control and all the
21 systems that control that.

22 When you have more than the minimum number of
23 people, then you have enough people to run HPCI by itself,
24 to run RCIC by itself, and to run the reactor feed pumps by
25 themselves.

1 So, there can exist in a situation when you have
2 more people than your normal minimum crew -- when he's
3 talking about we have unclear lines of responsibility, what
4 you're really saying is that probably no one operator in and
5 of himself has assumed responsibility for reactor water
6 level control.

7 There are enough operators that one is controlling
8 RCIC, one is controlling HPCI, and one is controlling the
9 reactor feed pumps.

10 As far as was there any question about who was in
11 charge and who was directing who, there was no confusion on
12 that point.

13 MR. BARTON: Now I understand better. Thank you.

14 MR. HODGE: That's all our presentation.

15 MR. MARSH: I have a couple comments, if I can,
16 please.

17 Speaking from the generic standpoint, we clearly
18 have some work to do to look at this event and the
19 ramifications of it, the recommendations of the AIT.

20 I want to point to a couple of things that have
21 taken place in terms of the agency's communication to the
22 industry about this event.

23 We issued an information notice early which
24 contained the AIT's preliminary findings and the concerns
25 that were expressed at the exit.

1 We have had discussions with INPO in terms of
2 their actions, and we are aware that they're working on an
3 SOER, which is one of their highest levels of
4 communications.

5 We also have been in a discussion with the BWR
6 owners group, and we are not yet far enough along to know
7 exactly what's happening there.

8 There were some preliminary plans on their part to
9 communicate with the industry early. We need to follow that
10 up to find out where we are in terms of those
11 communications.

12 Internally, we need to take the recommendations
13 from the team and assess them against licensing bases
14 issues, need to answer the questions about the design bases
15 for the trip set-points, whether in fact it includes
16 simultaneous operations of the feed pumps, the RCIC pumps,
17 and the HPCI pumps, as well as answering the team's concerns
18 about the design for the logic itself, the timing that's
19 there, and to answer the question about the MSIVs and the
20 variation around the industry for how those pieces of
21 equipment are operated, and we look to help from the owners
22 groups for some of those questions that may be best served
23 to ask those types of questions in the industry.

24 To put this event in another kind of a context,
25 this was an AIT, and we don't have many AITs, okay? In the

1 last 18 months, we have had three AITs, and so, that gives
2 you some sense of the significance of the event.

3 MR. BARTON: I think between that and INPO's
4 anticipating an SOR kind of gives us a feel for the
5 significance of the event.

6 MR. MARSH: Right. I think so, too.

7 We also looked at this in the context of the new
8 oversight process. What does this event tell us in terms of
9 the veracity of the oversight process? Would we have seen
10 this, reacted the same way?

11 We used -- in responding to this event, we used
12 the Management Directive 8.3, the new Management Directive
13 8.3, which is a risk-informed process, in order to come to
14 the decision to man an AIT.

15 We also asked ourselves whether the work processes
16 that are involved for determining risk that the resident
17 uses and in terms of inspection followup are consistent with
18 the new oversight process, and they largely were.

19 In other words, the new oversight process mates
20 with how we reacted in this event, and that was reassuring.

21 I guess the message that we want to leave with you
22 is there is certainly work to do, follow-on work coming from
23 this event.

24 We think the team did an outstanding job in
25 looking into this event and the underlying causes, and we

1 look forward to more interactions with the licensee in terms
2 of follow-on actions.

3 MR. BARTON: Thank you, Thad.

4 At this point --

5 DR. WALLIS: I think the thing that struck me most
6 when you were going through the whole technical description
7 was your points about water in the main steam lines. I mean
8 you have this question about to what extent should water be
9 allowed to enter the main steam line and what's the
10 significance of having water in there.

11 I would think this is something that must have
12 been surely considered long ago. I mean it's an obvious
13 possibility that the water level could rise and water could
14 get into the steam line and what are the consequences. That
15 must have been surely addressed by the designers of these
16 systems.

17 I'm surprised that the question is still being
18 raised now as if no one knows what the consequences might be
19 of having water in the main steam line.

20 MR. MARSH: That's certainly a part of our
21 follow-up action to find out to what extent this scenario
22 was postulated, when and how.

23 My recollection is that it was -- some of these
24 trip functions were added later, that this was not part of
25 the original design, some of these high-level trip

1 functions, because of this possibility.

2 A dead weight load has been considered in these
3 lines, and that's the reason that you would block them so
4 that you don't exceed any dead weight loads, but dynamic
5 loads -- my impression is that you want to avoid dynamic
6 loads and that's why you have these trip functions.

7 Now the question is what's the bases for those
8 trip set points to avoid this from occurring and should the
9 MSIVs be closed, is that a good action or not a good action
10 in order to ameliorate a high-level situation.

11 DR. WALLIS: Well, in defense-in-depth, one might
12 decide to design the thing so even if you did get this water
13 in there, no one is going to raise a question about is it
14 going to be too heavy or is it going to impose loads that
15 are too big, we've just designed it so it's okay.

16 MR. BARTON: That's good for the new-generation
17 reactors, Graham, yeah.

18 DR. SEALE: You've got what you've got.

19 MR. BARTON: You've got what you've got.

20 MR. SIEBER: You cannot back-fit.

21 MR. BARTON: Are there any other questions of the
22 staff before we hear from Licensing?

23 [No response.]

24 MR. BARTON: Hearing none, Lew, would you like to
25 make some comments?

1 MR. LEWIS: I've just got some brief comments.

2 One would be that, on the risk assessment, we came
3 to a different conclusion on the number for the risk
4 assessment, and we'd like to have the opportunity, with our
5 models and our assumptions, to review that with the staff to
6 see why our conclusions are different.

7 We came up with -- for a similar calculation -- in
8 the E to the minus 7th range, not E to the minus 5th range,
9 and it all depends on what assumptions you make.

10 MR. BARTON: Sure.

11 MR. LEWIS: And you come to a different conclusion
12 depending on the assumptions you make.

13 So, we certainly want to have the opportunity to
14 sit down and review and discuss our assumptions on our risk
15 assessment.

16 The second thing is that -- concerning the
17 adequacy of the high-level trips, we did have what's called
18 a TRACG analysis run by GE where we made assumptions of the
19 exact conditions that were present.

20 One feedwater line is isolated, both pumps are
21 trying at 100-percent demand, HPCI has not tripped at the
22 right set-point but RCIC did, and to verify -- we were
23 looking for such things as was there an asymmetric level
24 condition in the vessel at the time which would explain why
25 HPCI did not trip?

1 Well, that analysis didn't prove that out.

2 We also went to prove that -- were the trip
3 set-points adequate as part of the initial design basis, and
4 the TRACG analysis that we did proved that they were
5 adequate.

6 So, we believe we've got enough -- this is a
7 detailed study we've had GE working on for the last six
8 weeks to make sure that there are no other issues out there
9 that we know of related to the adequacy of the high-level
10 trip set-points.

11 We talked about the fact that we weren't able to
12 determine why HPCI didn't trip. Well, there's an
13 explanation for that.

14 When it did trip, automatically, the first time,
15 all the evidence was basically destroyed at that point of
16 how to determine what component may not have worked
17 correctly, but I will let you know we have put some
18 compensatory actions in there that exercise that logic chain
19 so that in the event that it is demanded again to operate,
20 that we've tried to improve the level of assurance that that
21 trip function is going to work, and we have reviewed and
22 still continue to review whether or not we should change the
23 logic design for the high-level trip.

24 But the thing we should remember is that actual
25 design basis for HPCI is to inject water into the vessel and

1 make sure the core is covered under a small DBA and that it
2 should trip at a high level, there's no belief that it
3 shouldn't trip at a high level, but its actual safety design
4 basis is to put water back in the vessel, which it did
5 successfully.

6 There are a tremendous amount of lessons learned
7 that we've gotten out of this event, and Len has discussed
8 some of the immediate ones that we've done as far as
9 correcting some equipment problems, some procedural problems
10 with RCIC, the simulator model that he referred to, but we
11 continue to look at deeper issues out there.

12 We look at our management processes to see, if we
13 have a RCIC model that does not exactly match the plant, how
14 did it come to be that way, and does that give us insight
15 into looking for other models or other issues out there that
16 we need to look at?

17 So, we continue to look at that.

18 We do have a follow-up meeting, as Len referred
19 to, on May the 17th, where we're going to discuss our
20 corrective actions, and we'll discuss not only the ones
21 we've talked about today for the immediate stuff but some of
22 the deeper issues out there that we continue to explore.

23 So, we've tried to use it as a learning
24 experience. I know there are some generic issues out there.

25 I don't believe determining what is the proper

1 guidance for closing the MSIVs on high-level will be an easy
2 thing to do, because as Len referred to, there are different
3 plant designs and there are different considerations,
4 depending on which plant you're at, but I believe there is
5 the importance of making sure that you don't get water in
6 the main steam line that was certainly brought out by some
7 of the things in this event.

8 MR. BARTON: One further question I've got is how
9 detailed had you looked at your corrective action system and
10 the effectiveness of it, especially since the history with
11 the GE SILs and information notices on these switches?

12 MR. LEWIS: The GE SIL came out in, I believe,
13 1977, and we did a review in 1977 based on the guidance in
14 the SIL as to what we should look for.

15 We thoroughly evaluated that, and we have written
16 documentation as to how we evaluate it.

17 We've had one failure of one switch in 15 years,
18 and that's this failure that Len referred to that happened
19 in 1996, and subsequent to that, of course, we did a broader
20 review with this particular even there.

21 So, one of the issues we do have is when we have
22 SILs that had been evaluated 20 years ago, is there a need
23 to go back and re-evaluate them in today's world? We
24 haven't come to a conclusion on that.

25 MR. BARTON: I guess the question I would have

1 there -- and I understand that. I lived through the same
2 thing with the GE SILs and how far do you go and how much
3 equipment plant do you change out.

4 But you had a subsequent failure. Well, you had a
5 failure after the SIL in '96. Apparently, according to the
6 AIT, this was classified as a significant event or a
7 significant issue in your corrective action system, and yet,
8 four years later, it didn't look like you did anymore
9 maintenance or change-out of this style switch, and the
10 reason I'm hammering you on this is, if you look at the new
11 oversight process and where we're going to risk-informed
12 regulations, etcetera, etcetera, you know, how robust your
13 corrective action system is depends a lot on, you know, how
14 the plant is going to perform and how the NRC is going to
15 look at your performance down the road.

16 So, again, you know, I still have a question as,
17 you know, how robust is your review or your self-assessments
18 of your corrective action systems?

19 MR. LEWIS: Well I think the question you ask --
20 SILs is a narrow area. When you get into other issues out
21 there -- we do have categories we call significant
22 occurrences.

23 We have others that are higher category we call
24 event reviews, and we do try to -- like you've done with
25 this event here -- this event met the criteria to have a lot

1 of study done on, and event reviews meet the criteria in our
2 own procedures for having a lot of study done, significant
3 occurrences have less study done but more than just routine,
4 you know, common occurrences that happen in the plant.

5 That is an issue that we're reviewing right now.
6 Does this particular event reveal a weakness or a need for
7 improvement in the way our corrective action is done, and
8 for example, would you postulate that you need to create a
9 self-assessment process for material you've reviewed several
10 years ago to see if the conditions have changed? We have
11 not come to that conclusion yet, but it is something we're
12 studying.

13 MR. BARTON: I understand that. Thank you.

14 DR. SEALE: What's the status of the plant now?

15 MR. LEWIS: The status of the plant -- both units
16 are at 100-percent power.

17 DR. SEALE: How long did it take to go back to
18 full power?

19 MR. LEWIS: After this event here?

20 DR. SEALE: Yes.

21 MR. LEWIS: Approximately -- we were down, I would
22 say, approximately a week to do all the reviews, make the
23 procedure changes, re-do the training, do a broadness review
24 of -- or locate all the locations for the different switches
25 of this type, categorize them to whether or not -- the worst

1 postulated action from that switch and what the end result
2 could be of that to decide which ones we would replace
3 before we started back up.

4 DR. UHRIG: Have you replaced any of the switches
5 in the other unit?

6 MR. LEWIS: Yes, sir, we have done it. We did
7 some immediately on the other unit, and then, during the
8 subsequent refueling outage, then we went and changed out
9 the other ones.

10 MR. BARTON: Any further questions?

11 [No response.]

12 MR. BARTON: If not, I'll turn it back to you, Mr.
13 Chairman.

14 CHAIRMAN POWERS: Thank you, gentlemen.

15 At this point, I want to dispense with the
16 transcription.

17 [Whereupon, at 11:35 a.m., the meeting continued
18 in executive session, to reconvene in public session this
19 same day, Friday, March 12, 2000, at 12:45 p.m.]

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A F T E R N O O N S E S S I O N

[12:45 p.m.]

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2
3 CHAIRMAN POWERS: Let's come back into order, and
4 we'll move to the topic of physical security requirements
5 for power reactors.

6 Dr. Kress is our cognizant official on this.

7 DR. KRESS: I don't know why, but I am.

8 CHAIRMAN POWERS: Well, because you're very
9 physical, I suppose.

10 DR. KRESS: I don't have a lot of introductory
11 remarks to make except it's awfully hard to make a risk
12 assessment of security.

13 I have seen such things in the past, and what I
14 recall of them are this particular area is a significant
15 risk. In fact, it may be risk dominant.

16 So, it's good to pay attention to it, and it's
17 generally treated in the classical way with regulations, in
18 the classical sense that there are design basis threats and
19 defense-in-depth philosophy, and then you use inspection and
20 a test to see if your system works.

21 Well, I think one of the problems is that these
22 tests, challenges to the system have been done in the past
23 on the sort of -- I presume a voluntary basis.

24 There's no regulatory authority to require them in
25 the regulations, but I think one of the things they want to

1 fix when they're developing -- what they're looking at is
2 developing a new rule for this area, and that's one of the
3 things they want to fix.

4 So, with that as sort of a minor introduction,
5 I'll turn it over to the staff.

6 CHAIRMAN POWERS: Before we go to them, I'd just
7 comment that, within the DOE community, we're concerned
8 about terrorist-type activities not in the sense of using
9 nuclear materials to threaten the public population but,
10 rather, to threaten facilities themselves using -- of
11 particular interest is gas and biological threat, has become
12 an area of some currency within the DOE community looking at
13 -- upon nuclear reactors as a public institution, along with
14 airports, other government buildings and whatnot, especially
15 following the Oklahoma City incident, and so, this is
16 gaining more currency than maybe we had when the Cold War
17 was at its peak.

18 DR. KRESS: Yeah. Well, I think one of the things
19 they're wrestling with is -- in making a rule -- is what are
20 the design basis threats. I'm not sure how much of that
21 we'll hear today, but I hope we hear some.

22 Let's turn it over to you guys.

23 MR. ROSANO: Good afternoon.

24 I think that, at this point, most of you know
25 Glenn Tracy, my boss, the Branch Chief.

1 My name is Dick Rosano. I'm the Chief of the
2 Reactor Safeguards Section, and I'm going to try to address
3 a couple of the concerns that you just raised in the context
4 of the briefing, realizing, of course, that what I'm going
5 to be talking about are the regulatory changes that we're
6 proposing, that we're working on in terms of risk-informing
7 the regs and that there will be a separate section
8 afterwards having to do with design basis threat, and I
9 think, as I go, you will see some of -- you'll pick up some
10 of my comments about the risk issue and how easy it is to do
11 and the fact that there are two different kinds of risk that
12 we're going to talk about.

13 First an overview of where we've been and what is
14 driving all of this.

15 I'd begin by referring to risk-informing 73.55,
16 and it actually pre-dates that somewhat, because the effort
17 underway right now began when we started contemplating an
18 exercise rule that was designed to be the successor to the
19 Operational Safeguards Response Evaluation program, the OSRE
20 program.

21 OSREs, for years, had conducted assessments at the
22 plants -- force-on-force drills run on scenarios meant to
23 test the defensive strategies or the protective strategies
24 of the plants.

25 We wanted to be able to replace that program with

1 a requirement to do drills and exercises, and after spending
2 some time looking at that, we expanded the consideration to
3 include an entire look at 73.55 and other related power
4 reactor regulations.

5 By that, I mean there are certain others like
6 50.54(p) and 50.90 that control changes to security plans
7 and commitments made. So, in the context of risk-informing
8 73.55, we would want to be able to look at the other
9 associated regulations.

10 When we did then consider risk-informing 73.55,
11 the issue of risk in essentially two forms comes up, and we
12 wanted to differentiate the two types of risk.

13 One is the probability of event, which I believe
14 you mentioned, and that really is a very difficult thing to
15 estimate.

16 In fact, you will find that most of the sabotage
17 events that have occurred through history did not come with
18 a high probability or expectation that they were about to
19 occur, and the community understands that the Commission,
20 over the years, has understood that and made various
21 proclamations relating to it.

22 Our efforts are not to risk-inform that process.
23 We are not trying to -- in the context of rewriting these
24 regs, we are not trying to assign a risk or probability to
25 an event occurring.

1 In the later presentation by Roberta Warren from
2 NMSS, when she does talk about design basis threat, there's
3 an element of that, and the intelligence community provides
4 great assistance in understanding what probabilities there
5 are, but that's not what we're trying to do when we're
6 risk-informing 73.55.

7 However, there is another element of
8 risk-informing the regs that we can deal with, and that has
9 to do with the consequences, the safety consequences of the
10 event.

11 Stripped down to its basics, a safeguards event or
12 a sabotage event is the initiating event in a safety
13 sequence, and we can do some risk-informing to better
14 understand what might unfold from that event.

15 There are a lot of factors. Obviously, we have to
16 be able to stabilize the systems at the plant, knowing that
17 there will not be additional sabotage events within that
18 context before we can then sit down and assign a
19 probability, but the regulations are intended to assign some
20 risk sense or probability or better safety understanding of
21 what might happen.

22 Perhaps one of the greatest products --

23 DR. KRESS: Could I interpret that to mean that
24 you might be focusing on the conditional core damage
25 frequency given the event?

1 MR. ROSANO: Yes, we are.

2 What we're doing now is trying to base the
3 regulation on performance criteria and safety criteria using
4 the design criteria of the operational systems, using that
5 as the proposed goal of a sabotage event, and then looking
6 at the probability of the attack resulting in the failure of
7 one of those design criteria.

8 We recently wrote in a Commission paper, 00-63,
9 the six design criteria that we intended to use for that.

10 I know I'm getting ahead of myself a little bit.
11 I'll try to be more controlled, but we'll go back to that,
12 because that's an important point that we want to discuss.

13 As we began to peel back the layers in
14 risk-informing the regs, we did find more and more
15 fundamental issues that needed to be resolved and that we
16 needed to come to better understanding of.

17 One was the definition of radiological sabotage,
18 which goes to your point.

19 The regulations do define rad sab as an event
20 which would cause a risk to the public. I've left out a lot
21 of words, but that's what it boils down to.

22 Well, the level of risk was not delineated, the
23 type of event, and so on.

24 So, we considered -- and in fact, in a Commission
25 paper, did recommend to the Commissioners that we look at

1 what is defined as rad sabotage and improve upon the
2 definition.

3 The more we worked on that, the more we decided
4 that, even with a better definition of rad sabotage, we
5 would still need to come up with performance criteria.

6 Subsequent to that, we did advise the
7 Commissioners that we had decided that the proper approach
8 for beginning this rulemaking was to define the performance
9 criteria that we expected the plant to maintain in the event
10 of a sabotage attack and that their systems should be
11 designed with a goal of maintaining those performance
12 criteria.

13 Now, when I said that the licensee or the plant
14 would need to maintain, another important difference that we
15 promoted and proposed was that it be a whole-plant response.

16 Rather than thinking of this as a gun battle in
17 the protected area, the security force against the
18 attackers, we wanted to step back from it and accept that
19 there are a number of other actions that can be taken by
20 other members of the licensee force -- for example, the
21 operational staff -- actions that could be taken to mitigate
22 the consequences of the attack or, perhaps by isolating
23 systems or components, perhaps defeat the attack, simply
24 without even the actions of the security force, which is not
25 to say that we would propose they do away with it, but we

1 wanted to respect what the entire plant organization could
2 do, and we took those things into account, and so, the new
3 rule will consider actions by operators and operational
4 staff.

5 MR. BARTON: Would that entail operators leaving
6 the control room?

7 MR. ROSANO: It would entail what the licensees
8 believe are the best means of handling that. In some cases,
9 I understand some licensees would consider it important to
10 dispatch operators to the remote shutdown panel and so on.
11 There are issues like that. Each licensee will have their
12 own answers.

13 DR. BONACA: Just a question I have. I remember
14 approximately 20 years ago there was a review of all the
15 power plants to identify that you cannot disable the plant
16 -- let me use the word "disable" now, and we didn't talk
17 about CDF at that time, or core damage -- that you cannot
18 disable the plant by one individual in one location, that
19 there was sufficient separation and diversity of systems in
20 different locations that you would have -- so, there are
21 some elements already in place that are still -- because I
22 remember that, and I remember that there was no further
23 activity after that, it was the only thing that was done.

24 MR. ROSANO: That has been better applied in a
25 safety arena than in safeguards, although it also applies in

1 safeguards, because the principle that no single act can
2 defeat the safe operation of the plant is a design feature,
3 design concept that would also prevent a single act of a
4 saboteur from accomplishing that purpose. Notice I said a
5 single act of a saboteur, not a single saboteur. One
6 individual could do more than one thing.

7 But it would apply, and I think that that's an
8 important part of looking at the whole plant response to a
9 sabotage attack.

10 DR. KRESS: Does that mean that each plant might
11 have to have something analogous to the emergency operating
12 procedures, call it a sabotage operating procedure?

13 MR. ROSANO: Well, in fact, they already do.

14 DR. KRESS: They do?

15 MR. ROSANO: The plants have incorporated what
16 they call protective strategies or tactical response
17 strategies.

18 One of the things that this rule would do would be
19 to add a little bit of detail to that and encourage
20 licensees to more formalize their processes for this, but
21 licensees already do have procedures, and they have -- under
22 Appendix C of Part 73, they're required to have a
23 contingency plan, and it's for safeguards emergencies, and
24 usually that results in things called tactical response
25 strategies where the security force has pre-programmed

1 responses to certain types of events, responses that they
2 practice through drills, and it sends them to certain
3 positions to respond, depending on what kind of event it is
4 and what's the likely outcome.

5 Going on, then, I mentioned the problem with
6 definition of rad sabotage and the performance criteria, so
7 now we're trying to deal again with the whole plant and
8 trying to use and take credit for any of the response
9 actions that might be incorporated together.

10 The next item that we found in peeling away the
11 layers of this issue was the design basis threat and the
12 adversary characteristics.

13 The rule -- there are three levels of detail. The
14 rule says that the design basis threat will include several
15 persons, and it describes them in general terms.

16 There is a classified -- in the case of category
17 one facilities -- a classified description of the numbers of
18 people, and for power reactor facilities, there is a
19 description that is safeguards information that describes
20 the number of people who would attempt sabotage.

21 The category one facilities need to protect
22 against sabotage and theft. We consider sabotage for
23 radiological purposes the only real issue at the power
24 reactor facility, and the type of threat, the type of DBT
25 and the size of the DBT would be different for each.

1 The next layer of detail is what we found
2 ourselves in while dealing with this problem today, and that
3 is that these adversaries could carry a number of different
4 arms or tools or items of equipment and that we needed to
5 have a clear understanding from which we would work and from
6 which the licensees would work in order to balance their
7 protective systems and understand what they needed to deal
8 with.

9 This is also considered classified information for
10 the fuel facilities and safeguards information for the power
11 reactors.

12 These characteristics are very important for the
13 licensees to understand in order for them to comply and live
14 up to the expected level and very important to guide our
15 exercises to make sure that we're testing at the proper
16 level.

17 The difference between different poundage or
18 amounts of explosives, different types of armaments needs to
19 be settled.

20 Now, NMSS has done extensive work on this, with
21 the intelligence community and in defining these details.

22 You'll hear more about that later, but this is
23 another issue that we concluded needed to be solved in order
24 for us to get to a more clear understanding of what the regs
25 should be.

1 DR. KRESS: Does that description of adversaries
2 deal with the potential for an insider at all?

3 MR. ROSANO: An insider is assumed to be part of
4 the design basis threat for both sabotage and theft, yeah.

5 Then the last item in terms of overview is the
6 industry's interim program.

7 I mentioned the OSRE program, Operational
8 Safeguards Response Evaluation program. That has been in
9 place since about 1991.

10 As of this month, we have completed the first full
11 round of OSREs in which a headquarters-led team with
12 regional assistance and contractors has gone to each of the
13 power reactor facilities, conducted week-long tests,
14 complete with table-top exercises and scenarios drawn up by
15 both licensees and the NRC and force-on-force drills,
16 several of them, not a single one, to determine the adequacy
17 of protection.

18 The OSRE program has completed its first full
19 cycle. Our goal was to replace the OSRE program with this
20 rule-based system, which we will.

21 That will take some time to do, and what we wanted
22 to do was have an opportunity to pilot the new concepts,
23 pilot the ideas that we would like to incorporate into the
24 rule as we write the rule, and the industry offered to write
25 a program that would be forward-looking rather than

1 backward-looking to a new program that would include some of
2 the ideas that we've been debating over the months for the
3 new rule rather than simply incorporating those already used
4 for the last nine years in the OSRE program.

5 That program has gone through a few revisions.
6 It's called the Safeguards Performance Assessment Program --
7 the title has changed a couple of times -- and that program
8 has been reviewed and been subject to comment by the NRC.

9 We've worked extensively with the industry through
10 public meetings and members of NEI, and that is coming
11 along. That actually kind of leads us into the next couple
12 of slides, I'll be able to tell you more about the status,
13 but in general, the goal is to have an interim program to
14 ensure that we continue evaluations of security response
15 strategies, not just security, because we have an inspection
16 program that evaluates security, and it does a good job of
17 that, but we would also like to have evaluations of the
18 response strategies.

19 So, what we want to do is have a continuation of
20 these exercises, allowing OSRE to sunset in favor of a
21 program that looks to the future, and let that program run
22 until the rule can reach its final state.

23 CHAIRMAN POWERS: I guess I don't quite
24 understand.

25 You have this OSRE program, and now you've got a

1 proposed new program that's characterized as looking to the
2 future.

3 I'm struggling with what's different.

4 MR. ROSANO: Well, there are several differences.

5 One is that we would like to have -- the rule, for
6 example, would require the licensees to develop a robust
7 program of drills and exercises.

8 Currently, although many of them do conduct
9 drills, there's no requirement in the rule that they do so.
10 So, the voluntary program that they're offering as an
11 interim program would do that. That's one of the changes.

12 CHAIRMAN POWERS: But I mean you've done this --
13 through the OSRE, you have these exercises.

14 MR. ROSANO: Yes, sir.

15 CHAIRMAN POWERS: Would they be the same or
16 different?

17 MR. ROSANO: The exercises under the interim
18 program and under the rule would be very similar to OSREs.
19 They would be force-on-force drills incorporating the design
20 basis threat standards in those drills, but currently,
21 because there's no requirement for drills or exercises, a
22 lot of licensees -- there are some licensees who drill at
23 different frequencies. Some drill very often, some drill
24 not so often. It has left us with the inability to take a
25 snapshot in time at any given time as to what the abilities

1 are.

2 The interim program, the SPA, would incorporate
3 quarterly drills, which is what we're thinking about for the
4 new rule.

5 It would have a triennial requirement for
6 extensive exercises, so that the exercises under the OSRE
7 program that -- considering that the first full cycle took
8 eight years, then obviously the full exercises under the
9 interim program of the rule would be three times as often.

10 There are some other things.

11 The design criteria will be looked at.

12 The OSRE program uses significant core damage as
13 the goal of the attack, which if you take that and then work
14 backward, then you'd assume that the licensee protective
15 strategies only have to be designed to prevent significant
16 core damage, and that's a very useful approach, but what
17 we're trying to do is improve upon that, and so, the design
18 criteria that we proposed in the recent Commission paper
19 would be tested out in the new program, so there would be a
20 better understanding of how this would function in the rule.

21 Certain other things, including means of training
22 and feedback mechanisms, so that findings in the exercises
23 would be fed back through the corrective action program, all
24 parts that we consider essentially to the new rule would be
25 piloted in the interim program.

1 DR. WALLIS: It seems to me it's not quite so
2 simple.

3 Adversaries, if they were able to get into a
4 position where they could get control of something and cause
5 some damage, probably would want to say okay, now we want
6 something, and you don't know what they control, what they
7 can do, how far they've gone.

8 We'd be in a very difficult position negotiating
9 with people who you don't know what they're able to do, how
10 far they've been able to do things, and you don't have
11 information coming out that tells you what they've done.

12 MR. ROSANO: That's a very specific
13 safety-oriented question.

14 The goal of the response strategy should be for
15 the licensee to maintain control of the operation of the
16 plant, and so, for individuals to reach a point in the plant
17 where they could take over control would be considered a
18 loss of a system.

19 DR. WALLIS: Do you go beyond that? I mean if
20 they do reach that point, then you've still got to do
21 something.

22 MR. ROSANO: You still have to do something, but
23 actually -- let me try to differentiate between denial and
24 defeat strategies.

25 The licensees, more and more, are going to denial

1 strategies, which is to keep the potential saboteurs away
2 from the equipment that might allow them to take control of
3 the plant, so that they -- in effect, they win, they win the
4 game if the attackers are isolated or kept out of the
5 critical areas of the plant.

6 A defeat strategy would mean, again back to the
7 notion of a gun battle, would mean killing more of them than
8 they kill of the licensees. That's not the approach.

9 So, the point is for the licensee to maintain
10 control through denial of the areas of the plant necessary
11 to maintain safe operations.

12 DR. WALLIS: Assuming once you've lost control,
13 that's the end of anything you think about?

14 MR. ROSANO: Oh, no. Certainly we wouldn't just
15 give up, but now, at this point, what we're talking about is
16 the safeguards, protective strategies, and the
17 responsibilities within the program to be able to defend
18 against losing that control. If the attacker gains control
19 of the critical systems, there's still actions that need to
20 be taken.

21 DR. WALLIS: I think you might be in a position
22 where you don't know if he's gained control or not but you
23 know that you happen to have lost your control, but you
24 don't really know what they've been able to do.

25 MR. ROSANO: So, anyway, that is the point of the

1 interim program, is, again, to be forward-looking. What we
2 want to do is take the best of the OSRE program, of which
3 there is quite a lot, but to incorporate some new ideas and
4 to test out where we're going.

5 We also think of the interim program as an
6 evolutionary thing. It won't be static. As we learn and
7 things become obvious to the industry and the NRC, we'd like
8 to be able to incorporate those.

9 The second part of the presentation is on
10 chronology, and in my way of going around the facts, I
11 probably already covered a lot of this, but I just want to
12 bring us back to where we were.

13 In May of 1999, we briefed the Commission, and
14 actually, what I failed to mention there was that that was a
15 result of a Commission paper.

16 The SPA task force, the Safeguards Performance
17 Assessment Task Force, submitted in January '99 -- it was
18 SECY paper 99-24, and we submitted our recommendations, and
19 that had to do with creating an exercise requirement in the
20 rules.

21 On May 5th, we briefed the Commission, the
22 Commissioners, followed with an SRM dated June 29th in which
23 they instructed the staff to go forward and develop these
24 recommendations.

25 That was in June.

1 It was during the course of the summer of 1999,
2 through extensive meetings with the -- public meetings,
3 including the industry, in which more was discussed about
4 the possibility of opening up the door to consider all of
5 the safeguards regulations.

6 I wasn't with the NRC back in the '70s when we
7 wrote 73.55, and I also know that, in spite of some of the
8 fixes we've made to 73.55 over the years, we've never
9 stepped back from it and taken a complete look.

10 We believe it's time -- the staff has thought that
11 it's time, and this is a good opportunity for us to
12 modernize the regulations.

13 In October, SECY 99-241 was proposed, and that
14 included all of these concepts, risk-informing 73.55,
15 including the exercise rule, so a broader look, and that was
16 approved by SRM in November of '99.

17 March 9th of this year, we submitted the SECY
18 00-63.

19 This was in response to the part of the November
20 SRM that asked us for a definition of rad sabotage, and as I
21 described earlier, we tried and could not conclude that
22 simply an improved definition would solve all the problems.

23 We concluded that we needed to have design
24 criteria that would form the basis for the protective
25 strategies and for the regulation.

1 We submitted those design criteria in SECY 00-63,
2 and the Commissioners adopted the recommendations in April
3 of this year, telling the staff -- directing the staff to go
4 forward and to work the rule.

5 So, it's been taken step by step.

6 In the beginning, we recommended an exercise rule.
7 After that, we recommended a broader look at 7355 to
8 risk-inform it, and then, following that, we submitted a
9 Commission paper in order to show how we intended to base
10 the rule, on what we intended to base the rule, and that was
11 the performance criteria.

12 MR. TRACY: I would also add the Commission
13 directed us to incorporate the performance criteria in the
14 interim program that the industry would ultimately take on.

15 MR. ROSANO: As for future, we are looking at
16 summer of 2000 -- this program proposed by the industry, the
17 Safeguards Performance Assessment Program -- the staff has
18 spent considerable time reviewing it in several different
19 versions, submitted comments to the industry, received some
20 feedback from them, and it's been an iterative process.

21 We hope to be able to reach final agreement and
22 endorse the industry's Safeguards Performance Assessment
23 Program. That's what was referred to as the interim program
24 on an earlier slide.

25 That would be the program that would allow us over

1 the next two to three years to test out the concepts in the
2 rule.

3 Now, an important point before I go beyond there
4 is that we intend to continue doing exercises of protective
5 strategies from here through that time. Those will probably
6 be in the form of OSREs, because it's a program that's
7 worked very well and it's well understood.

8 We will do OSREs on a periodic basis in order to
9 continue the flow of information about licensees' response
10 strategies until the time -- and here it says in late 2000
11 -- that we expect SPA exercises to begin.

12 The endorsement needs to precede the actual
13 initiation of the program by some several months to ensure
14 that the licensees who come up first for the exercises are
15 working -- are operating under the right rules of
16 engagement.

17 CHAIRMAN POWERS: I guess I have -- a couple of
18 questions spring to mind.

19 MR. ROSANO: Sure.

20 CHAIRMAN POWERS: The first one that springs to
21 mind is I think that the licensees are excellent at running
22 electrical generation facilities. I am not sure what their
23 qualifications are for designing terrorist activities.

24 So, I come in and say, gee, I wonder how one looks
25 -- goes about formulating and reviewing a proposed SPA

1 program, what criterion one uses to say whether it's an
2 adequate one or not.

3 I mean I know there are other organizations -- I
4 happen to work for one -- that makes a business out of doing
5 these things for the military.

6 Can you tell me more about how it gets designed
7 and how it gets reviewed?

8 MR. ROSANO: The document that has been generated
9 by the industry, that we've been reviewing -- we have
10 reviewed, in the context of what we know so far today about
11 OSREs, what OSREs have taught us -- now, the OSRE program
12 has been -- has enjoyed the benefit of contractors that we
13 use who are very experienced in this area and who have
14 helped us through the years.

15 The document that the industry has proposed
16 incorporates a lot of those ideas, plus I happen to know
17 that the licensees typically have contractors themselves who
18 have backgrounds in this field.

19 Now, you've reached deep into the subject and
20 asked a very important question.

21 It's not just a matter of evaluating the exercise
22 results, it's a matter of evaluating the program itself, and
23 so, in fact, that's what I think is one of the strengths of
24 the new program.

25 This program, SPA, as well as the rule to come out

1 -- it's kind of like the difference between, you know,
2 giving a man a fish and teaching a man to fish.

3 If we get the opportunity to look at the
4 licensee's program, the industry's program, and it's a
5 robust, strong, legitimate program, we can walk away with
6 greater assurance that things will be conducted properly
7 even when we're gone rather than just while we're on-site,
8 and that's the goal of the new initiative.

9 CHAIRMAN POWERS: The next question that comes to
10 mind is that I know -- you've certainly emphasized
11 force-on-force exercises, as well as table-top exercises and
12 things like that.

13 I also know that there's a booming cottage
14 industry in developing computer codes to simulate armed
15 intervention against incursions and whatnot.

16 Is that -- do those figure into this program at
17 all?

18 MR. ROSANO: Yes. I'm very pleased you asked that
19 question, because it turns out that, in the last two days,
20 we've just finished a two-day symposium in which --

21 CHAIRMAN POWERS: I'm a great straight man.

22 MR. ROSANO: You can ask questions all day, sir.

23 A gentleman on my staff in the back of the room,
24 Al Tartif, put together a workshop that brought to
25 headquarters here members of Department of Energy, DOD,

1 the next 10 years, cyber-security may be more important than
2 physical security.

3 Okay.

4 I think we're near the end, in any case, with the
5 exception of time for some questions.

6 In May of 2001, according to SRM that's been
7 generated -- and this now, I think, is a couple SRMs ago --
8 I can't keep track of which one told us to do which, but by
9 May of 2001 --

10 DR. SEALE: There's a snowstorm over there.

11 MR. ROSANO: Probably is.

12 May of 2001, the draft or the proposed rule is
13 expected to be ready for publication, and by November 2002,
14 we intend to have the final rule in place.

15 Now, one thing I will say that refers back and
16 that is that the licensee -- this interim program includes a
17 triennial cycle of exercises, and the expectation was based
18 on it taking about three years for us to write the rule from
19 beginning to end, and so, the licensees will actually be
20 running drills on a fairly continuous flow during this
21 period that we're writing the rule so that, by November
22 2002, we would expect to have had a significant percentage
23 of licensees who have already run through their drills.

24 And that completes my presentation.

25 Any questions?

1 CHAIRMAN POWERS: I think we can thank the
2 gentleman for that presentation.

3 DR. KRESS: I think we have comments from Mr.
4 Lyman. This might be a good time for him.

5 CHAIRMAN POWERS: Yes.

6 DR. KRESS: Thank you, guys. That was very, very
7 interesting.

8 CHAIRMAN POWERS: Mr. Lyman, I have enjoyed your
9 presentations in the past on MOX fuel, and I hope you're as
10 informative in this area as you were in that area.

11 MR. LYMAN: I'll try to be.

12 I do appreciate the opportunity to make a few
13 comments here.

14 My presentation, which you should have gotten a
15 copy of, is based on one which I gave at the RIC a few weeks
16 ago, and I am grateful to Mr. Rosano for inviting me to
17 speak at that conference, since I think we're probably
18 regarded as a pain in the neck.

19 DR. APOSTOLAKIS: Could you tell us who you are
20 please? Not all of us know you.

21 MR. LYMAN: My name is Edwin Lyman. I'm a
22 physicist with the Nuclear Control Institute, which is a
23 nonprofit research organization which focuses on nuclear
24 non-proliferation issues and also issues of nuclear
25 terrorism, which carry us over into nuclear sabotage, as

1 well, and radiological sabotage.

2 We are a public interest group, one of the few who
3 have been trying to track NRC's developments in this area,
4 and I think our perspective on the history of this program
5 and how we've gotten here today is somewhat different from
6 Mr. Rosano's, so I'd like to at least present some of the
7 background as we see it, where the issues and the
8 differences with the industry's position and ours are, and
9 just comment on the future.

10 I'll refer most of the details to the document I
11 distributed.

12 First of all, as a public interest organization,
13 we are concerned with the public confidence aspects of NRC's
14 programs.

15 In fact, we see ourselves wanting to have
16 confidence in NRC's programs, and therefore, what we see
17 forms the basis for our ability to have confidence.

18 In the issue of physical security and physical
19 protection, I think it's especially crucial that the
20 appearance of a robust system is maintained, because the
21 public has less access.

22 Even compared to safety issues, a lot of what goes
23 on in the physical security arena is within a black box.

24 So, we have to accept the assurances of NRC that
25 they know what they're doing, that they can assess the

1 threat accurately, and that the regulations they impose are
2 appropriate for ensuring that the appropriate response to
3 that threat is guaranteed, and we have to take their words
4 for it in a lot of aspects, and appearance is, in the
5 physical security, physical protection arena, reality to
6 some extent, since the appearance of making nuclear plants
7 look like hard targets is a big part of actually deterring a
8 terrorist threat.

9 Now, the background to the -- where we are in the
10 OSRE program is that, back in the summer of 1998, it was
11 terminated by staff without consulting the Commission.

12 This was following a rather undistinguished
13 performance by the utilities, by the licensees in the OSRE
14 program, in which case almost half of them failed the OSRE
15 in that they were unable to prevent an entire target set
16 from being taken out, and according to OSRE, the OSRE logic,
17 that would lead to significant core damage. So, in almost
18 half the plants, the mock terrorists were able to achieve
19 significant core damage.

20 Needless to say, this was not regarded as -- this
21 is regarded as embarrassing by some of the licensees, and
22 they were not happy about having to continue to comply with
23 this program.

24 In fact, the measures that they took greatly
25 exceeded what they committed to in the security plans in

1 some aspects, and in particular, an average of 80 percent of
2 -- they employed more than 80 percent, on average, of
3 security guards for the OSRE program, in excess of what they
4 committed to in the security plans, and yet they still had
5 this rather poor response.

6 So, in our view, OSRE did what it set out to do,
7 and it was, in fact, the very model of a performance-based
8 program that NRC wants -- is looking to adopt more broadly
9 in that there were a set of prescriptive regulations which
10 were 10 CFR 73.55(b) through (h) giving very detailed
11 instructions on what the licensees had to do, and the fact
12 is that, even if they were in compliance with those, they
13 still were not able to respond to the performance assessment
14 appropriately, so it revealed there were weaknesses in the
15 prescriptions that needed to be corrected.

16 So, after the cancellation of OSRE, there was
17 leaks to the press, there were different professional
18 opinions on this, and it led to a rather embarrassing
19 situation where the White House itself had to call Chairman
20 Jackson at the time and ask her to reinstate the program,
21 because major policy speeches had just been given
22 recognizing the increased risk of terrorism and increased
23 response by the Government. So, NRC seemed to be out of
24 step at that point.

25 DR. KRESS: Do you have any idea of why it was

1 canceled, the program, in the first place?

2 MR. LYMAN: Well, there's no hard evidence there.
3 Chairman Jackson responded to Representative Markey by
4 saying that there had been complaints on an informal basis
5 by the industry about this program, it was too expensive.
6 They really objected to the expense of having to assemble
7 the additional guards necessary, and it really was a burden
8 to them.

9 At the same time, I think NRC staff will say they
10 were looking at revising the program from the beginning and
11 this cancellation was simply a way to transition toward a
12 new program, but it certainly was so abrupt that there
13 didn't seem to be any kind of transition, and so, the cycle
14 was not complete at the time that it was canceled.

15 So, I can only speculate, but it appears,
16 certainly, that after the performance record of the
17 licensees at that point, they were anxious not to continue
18 what seemed to be an embarrassment.

19 So, going from that point on, the OSRE program was
20 reinstated, but at the same time, there was an effort to
21 rewrite the whole rule, as Mr. Rosano has discussed.

22 The original intent -- well, there was another
23 point about canceling the program, was that it was unclear
24 whether there was legal authority for this. Were the
25 licensees required to endure these exercises to demonstrate

1 they could deter the design basis threat against
2 radiological sabotage, and our legal counsel believes there
3 was authority, but it was decided that that really should be
4 formalized by a new regulation.

5 So, originally, I think the intent was simply to
6 augment the authority in the rule to include an OSRE-like
7 exercise as a requirement of the licensees, yet I believe
8 the Nuclear Energy Institute wrote a letter saying it's time
9 to open up the whole rule, we want to look at everything,
10 and that was consented to, and we have concerns about that,
11 that at least what comes out of this process should be at
12 least as robust as what has happened in the past, because we
13 don't think -- in contrast to maybe other performance
14 measures of the licensees over the years in safety, which
15 has led to the new oversight program, where there's
16 confidence that, well, they're doing better in these areas,
17 so we can give them more responsibility for their own
18 oversight in some areas, this is not one arena where the
19 performance has been that good, and I would not -- and they
20 haven't earned the right to self-assessment, in our view.

21 I'd just like to, as a way of background, describe
22 some of the core issues that emerged at first.

23 NEI proposed and the staff was willing to accept,
24 it seems, changing the definition of radiological sabotage
25 at the beginning, so that instead of significant core damage

1 as the standard for OSRE, it would be a weaker condition
2 that a Part 100 release would not have to be -- you would
3 have to keep below a Part 100 release.

4 So, the effect of this would be where if a
5 successful -- or a failure of the OSRE program would occur
6 if the entire target set was taken out and significant core
7 damage would result.

8 If you went to a Part 100 release, that would mean
9 you would accept significant core damage. I'd remind you
10 Part 100 is the type of release consistent with, I believe,
11 the substantial meltdown of the fuel.

12 So, what the NEI proposal was really saying is we
13 would accept enough damage to the plant that we could go to
14 substantial meltdown of the fuel, but given that our
15 containment, our emergency planning, and our engineered
16 safeguards are designed to keep below Part 100 releases,
17 then we can't afford to have greater damage and still
18 satisfy protection of the public from a radiological
19 release.

20 Now, we found that approach somewhat extreme and
21 wholly unreasonable, and from a public confidence
22 standpoint, it just showed to us how out of touch we thought
23 NEI was with the public, because we don't think the public
24 would accept if a terrorist attack occurred at a nuclear
25 plant, that terrorists were actually able to bring

1 explosives into the plant, blow up safety equipment, blow up
2 the -- or violate the reactor coolant system boundary, and
3 yet, because the operators were able to stop this from
4 becoming a holocaust, a Chernobyl, that that would be an
5 acceptable and, in fact, not even -- that would be an
6 acceptable outcome of their physical protection strategy.

7 Just looking at what happened with the Indian
8 Point 2 accident where there was no measurable radiological
9 release, you looked at the public response to that, you just
10 see that that is really extreme.

11 I think the public believes and should believe
12 that the physical protection at nuclear plants can prevent
13 damage, any kind of damage, from being done to the plant,
14 whether or not it's a critical safety system.

15 So, we think going to a Part 100 was a mistake,
16 and to NRC's credit, they arranged their SECY paper and
17 their own recommendation to be based on performance
18 criteria.

19 This is closer to the way the original OSRE was
20 structured.

21 In other words, you want to make sure that you
22 have enough equipment in place so that you can bring the
23 plant to safe shutdown and you maintain core cooling, though
24 they were willing to go beyond that point and say that that
25 was acceptable.

1 However, at the same time, there are some aspects
2 of the plan going forward that we are concerned about.

3 This session started with the question about
4 risk-informing this process.

5 We don't think that it's necessarily a wise thing
6 to risk-inform security, to try to link security so closely
7 with safety issues when, in our view, they are really
8 different animals, and that's because, when you're dealing
9 with intelligent adversary, what they are capable of doing
10 is completely different from a dumb equipment failure.

11 You know, if you have one spontaneous equipment
12 failure, you can figure out what the probability of that is
13 going to be. If you have two spontaneous failures, that's
14 generally more unlikely, unless it's a common mode failure.
15 But if you have an intelligent adversary who might be an
16 insider, who might have access to everything you know, to
17 your severe accident management guidelines, to your
18 emergency planning, they know what you're going to do, and
19 it will be a chess game.

20 There is no way to estimate the probability of the
21 capability of that insider to bring this plant to a
22 meltdown. So, we don't think that it's really necessarily a
23 wise idea to risk-inform this process in the same way.

24 We're all in favor of using better knowledge of
25 what the critical safety systems are, what the weak points

1 of nuclear plants are in designing a protective strategy,
2 but in our view, that is not going to lead to a -- that
3 wouldn't lead to a relaxation of what you can protect, and I
4 think it's pretty well known what you have to protect.

5 Now, the other aspect of this which is related and
6 came up is the increased reliance on operator actions in
7 assessing the consequences of an attack.

8 We do not think that it's wise to go to increased
9 reliance on operator actions in this way, especially if an
10 entire target set is taken out.

11 If you look at the latest draft of the industry's
12 self-assessment program, which has turned from SAP, which it
13 was a few weeks ago, now to SPA -- it doesn't seem to be a
14 self-assessment program anymore, but their own plan -- they
15 were still, as a few weeks ago, saying that even if an
16 entire target set is taken out, we still want to have the
17 opportunity to be given credit for preventing significant
18 core damage if we can show their operators would be able to
19 intervene that way, and our response to that is, if you're
20 willing to give operators credit for those types of actions,
21 that has to be demonstrated, that capability has to be
22 demonstrated either on a simulator or through a human
23 reliability assessment.

24 There has to be some way. You can't just take
25 their word for it.

1 DR. KRESS: Let me ask you about that.

2 It seems to me like that's analogous to what we
3 call severe accident management, where the operator has
4 severe accident management guidelines to do whatever he can
5 with the existing systems, given what he knows about how the
6 accident is progressing, to try to stop it, and I think
7 that's a good idea.

8 Even in the case of a sabotage effect, it would be
9 nice for somebody to have pre-thought out what the operator
10 might be able to do, with whatever parts of the system that
11 he still has control of and is functional, to be able to
12 stop it. So, to me, it's thinking out the process and
13 putting down ahead of time what he might be able to do,
14 which seems like a good idea, whether you take credit for
15 that or not.

16 MR. LYMAN: No, I absolutely agree with that, and
17 I have no complaint about thinking these things through more
18 carefully, but in my view, when you are evaluating an
19 exercise, that that should go into the margin and shouldn't
20 be given credit --

21 DR. KRESS: Shouldn't be part of the performance
22 evaluation.

23 MR. LYMAN: Right, unless they can demonstrate it,
24 because I mean if you have -- God knows what kind of
25 complicated event you have and you don't know if the

1 adversary, like I said before, an active insider has -- as
2 someone mentioned before -- has interfered with the
3 electronics, with the instrumentation systems -- maybe
4 they've thought out everything that you would do.

5 I mean they have these plans, and they say, you
6 know, if you want to -- if you're going to scram the plant
7 or you're going to de-pressurize the coolant system or
8 whatever, that I'll be one step ahead of you, and so, unless
9 you can really assess that appropriately, then you shouldn't
10 be given credit for it unless the operators can be
11 demonstrated, if they're given all these -- you know, the
12 variety of scenarios, and I just think this would greatly
13 complicate the evaluation, because if you tried to think
14 through all the possible scenarios that an insider could
15 create to confuse, I think that would increase the licensee
16 burden.

17 I don't know why they would want to do that kind
18 of exercise.

19 I think it's just easier for them to show they can
20 keep saboteurs from bringing explosives to a vital area.

21 So, you know, if they want to go through that
22 exercise, I just say they have to demonstrate it credibly or
23 they shouldn't get credit.

24 In the existing OSREs, for instance, if a security
25 guard has some sort of fantastic shot, if their success

1 depends on what might be viewed -- you know, a shot that
2 requires considerable skill, they're taken out to the firing
3 range and asked to demonstrate -- I understand a recent one,
4 that they tried to take credit for a shot that couldn't be
5 demonstrated.

6 I'm just saying that has to be -- that should be
7 done the same way. You want credit for it, you demonstrate
8 it, and that's why I would urge you to try to recommend that
9 some sort of robust means for demonstrating that is
10 implemented.

11 I think that point's been driven home.

12 The last aspect now, the design basis threat -- we
13 have a few concerns with what's been going on in that area.

14 One is that the adversary characteristics
15 document, which is just released -- in our view, at least --
16 the public can't see that, because we're not cleared for
17 safeguards information, but it's our belief that this is
18 based on the best intelligence judgement, information
19 judgement to date, and I was under the impression that that
20 document would not be sent to industry for comment.

21 In fact, a few months ago, Mr. Rosano made the
22 statement that it was a finished document.

23 When NEI wanted to see it and comment on it, they
24 were told at that time that it's not for comment, which
25 seems reasonable to me, because I don't think they have the

1 capability for any type of independent intelligence
2 assessment of what's a reasonable threat, but I understand
3 that the document was sent out, was offered to cleared NEI
4 personnel for review, especially for its impact on
5 operational and financial aspects of the plant's operation,
6 and that troubles me, because I don't know what that
7 feedback is actually going to do to the document itself.

8 The other aspect of this I'm concerned about is
9 the lack of a mechanism for testing at one point against the
10 entire design basis threat.

11 The design basis threat is a set of different
12 capabilities in the industry's latest plan for their
13 program. They do not say at any point that they are going
14 to run an exercise with the entire capability of the design
15 basis threat at once.

16 What they say is we might run different pieces,
17 test different aspects of the threat, then put it all
18 together, but that, to me, is not credible.

19 If you have a design basis threat, then there
20 should be at least one evaluated exercise where the entire
21 capability is active at once, and that includes the
22 possibility of an active insider, which I believe you asked
23 before if insiders were evaluated in the past or were
24 present in the past, and only passive insiders who could
25 give information but do not actually take part in the attack

1 and didn't engage in any of these other activities of trying
2 to interfere with systems, and so, clearly, an active
3 insider is a component which really should be brought to
4 bear, and especially the impact of an active insider on the
5 operators if they attempt to intervene, clearly that could
6 be neutralized.

7 So, another aspect of the -- of trying to bring in
8 operator actions is you have to consider malevolent operator
9 actions, as well, or the ability to neutralize operators,
10 and that would increase the range of possible targets, I
11 think.

12 CHAIRMAN POWERS: Let me ask a little question
13 about that.

14 Suppose I did have an operator that was in cahoots
15 with an outside force, attempting to do something.
16 Wouldn't, in fact, any activity that he undertook be
17 promptly detected by the rest of the operational staff?

18 MR. LYMAN: That's certainly a possibility, but
19 you know --

20 CHAIRMAN POWERS: Under active supervision.

21 MR. LYMAN: Yes. Certainly, there are mechanisms
22 that -- of course, that are designed to prevent -- for it to
23 be able to detect that, but I couldn't say that, in every
24 instance, that would be detected, or if an operator that was
25 fully aware or placed highly enough, you know, in the

1 security organization of the plant couldn't bypass these. I
2 mean it depends on your assumptions, and that's something
3 which is still not known to the public.

4 I don't know what's assumed about the capability
5 of operators, but the possibility has been raised about
6 someone who prepares for this incident by walking through
7 the plant, making small changes that might remain undetected
8 but cumulatively would have a big effect when the actual
9 attack occurred.

10 So, I'm sure you could dream up scenarios. The
11 question is how do you judge which are credible and which
12 aren't? I don't think there's a way to put a numerical
13 value on them.

14 Finally, on the -- what was called the
15 self-assessment program and is now something else, the --
16 there have been concerns that, like I said before, the
17 industry hasn't really earned the right to have greater
18 oversight in this area, yet that's what they're asking, and
19 that's why the initial phrasing was self-assessment program.

20 This is one big difference between OSRE and what
21 they're contemplating, is that there would be potentially
22 less oversight in certain arenas, and this is what we are
23 not happy about seeing.

24 We think whatever comes in the future has to have
25 something as stringent as OSRE.

1 If they are more frequent, that's all to the good,
2 but they have to have the ground rules that are at least as
3 stringent, because there's no evidence that they should be
4 relaxed at this point, until the industry can demonstrate
5 repeatedly they've corrected the vulnerabilities that have
6 been shown in the past.

7 So, with that, I'd conclude.

8 Thank you.

9 DR. KRESS: Well, you've certainly give us some
10 good food for thought, and we appreciate you coming by.

11 I might ask if anyone has any questions of Mr.
12 Lyman.

13 DR. BONACA: You had some comments in your paper
14 on the process. You did not elaborate on that.

15 MR. LYMAN: Well, this is difficult for someone
16 from the public to actually say, but having sat in on the
17 series of meetings since the beginning of this year, which
18 are -- is part of what you might call interactive
19 rulemaking.

20 I would have to say that, because of the lack of
21 resources of public organizations like ourselves, we can't
22 participate on the same level as the industry can, and what
23 I've seen in these meetings is almost like a contract
24 negotiation, where the industry is writing its own
25 documents, NRC has commented line by line, and the industry

1 has quarreled with almost every change.

2 Some of them they take, some of them they take
3 back for consultation, they bring the document back the next
4 time and it hasn't been changed, and it hasn't -- it doesn't
5 seem to be the best or the most efficient way, first of all,
6 since there was a debate for several months about
7 radiological sabotage and the same arguments kept coming
8 back to the fore.

9 Because of this inequity, I would almost say that,
10 unless the public can marshal the same resource to
11 participate as equal players in this, that it might be worth
12 putting more distance, again, between those writing the rule
13 and those commenting on the rule, and of course, I would
14 prefer more public access, more public resources, but in the
15 absence of that, which doesn't seem very realistic, I don't
16 know, I think it's a problem which has to be looked at.

17 Other aspects like 10 CFR 70, which is also this
18 interactive rulemaking -- we haven't been able to
19 participate at all in that, and yet, I understand there's
20 significant industry participate in the rule writing.

21 DR. KRESS: That's a very interesting comment.

22 I understand that NEI would like to make a
23 comment.

24 Than you, Mr. Lyman. We appreciate you coming by
25 and giving us your views.

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1 MR. DAVIS: Good afternoon. I'm Jim Davis from
2 Nuclear Energy Institute. I've been working security there
3 for about six years.

4 I noticed the NRC staff provided you three slides.
5 I handed you 13. Don't worry, I'm not going to go through
6 every one of the slides, but I thought I'd provide some of
7 the information as background material, and let me refer
8 just to a few of those.

9 What's OSRE? I mean it seems like that's sort of
10 a magical word.

11 Perhaps a way to look at it is similar to some of
12 the other baseline inspection programs we've seen in the
13 past, and as you approach the end of that baseline program,
14 you say what have you learned and what should we do in the
15 future, and I think both the NRC and the industry are at
16 that point right now.

17 Last week, we completed the last inspection -- the
18 last of the first series of inspections. Every facility has
19 now had an OSRE.

20 So, you sort of finish the baseline and you say
21 what do we do next, and I think you actually will find that,
22 in the last couple of years, NRC staff has done a
23 significant amount of work to try to figure out where they
24 want to go in the future and what's the optimum way to
25 capitalize on the lessons learned in the OSRE.

1 Let me emphasize that an OSRE is basically a
2 facility-run exercise observed by the Nuclear Regulatory
3 Commission staff.

4 The adversary is provided by the facility. The
5 training of the adversary is provided by the facility.

6 So, a preponderance of this is a facility-run
7 exercise that's observed and critiqued and evaluated by the
8 staff.

9 We had a whole list of SECYS earlier, but one of
10 those SECYS, 99-024, very early in the process -- and this
11 was the Safeguards Performance Assessment Task Force that
12 did really a holistic look at the process -- is saying we
13 think that there's more opportunity to integrate the
14 licensee into this process and get the industry more
15 involved and more responsible for the set-up, run, and doing
16 these things.

17 Remember, an OSRE is an eight-year cycle. Once
18 every eight years you were getting an OSRE.

19 Out of that process and in discussion with the
20 staff, the staff came up with what was referred to earlier
21 as the exercise rule, and look at these elements. Licensee
22 develop target sets, licensee develops areas, licensee
23 conducts drills and exercises, licensee evaluate, licensee
24 correct the deficiencies. It looks like a lot of licensee
25 words. Keep that in mind.

1 We looked at that and said we've learned something
2 from the OSRE process, too, and what we've learned, what the
3 industry has learned, is if you take a deterministic rule
4 and try to do performance-based evaluations against that
5 rule, you're in big trouble.

6 That has been our most significant issue, and in
7 the discussions over the last year, we have said it is
8 absolutely essential, if you are going to hold the industry
9 responsible for performance instead of compliance with (b)
10 through (h) in the rule, you want us to perform at a certain
11 level, we must understand what the underlying criteria are
12 for that performance.

13 We've got to design to those criteria, we've got
14 evaluate to those criteria, and we'd appreciate it if
15 somebody would provide oversight to those same criteria.

16 We felt it was absolutely essential that, to
17 achieve this performance base, that the holistic look needed
18 to be taken at the rule, and Mr. Lyman is absolutely right,
19 on August 31st we sent a letter to the Chairman of the
20 Commission saying the industry feels we need to completely
21 rewrite the rule, and that's going to take three years, and
22 we agree that we need to go on, and that's when we made the
23 proposal that we would take the concepts and precepts that
24 had already been developed and discussed with the NRC
25 Commission and we would try to put them into an interim

1 program as we move forward.

2 But the biggest thing is assessment against what,
3 and I think when you kick us out of here, you're going to
4 discuss one of those activities, is what is the adversary
5 that we are working against, because we need to understand
6 that in detail just as much as anybody else, because it's a
7 fundamental of the design of our program.

8 But let me tell you what this core program
9 contains. It's procedures for developing target sets. Go
10 back to the first slide. What did it say? You wanted us to
11 develop target sets, procedures for developing scenarios, a
12 three-year cycle of drills and exercises, not an eight-year
13 cycle, a three-year cycle, something that the licensee is
14 responsible for.

15 The drills are evaluated.

16 Deficiencies are handled within the training and
17 corrective action program, and at least once every three
18 years, an evaluated exercise, a holistic look at the program
19 that demonstrates the six key elements of the program, and
20 those are the same key elements that the staff has been
21 talking about for many years as they go through the
22 discussion of what they consider important in the OSRE
23 process and they try to train the -- and help people get a
24 performance-based view of what they're going and the
25 expectation that the NRC staff would be observing those --

1 and critiquing those particular exercises.

2 So, I guess what I wanted to just bring to the
3 table today was that, one, the industry feels that it's time
4 to rewrite the security regulation to take advantage of the
5 performance insights that we have all gained from the OSRE
6 process.

7 We agree that a compliance-based rule is not the
8 most effective way to maintain security in the current
9 environment that we have today and that the program we are
10 proposing, in fact, is exactly what the staff wants to put
11 forward in the rule, and we think that there is an excellent
12 opportunity to test these concepts over the next several
13 years as the rulemaking process moves forward, so that at
14 the end we put in the rule some words that in fact will work
15 within the program, and I think you all are aware of several
16 rulemaking efforts where we've had to come back and change a
17 rule because, in fact, when you started writing the
18 implementation guidance after the rule was done, you found
19 out it didn't work quite the way you wanted it.

20 So, we're enthusiastic about this process, and we
21 think it's going to be a good effort.

22 DR. KRESS: What is the problem with you guys, the
23 licensee, knowing what the design basis threat is? Is that
24 a security issue or what?

25 MR. DAVIS: No, sir. The design basis threat or

1 the characteristic -- the detailed characteristics --

2 DR. KRESS: Detailed characteristics.

3 MR. DAVIS: -- are classified safeguards, and the
4 security manager at every facility is cleared for safeguards
5 information.

6 Clearly, the security manager has to know what
7 he's working against.

8 DR. KRESS: Is there a reluctance to let you guys
9 know what you're having to guard against? Is there some
10 reluctance?

11 MR. DAVIS: I don't fully understand the history
12 and what's gone on in many years.

13 The problem I think we've faced is we started out
14 with a deterministic rule.

15 When you tell me I have to build an eight-foot
16 fence and have to have .2 foot candles of light, I don't
17 need to know much more than that.

18 So, nobody went through the exercise of clearly
19 defining what radiological sabotage meant, how Part 100 was
20 applied, which is a siting criteria, how it applied and how
21 we cross-connected it across the entire plant, but when we
22 get into the performance base, those issues become important
23 to us, and as we get to the end of the process and we look
24 back and say, gee, part of the problem we've had is we have
25 not understood in the field the performance criteria that

1 we'd expected at the same level that some on the staff or in
2 other areas had.

3 Therefore, we need to -- you know, let's look
4 forward.

5 I don't know history, but looking forward, we need
6 to clearly understand what the adversary is and what the
7 performance expectations are.

8 With those, then we can ensure that our program is
9 adequately designed, and this is not -- don't come once
10 every eight years and say here is the criteria I am using to
11 evaluate your performance, give them to us up front, we'll
12 design our system, and you can look over our shoulders
13 periodically and make sure we're performing to that
14 criteria, and although -- and I don't have -- I guess I've
15 got do a better job of selling that, because to me, that
16 seems like, you know, an order of magnitude improvement on
17 what we've been doing in the past.

18 This is not the industry trying to do away with
19 security regulations.

20 We're not asking to do away with the guard forces
21 and that kind of -- we're asking for -- to actually move,
22 really move into the performance-based approach to
23 evaluating the effectiveness of security that's at the
24 plants.

25 MR. SIEBER: Are you trying to save money?

1 MR. DAVIS: I didn't say that.

2 MR. SIEBER: All right. I withdraw my question.

3 MR. DAVIS: Well, let me answer your question.

4 The problem that we face is we have some
5 performance -- some deterministic requirements that are
6 levied on the plants today that, in fact, contribute
7 absolutely nothing to the overall public health and safety.

8 At the time they were put in place, they probably
9 looked like good requirements, but they are sitting there as
10 requirements.

11 So, we, in fact, sometimes have people doing
12 things that we look at now do not contribute to the overall
13 capability to counter a terrorist attack or prevent a
14 terrorist attack.

15 By making some of those deterministic things go
16 away, focusing on the performance aspect within the same
17 resources, we, in fact, provide a higher level of assurance
18 that our security organization is going to perform its task.

19 So, it's a shift in the focus of resources, is
20 what you're really looking for.

21 MR. SIEBER: I don't know if I'm allowed to ask
22 this question, but could you give me some examples of things
23 that you think are deterministic that don't contribute to
24 the overall mission?

25 MR. DAVIS: Well, one good example is the original

1 rule you have a requirement to have .2 foot candles of light
2 in the perimeter zone.

3 At the time that that was put in effect and the
4 electronic surveillance systems that were available, that
5 was probably not a bad requirement for lighting.

6 As we look forward with the improvements in
7 electronics, you probably don't need that high an intensity
8 in lighting in all areas to provide adequate surveillance.

9 What's the performance criteria? The performance
10 criteria is it is able to monitor, observe, and determine
11 what is moving in that particular area, not that you have a
12 certain fundamental lighting requirement.

13 So, there's one example.

14 MR. SIEBER: It actually goes -- it's not only
15 what is moving, but it could be something that isn't moving
16 but doesn't belong there.

17 MR. DAVIS: Yes, sir. I mean a variety of things.

18 MR. SIEBER: And so, you would give your response
19 officers and your watchmen these surveillance devices in
20 lieu of keeping light-bulbs lit?

21 MR. DAVIS: I think what you will find is the
22 lighting requirement would be commensurate with the
23 surveillance equipment that you're using in that particular
24 case.

25 MR. SIEBER: So, it would be one or the other.

1 MR. DAVIS: Defining lighting in this area and
2 defining the electronic equipment standards you use in
3 another area.

4 The issue is can you observe and categorize what's
5 going on in that particular -- I mean that's one example.

6 MR. SIEBER: Do you have any others, or is that
7 the most prominent?

8 MR. DAVIS: That's just one example. There are
9 lots of others. They all run in the same arena. I hate to
10 get into details, because you end up spending five or six
11 minutes trying to explain the entire background so that the
12 thing is -- the relevance of the issue is a little bit -- it
13 takes some technical detail to understand why something is
14 or isn't important.

15 I guess which brings me to one more thought, if I
16 can inject this.

17 I would like to make sure you understand that we
18 have professionals in the industry that are managing
19 security. These are security professionals. I am not a
20 security professional.

21 They know what they're doing, and they came from
22 the same background as all the contractors and everybody
23 else that we've been talking about.

24 The industry does have the knowledge and does have
25 the capability to set up realistic and challenging

1 exercises, and whenever the question came up, we do have our
2 own contractors that we use in this business to help us get
3 an independent look.

4 DR. WALLIS: Mr. Lyman spoke of a situation where
5 you might find yourself in a sort of chess game with some
6 intelligent intruder. I just wonder how you figure out that
7 you're going to win that chess game. I'm not sure that
8 regulations help you very much in that sort of adversarial
9 confrontation.

10 MR. DAVIS: Developing defensive strategies
11 requires a lot of work.

12 Table-top exercise, as mentioned earlier, is one
13 of the techniques you use, and you pick a variety of
14 scenarios and you start playing the what-if game -- if, what
15 if; if, I will -- and you run through those various
16 scenarios and you develop your defensive strategies for the
17 broad case lot of what you're doing.

18 You work in adversary characteristics against your
19 target sets, and you run in your various scenarios, where
20 your responders go in those various cases, what advantage
21 you might or might not have in a particular situation, where
22 your vulnerabilities are, and then changing your procedures
23 to fix those cases.

24 So, basically running those kind of what-if cases
25 is a significant part of the development of the security

1 plan and the contingency response plan for a particular
2 facility. The drills and exercises is one of the tools you
3 use to validate the plan in that you run --

4 DR. WALLIS: I was more concerned with the
5 intelligent adversary game, that usually security personnel
6 are not chosen for superior intelligence. You don't want
7 them to have to make lots of decisions based on
8 chess-game-type things. You want them to react exactly as
9 trained, and I wonder how you anticipate, then, the
10 chess-game-type adversary.

11 MR. DAVIS: Management is making these decisions.
12 I guess I can't accept the statement that our security
13 personnel are not very highly trained or skilled at what
14 they do.

15 DR. WALLIS: No, they are. They are very well
16 trained and skilled, but it's not in the chess-game type of
17 adversarial setup.

18 MR. SIEBER: Maybe I could address that a little
19 bit.

20 I think in any job classification, you have a
21 range of people from watchmen all the way up to your
22 response people plus your management, but security in a
23 power plant, having worked in one for many years, is a team
24 between management, security, and operations, and so, you
25 can't look at it just as the uniformed security force, you

1 have to look at it as a broader team.

2 MR. DAVIS: I agree, it's a total team concept.

3 DR. KRESS: One more question, then we're going to
4 have to move on.

5 DR. BONACA: I thought I understand -- I mean Mr.
6 Lyman said that there was a significant failure rate of the
7 OSRE exercises.

8 If I understand what you said, it's that you trace
9 back that one to the fact that there are deterministic
10 criteria at the plants and the criteria used by the NRC to
11 evaluate performance by the staff are not clear to the
12 staff.

13 MR. DAVIS: The performance criteria, in some
14 cases, has not been adequately defined.

15 I think Mr. Lyman likes to make a statement that
16 half the people fail, but unfortunately, I think, if you go
17 back and look at the situation, you'll find that there are
18 very few cases where a finding, an actual violation of
19 regulations was issued as a result of an OSRE inspection,
20 and you have the difficulty of taking an opportunity to find
21 a weakness in your program where you can take some other
22 actions to improve the strength of it and you turn that into
23 a -- into, gee, it must be a failure instead of here is a
24 way of doing business that will improve you, and that's
25 where I'd like to sort of compare this to some of the other

1 inspections.

2 Very frequently you find you're in compliance with
3 regulations, but in fact, there are other ways and other
4 things you can do that still comply with regulations but
5 improve the performance and reduce the risk of the system.

6 DR. BONACA: You said going to performance-based
7 exercises, then that would result in some other issues with
8 OSRE. That's why I was trying to understand where you saw
9 these performance-based, you know, exercises being a
10 resolution of the issues.

11 MR. DAVIS: I think the underlying issue is OSRE,
12 in trying to look at performance, has shown that using a
13 deterministic rule approach does not give you a program that
14 clearly identifies and overcomes all the potential
15 vulnerabilities.

16 I thank you very much for your time.

17 DR. KRESS: Thank you.

18 I guess that now is the time that we're going to
19 -- we can go off the transcripts, because we're going to go
20 into the closed portion of the meeting.

21 [Whereupon, at 2:08 p.m., the meeting continued in
22 executive session.]

23

24

25

REPORTER'S CERTIFICATE

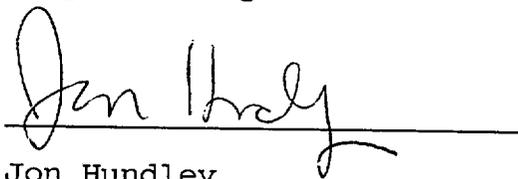
This is to certify that the attached proceedings before the United States Nuclear Regulatory Commission in the matter of:

NAME OF PROCEEDING: MEETING: 472ND ADVISORY COMMITTEE
ON REACTOR SAFEGUARDS

CASE NUMBER:

PLACE OF PROCEEDING: Rockville, MD

were held as herein appears, and that this is the original transcript thereof for the file of the United States Nuclear Regulatory Commission taken by me and thereafter reduced to typewriting by me or under the direction of the court reporting company, and that the transcript is a true and accurate record of the foregoing proceedings.

A handwritten signature in cursive script, reading "Jon Hundley", is written over a horizontal line.

Jon Hundley

Official Reporter

Ann Riley & Associates, Ltd.

INTRODUCTORY STATEMENT BY THE ACRS CHAIRMAN
472ND MEETING - MAY 11-13, 2000

THE MEETING WILL NOW COME TO ORDER. THIS IS THE SECOND DAY OF THE 472ND MEETING OF THE ADVISORY COMMITTEE ON REACTOR SAFEGUARDS. DURING TODAY'S MEETING, THE COMMITTEE WILL CONSIDER THE FOLLOWING:

- (1) SECY-00-0062, RISK-INFORMED REGULATION IMPLEMENTATION PLAN
- (2) OPERATING EVENT AT E.I. HATCH NUCLEAR POWER PLANT, UN. 1
- (3) RECONCILIATION OF ACRS COMMENTS AND RECOMMENDATIONS
- (4) PHYSICAL SECURITY REQUIREMENTS FOR POWER REACTORS
- (5) FUTURE ACRS ACTIVITIES
- (6) REPORT OF THE PLANNING AND PROCEDURES SUBCOMMITTEE
- (7) PROPOSED ACRS REPORTS

A PORTION OF THE SESSION ASSOCIATED WITH PHYSICAL SECURITY REQUIREMENTS FOR POWER REACTORS WILL BE CLOSED TO DISCUSS SAFEGUARDS INFORMATION.

THIS MEETING IS BEING CONDUCTED IN ACCORDANCE WITH THE PROVISIONS OF THE FEDERAL ADVISORY COMMITTEE ACT.

MR. SAM DURAISWAMY IS THE DESIGNATED FEDERAL OFFICIAL FOR THE INITIAL PORTION OF THE MEETING.

WE HAVE RECEIVED WRITTEN COMMENTS AND REQUEST FOR TIME TO MAKE ORAL STATEMENTS FROM MR. EDWIN LYMAN, NUCLEAR CONTROL INSTITUTE, REGARDING PHYSICAL SECURITY REQUIREMENTS FOR POWER REACTORS. A TRANSCRIPT OF PORTIONS OF THE MEETING IS BEING KEPT, AND IT IS REQUESTED THAT THE SPEAKERS USE ONE OF THE MICROPHONES, IDENTIFY THEMSELVES AND SPEAK WITH SUFFICIENT CLARITY AND VOLUME SO THAT THEY CAN BE READILY HEARD.

**Presentation Before the
Advisory Committee on Reactor Safeguards**

Hatch Unit 1 Scram with Complications (AIT)

**May 12, 2000
10:15 a.m. EST**

Presenters

Introduction:

**Tad Marsh, Chief
Events Assessment Branch
NRR**

Augmented Inspection Team Leader:

**Leonard Wert
Region II
(404)562-4540**

Event Assessment:

**Vern Hodge
NRR
(301)415-1861**

HATCH UNIT 1
SCRAM WITH COMPLICATIONS
JANUARY 26, 2000

AIT Team Leader: Leonard Wert, DRP Branch Chief, Region II

AIT Members:

J. Munday, Senior Resident Inspector, Hatch
G. Hammer, Mechanical Engineer, NRR
T. Fredette, Resident Inspector, Hatch
J. Starefos, Resident Inspector, Browns Ferry
W. Bearden, Reactor Engineer, DRS

NRC Inspection Report 50-321, 366/00-01, February 28, 2000

I. OVERALL EVENT SEQUENCE

II. EQUIPMENT ISSUES

III PERFORMANCE OF LICENSED OPERATORS

IV. HEALTH AND SAFETY ASSESSMENT

V. NRC ACTIONS

OVERALL EVENT SEQUENCE

A feedwater (FW) heater inlet isolation valve closed when a control switch unexpectedly actuated. An automatic scram on low reactor water level resulted.

High Pressure Coolant Injection (HPCI) and Reactor Core Isolation Cooling (RCIC) initiated. Reactor vessel water level was rapidly recovered.

HPCI tripped about 67 seconds after the reactor vessel high level trip setpoint was reached. Reactor vessel water level was high enough to cause water to enter the main steam lines.

The operators closed the Main Steam Isolation Valves in accordance with the Emergency Operating Procedures.

On the operator's initial attempts to control pressure with the Safety Relief Valves (SRVs), the expected control panel indications were not received.

After the control switches for several other SRVs were manipulated, an "open" indication was received and the SRVs were then used to control reactor pressure.

Reactor pressure peaked slightly above normal operating pressure.

After the incident, licensee determined that the SRVs had actually opened when actuated. SRV tailpipe (discharge line) temperatures clearly showed that the valves had opened.

Operators subsequently used HPCI and RCIC for inventory control. Several early attempts to restart RCIC did not succeed but RCIC was successfully used later in event.

HPCI was manually operated several times and tripped properly at its high level setpoint on two occasions.

EQUIPMENT ISSUES:

SAFETY RELIEF VALVES

While the SRVs were passing water or a steam/water mixture, the pressure in the SRV discharge line did not get high enough to actuate the pressure switch. Alternative open SRV indication (tailpipe temperatures) was available but not used.

Five of the pilot actuated Target-Rock SRV assemblies were later satisfactorily setpoint tested. One pilot valve assembly was inspected. No unexpected conditions were identified.

Subsequent GE and Target-Rock analyses supported operability of SRVs, the discharge lines, and components in the discharge lines (vacuum breakers and pressure switches).

REACTOR CORE ISOLATION COOLING

Hatch's procedure for RCIC restart left the RCIC steam admission valve fully open. Under some plant conditions, such as water in the steam supply line, the RCIC turbine can overspeed if this restart procedure is used.

Simulator training did not accurately reflect RCIC performance.

Licensee promptly revised RCIC procedures.

HIGH PRESSURE COOLANT INJECTION

The high reactor water level most likely resulted from HPCI not tripping immediately when the high level setpoint was reached. Additional factors contributed to the high water level.

Operators should have manually tripped HPCI when it was indicated that HPCI did not automatically trip.

Licensee did not conclusively determine why HPCI did not immediately trip during initial operation. Subsequent extensive testing supported operability of the trip function.

FEEDWATER VALVE CONTROL SWITCH

Licensee determined that a GE type CR 2940 control switch failure caused the feedwater heater valve to close unexpectedly.

GE Service Information Letter (SIL) 217, issued in 1977, states that the switch contacts may close prematurely from slight movement of the selector switch. SIL recommended that the switches be replaced with a less sensitive model.

Two of these switches had failed at Hatch in 1996 in non-safety related applications. After this event, licensee developed list of affected switches, including safety-related applications, prioritized them, and replaced some.

MAIN STEAM LINE INSTRUMENTATION:

The licensee assessed the potential effects of the transient such as localized flashing or water hammer on the instrumentation connected to the main steam lines.

Testing identified that four pressure transmitters were affected by the transient, two were significantly damaged. Two of the transmitters were involved in a failure of RCIC to automatically isolate during the subsequent plant cooldown.

The affected transmitters were replaced prior to startup.

PERFORMANCE OF LICENSED OPERATORS

- Event occurred during shift change. Shift supervisors (SS) had already turned over, but reactor operators were in the process of changing over. SRO was outside the “at the controls area” when event initiated.
- The operators did not properly monitor reactor vessel water level and injection system operations.
- STA did not provide timely assistance to operators when unexpected SRV indications were observed. Training sessions had described the availability of the tailpipe temperature as an indication of SRV performance.

- Operator took manual control of FW controller, this affected the controller response to the feedwater transient.
- RCIC restart guidance and simulator training were not adequate for conditions of the event.

Licensee promptly completed several corrective actions, including revision to the turnover process. Licensee also initiated broader corrective actions to address operations performance issues.

HEALTH AND SAFETY ASSESSMENT

No adverse affect on public health and safety. No radiological release, no approach to operational safety limits. Safety-related systems remained operable, although some problems with important equipment were experienced.

NRC ACTIONS

Region II dispatched inspectors to site and initiated Special Team Inspection on January 26, 2000.

AIT was dispatched to site January 30 - February 4, 2000. The exit was attended by several members of the public.

Staff contacted the BWROG, discussed the event with INPO during its weekly call, and responded by telephone to informal UCS inquiry about the event.

Region II continues to monitor the licensee's implementation of corrective actions through baseline inspection activities. On May 17, 2000, licensee will discuss corrective actions with Region II management in a meeting.

AIT identified candidate generic issues and promptly initiated Information Notice 2000-01 (issued February 11, 2000) highlighting three issues:

- SRV operation is slowed and indication depending on tailpipe pressure is affected when the valve is passing water instead of steam.
- Procedural guidance for MSIV closure and setpoints for high-level trips of injection systems may not prevent complications due to water collecting in main steam lines.
- RCIC performance is affected by resetting turbine trip-and-throttle valve with steam admission valve open and flow demand present, especially with excessive moisture in the turbine steam supply line.

A Memorandum was written on April 14, 2000 from Region II DRP Division Director to Chief, Events Assessment, Generic Communications, and Non-Power Reactors Branch, NRR requesting review of two issues, including interaction with the BWR Owners Group and GE as appropriate:

- To what degree should water be allowed to enter the MS lines at BWRs? Should universal guidance be developed for BWRs with specific criteria directing when the MSIVs should be closed?
- What is the significance and specific impact of the water in the main steam lines relative to considerations in the design and licensing basis?

NRR Safety Assessment and Followup

- Conducted Operational Events Briefing February 29, 2000
- The NRR Probabilistic Safety Assessment Branch performed a preliminary probabilistic risk analysis for this event, using the revised simplified plant analysis risk model for Hatch (rev. 2_qa). Application of this model to this event was accomplished using several assumptions.
 - Dominant sequences include losing the condenser as a heat sink, failing to provide adequate high pressure coolant makeup, and failing to depressurize the reactor to allow low pressure makeup.

- Probability for losing condenser heat sink is modeled by taking little credit for recovering power conversion system for short recovery times.
- If HPCI fails, recovery is assumed to be performed in the plant, not in the control room. The RCIC system was modeled as failed and not recoverable for short recovery time sequences. Given simultaneous HPCI and RCIC failures, no credit is taken for control rod drive pump injection.
- Probability for operator failure is increased slightly to account for the AIT finding that overcrowded conditions in the control room prevented clear lines of responsibility.

- With these assumptions, the calculated conditional core damage probability is $1.6E-5$.
- This event is being considered as a significant event because of several complicating factors:
 - water filling the main steam lines to the main steam isolation valves
 - loss of the condenser heat sink on manual closure of the main steam isolation valves
 - inadequate indication of safety relief valve operation
 - faulty operation of two steam-driven injection systems
 - unclear lines of responsibility in the control room
 - excessive sensitivity to mechanical motion of the feedwater control switch



*United States
Nuclear Regulatory Commission*

Risk-Informed Regulation - Implementation Plan

ACRS Full Committee

May 12, 2000

T. King, RES (415-5790)

M. Cunningham, RES (415-6189)

Purpose of Briefing

- Describe Risk-Informed Regulation Implementation Plan (RIR-IP):
 - background
 - purpose/objectives
 - outline/structure
 - plans for completion

- No ACRS letter requested at this time

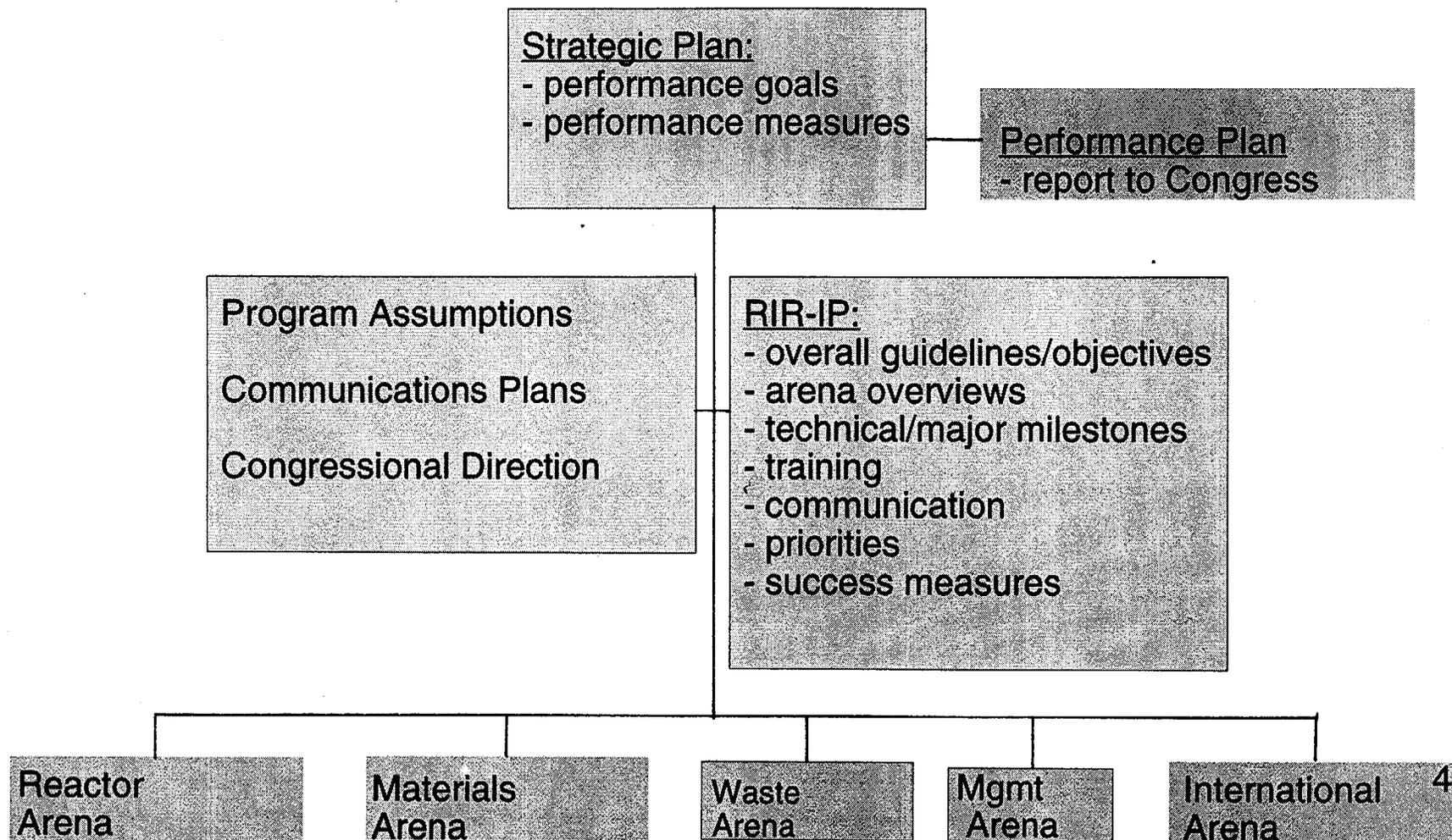
Background

- PRA Implementation Plan:
 - started in 1995
 - catalog by office of ongoing activities
 - updated semi-annually
- March 1999 GAO Report:
 - agency needs a strategy for RIR
 - roadmap of where to go/how to get there
- June 1999 Chairman response
- Jan. 2000 Outline
- SECY-00-0062

RIR-IP Purpose and Objectives

- To provide a comprehensive and integrated plan for the Agency's risk-informed activities:
 - what should be risk-informed?
 - what is needed to accomplish risk-informing?
 - what is the schedule?
- Includes:
 - guidelines for selection of activities to be risk-informed
 - guidelines for RIR (e.g., principles)
 - identification of major milestones and infrastructure needs (e.g., goals, data, tools, guidance)
 - training plans
 - communication plans
- Covers reactors, materials and waste.

FRAMEWORK



Guidelines for Selection

- Contribution to Agency Performance Goals:
 - maintain safety
 - increase public confidence
 - improve effectiveness, efficiency, realism
 - reduce unnecessary burden

- Other factors:
 - sufficient information and analytical tools exist or can be developed to support risk-informing

 - licensee interest

 - reasonable cost

RIR-IP Outline

- Executive Summary:
 - quick look tables

- Introduction:
 - purpose/objectives
 - relation to Strategic Plan, Performance Plan (some performance measures are based on the RIR-IP), Operating Plans, PBPM process
 - overall guidelines with respect to selection, prioritization, communication, implementation (e.g., performance-based)

- Arena Sections:
 - reactor
 - materials
 - waste

Outline & Structure for Each Arena

Introduction:

- guidelines applied in selecting and prioritizing activities to be risk-informed
- list of activities and priority for risk-informing
- activities are defined at high level (e.g., 10 CFR 50, RROP, security, etc.)
- list of activities not selected for risk-informing

For Each Activity to be Risk-Informed

- status
- major milestones
- infrastructure needs:
 - data
 - tools
 - guidance documents
- responsibilities

Arena and Activity Training Needs

- who
- what
- when

Arena and Activity Communications Plan

- who
- what
- when

Success Measures

Schedule

- Executive Summary/Introduction
 - draft 6/00

- Reactor Arena:
 - workshop with stakeholders - TBD
 - draft arena section - 8/00
 - ACRS review - 9/00 - 10/00

- Materials + Waste Arenas:
 - workshop with stakeholders - 4/00
 - draft arena sections - 8/00
 - ACRS/ACNW review - 9/00 - 10/00

- Complete Draft
 - due to Commission - 10/27/00

- Updates
 - every 6 months

Issues

- Internal and external factors affecting planning (April 18, 2000 SRM):
 - licensee interest/participation
 - availability of pilot plants
 - resolution of PRA quality issues
- Integration of RIR communications plans into overall Agency/Office communications plans (5/1/00 Travers memo)
- Should there be a public comment process on the October RIR/IP?

Overview

- **Risk-Informing 10 CFR 73.55 and Related Power Reactor Security Regulations**
- **Definition of Radiological Sabotage and Performance Criteria**
- **Design Basis Threat and Adversary Characteristics**
- **Industry's Interim Program**

Chronology

- **May 5, 1999 - Commission meeting at which staff proposed exercise rule to replace OSRE program (approved by SRM dated June 29, 1999)**
- **October 5, 1999 - SECY-99-241 proposed general effort to risk-inform 10 CFR 73.55, including exercise rule (approved by SRM-Nov.22,1999)**
- **March 9, 2000 - SECY-00-063 proposed use of performance criteria (approved by SRM dated April 12, 2000)**

Future Schedule

- **Summer 2000 - Endorse industry's Safeguards Performance Assessment Program**
- **Late 2000 - Begin SPA exercises (terminate OSRE exercises)**
- **May 2001 - Proposed rule issued for public comment**
- **November 2002 - Final rule issued**

Self-Assessment Program



Why an industry program?

- SECY 99-024--"...the (Safeguards Performance Assessment) SPA Task Force concludes that the industry can assume more responsibility for performance assessment..."
- SRM 99-024
- SECY 99-241
- SRM 99-241



Exercise Rule

- Licensee develop target sets
- Licensee develop scenarios
- Licensee conduct drills and exercises
- Licensee evaluate performance
- Licensee correct weaknesses

3



Industry views

- Current rule is deterministic
 - Must change to performance based rule
 - Need clearly define performance criteria
- Industry was willing to develop a contingency response evaluation program
 - Can be implemented near term
 - Supports long term rulemaking goals

4



Goal to have interim program by mid-2000

- Sept 99--Developed draft self-assessment guide
- Oct 99--Industry review
- Nov 99--Resolution of industry issues
- Dec 99--working draft provided to NRC for discussion
- March 00--Final industry and NRC review
- April 00--Industry and NRC comments resolved



5

Background

- Developed by subgroup of security managers
 - Detailed review by Security Working Group
 - Details worked with all security managers through regional associations
- Has been through two industry and NRC review cycles
- Program guide, NEI 99-07, is ready for use



6

Interim program

- Industry alternative fits with NRC long term rule objectives
 - Tests rule concepts before finalized
 - Three year program to fit with rulemaking effort
 - Provides for NRC oversight
- Takes advantage of training already being conducted by many facilities



7

Assessment against what?

- Consistent contingency response design and assessment
 - Has been a fundamental issue
 - Significant discussion with the NRC over the last 6 months--still an issue!
- Plant protection--significant core damage --target sets
- Design Basis Threat--clearly specify adversary characteristics



8

Core program

- Procedure for developing target sets
- Procedure for developing scenarios
- Three year cycle of evaluated drills and exercises
 - one drill per year for each shift
 - one exercise every three years
 - Over three year cycle evaluates full range of contingency response capability

9



Evaluated

- Drill Evaluates at least one contingency response program element
 - Element identified as part of scenario preparation
 - Basis for evaluation during critique
- Deficiencies handled as part of training or corrective action program

10



Evaluated exercise

- Contains multiple scenarios
- Range of adversary capabilities
- Demonstrates all 6 key program elements
- Expect the NRC staff to observe
- Three year cycle



11

Industry approval

- Guide is ready now
- Need bases for adversary--a key issue that must be resolved
- Will provide to industry for vote--goal is approval by the end of May



12

Industry implementation

- Volunteers to conduct evaluated exercise during first 6 months
- Schedule for evaluated exercises
 - Based on date of last OSRE
 - ◆ First year--22 facilities with oldest dates
 - ◆ Second year-- 22 with middle dates
 - ◆ Last year--those with most recent OSRE
 - Coordinate scheduling with region

