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

**Title: MEETING: 473RD ADVISORY
COMMITTEE ON REACTOR
SAFEGUARDS**

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ADVISORY COMMITTEE ON REACTOR SAFEGUARDS

JUNE 8, 2000

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

1 UNITED STATES OF AMERICA
2 NUCLEAR REGULATORY COMMISSION
3 ADVISORY COMMITTEE ON REACTOR SAFEGUARDS

4 ***

5 MEETING: 473RD ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
6

7 U.S. NRC

8 Two White Flint North, Room T2-B3

9 11545 Rockville Pike

10 Rockville, MD

11 Thursday, June 8, 2000
12

13 The Committee met, pursuant to notice, at 8:30
14 a.m.

15 MEMBERS PRESENT:

16 DANA A. POWERS, Chairman

17 GEORGE APOSTOLAKIS, Vice-Chairman

18 JOHN J. BARTON

19 MARIO V. BONACA

20 THOMAS S. KRESS

21 ROBERT L. SEALE

22 WILLIAM J. SHACK

23 JOHN D. SIEBER

24 ROBERT E. UHRIG

25 GRAHAM B. WALLIS

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P R O C E E D I N G S

[8:30 a.m.]

1
2
3 MR. POWERS: The meeting will now come to order.
4 This is the second day of the 473rd meeting of the Advisory
5 Committee on Reactor Safeguards.

6 During today's meeting, the Committee will
7 consider the following performance-based regulatory
8 initiative: use of industry initiatives on the regulatory
9 process and safety culture at operating nuclear power
10 plants. We will also discuss our upcoming visit to Davis
11 Bessie Nuclear Power Plant, and a meeting with the NRC
12 Region III personnel. You'll also have proposed plan and
13 assignments for reviewing license renewal guidance
14 documents, reconciliation of ACRS comments and
15 recommendation, and a discussion of future ACRS activities,
16 and the report of the Planning and Procedures Committee.

17 The meeting is being conducted in accordance with
18 the provisions of the Federal Advisory Committee Act. Mr.
19 Sam Duraiswamy is the designated Federal official for the
20 initial portion of the meeting. We have received no written
21 statements or requests for time to make oral statements from
22 members of the public regarding today's session. A
23 transcript of portions of the meeting is being kept, and it
24 is requested that the speakers use one of the microphones,
25 identify themselves, and speak with sufficient clarity and

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1 volume so they can be readily heard.

2 We begin this meeting by calling members'
3 attention to a interesting debate between our Vice Chairman
4 and a former member, Hal Lewis. It's obvious that our Vice
5 Chairman hasn't learned the futility of arguing with Hal.
6 But it does provide you an interesting view on revisionist
7 history of the word 1400, I hope.

8 MR. SEALE: It also demonstrates that Hal still
9 gets a kick out of arguing with anybody.

10 MR. POWERS: That's right.

11 [Laughter.]

12 MR. KRESS: I take exception to it being
13 revisionist history. I think the history was right on the
14 mark.

15 MR. POWERS: I think it's revisionist
16 history--putting the best spin on it. Things of the past.
17 I will also call members' attention to a list of major ACRS
18 activities in the coming year and some proposed assignments
19 for leadership on those various activities that we'll
20 discuss as we get into our planning for the future
21 activities.

22 Do any of the members have comments they would
23 like to make before the formal proceedings of today's
24 meeting?

25 Seeing none, we'll turn to the first subject,

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1 which is performance-based regulatory initiatives. Jack,
2 you're going to lead us through this?

3 MR. SIEBER: Yes, sir. And thank you, Mr.
4 Chairman. This morning's session revolves around the
5 high-level guidelines for performance-based activities,
6 which were initially issued January 24th of 2000; and most
7 recently issued after workshop and numerous public comments
8 on May 9th of 2000, including all the incorporated public
9 comments. That issue appeared in the Federal Register, and
10 we all got a copy of that. But I draw your attention to the
11 fact that they have--we have each received a hand-out which
12 is a reproduction of the Federal Register notice--the
13 important parts of it--so that you can actually read it, as
14 opposed to magnifying glasses and so forth.

15 MR. POWERS: Yeah, right.

16 MR. SIEBER: An item of interest here that there is
17 an Internet workshop going on today as we speak, and that
18 workshop may elicit further public comment. And actually,
19 that workshop will be open, I guess by telephone, until the
20 close of business tomorrow. And so the document that we
21 have to review today is essentially complete. It will not
22 be complete until such time as those public comments are
23 evaluated and incorporated, if any.

24 I would guess that since there was a tremendous
25 number of comments on the January draft, there probably will

1 not be too much more to say about it. But we have to wait
2 and see. Following the incorporation of those comments,
3 which hopefully will be soon, there will be a Commission
4 paper that will forward the guidelines to the Commission.
5 And I would suggest that we would need to look at the final
6 copy of the high-level guidelines, along with that
7 Commission paper. It would be good if we could get some
8 kind of schedule from the staff as to when that would occur,
9 so we can conduct that review and make our own comments as
10 appropriate.

11 Now, we will have a presentation from the staff,
12 and also we have been given notice that Mr. Biff Bradley of
13 NEI would like to make a presentation. And Ms. Lisa Gue, of
14 Public Citizen, would in addition like to make a
15 presentation, so we will save out sufficient time from our
16 schedule to allow these individuals to speak.

17 MR. POWERS: I am particularly interested in both
18 of those presentations because they seem to have slightly
19 different spins to the staff on their view towards these
20 things.

21 MR. SIEBER: Right.

22 MR. POWERS: And I think that the--a view from NEI
23 probably can be accommodated. The public citizen in a
24 different view, and I'd like to understand that better.
25 So--

1 MR. SIEBER: I would point out that if you look
2 through the packet that you were sent about 10 or 15 days
3 ago, there were two letters in that packet from Public
4 Citizen, which I think deserve reading.

5 With that, I'd like to introduce Jack Rosenthal,
6 who will introduce the speakers for the staff. Jack?

7 MR. ROSENTHAL: Thank you. I'm Jack Rosenthal,
8 Branch Chief of the Regulatory Effectiveness, Assessment,
9 and Human Factor Branch in the Office of Research. The
10 principal spokesperson is Prasad Kadambi, who is the team
11 leader for reg effectiveness within the Office of Research.
12 Ashok Thadani, the Office Director, asked that we always
13 relate our work whether orally or in writing to the agency's
14 goals. And this activity to make our regulations more
15 performance-based is under the general goal vector of making
16 our regulations more effective and efficient. And in our
17 budgeting, we have in that category.

18 It's an agency-wide effort, which you'll hear
19 about with participate. The lead is with RES, but NMSS and
20 OR have substantive roles in the agency effort. With that,
21 I'll turn it over to Prasad.

22 MR. POWERS: Jack, before you turn it over. I
23 wonder has the agency been able to identify metrics for
24 either efficiency or effectiveness?

25 MR. ELTAWILA: This is Farouk Eltawila. No the

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1 agency has not provided that metrics yet.

2 MR. POWERS: Okay.

3 MR. KADAMBI: Thank you, Jack. Mr. Chairman,
4 members of the Advisory Committee. As was mentioned, the
5 topic for this morning's presentation is the high-level
6 guidelines for performance-based activities. What we mean
7 by high-level is the level of conceptualization and
8 generality in these proposed guidelines. The result is that
9 they apply to all three of the NRC's arenas of activity;
10 that is, reactors, materials, and waste.

11 This is an outline of the presentation I wish to
12 make this morning. The ACRS last heard from the staff on
13 this subject almost to the day about a year ago. The ACRS
14 also wrote a letter June 10th, which we'll refer to. And
15 this is roughly the third presentation that the staff is
16 making to the ACRS on this subject. And I think we're
17 developing a modest level of history in what I still think
18 is a fledgling initiative as we go forward.

19 We'll talk about the SRM and the direction from
20 the Commission, the actions taken for stakeholder input, and
21 I must express gratification at the level of interest shown
22 by stakeholders. They have devoted considerable time and
23 effort to this. We'll talk about the use of risk
24 information, and some considerable time probably on the
25 discussion of the high-level guidelines and staff's plans.

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1 MR. APOSTOLAKIS: So this is not just an initiative
2 to define performance criteria in the absence of risk
3 information. This is everything. Is that what you're
4 saying?

5 MR. KADAMBI: Well, the presentation that I'm
6 making is primarily the performance-based initiative, but it
7 has been recognized, and the Commission has directed us to
8 make sure that we integrate the activity into the other
9 ongoing efforts.

10 MR. APOSTOLAKIS: Is there any--somebody else who's
11 developing performance criteria when I have a PRA? Or you
12 are doing that as well?

13 MR. KADAMBI: That is part of what we are trying to
14 do, yes.

15 By way of an overview, I believe that the staff is
16 fulfilling the Commission's directions up to now on the
17 matter of performance-based approaches. We are making
18 steady progress in this direction. It must be recognized
19 that the degree of progress is related to the resources
20 allocated. So it has been rather incremental progress, but
21 we are I believe meeting the Commission's direction. What
22 we now have developed are high-level guidelines, which you
23 mentioned. And what we plan to do is go through a
24 validation effort, and these represent I think significant
25 milestones in the progress towards what the Commission wants

1 to accomplish.

2 We hope that we'll be able to validate and test
3 these guidelines over a range of regulatory issues, and gain
4 confidence in their use and identify key challenges which
5 may limit their application, recognizing that more
6 specialized guidelines would be set at a lower level than
7 the high-level guidelines.

8 The staff will eventually integrate the
9 performance-based activities into the mainstream of the
10 regulatory improvement activities.

11 MR. APOSTOLAKIS: Is it appropriate to ask you now
12 what is the overall objective of the performance criteria?
13 I mean, if I have the indicators that you will define, what
14 conclusion can I reach? What is it I'm trying to conclude?

15 MR. KADAMBI: Well, I believe that the general
16 objective is to make our regulatory activities as--and the
17 Commission has indicated what is meant by performance-based
18 in the white paper. And we are using that kind of a--sort
19 of a--direction of progress. I'm not sure that this point I
20 can define very clearly what the end point will look like in
21 terms of performance criteria as a generalized--you know,
22 something that we can define clearly at this point for all
23 three of the agency's arenas of activities for example.

24 MR. APOSTOLAKIS: But what you just said really
25 refers to the administrative part; that the agency wants to

1 do this, and the Commission has directed you to do it. I
2 think that's fine. But what I meant by objective is--I
3 received the information, okay, from the things that we're
4 monitoring. Now, what is it I'm trying to see that--for
5 example, one objective might be that indeed the facility
6 meets its licensing basis. That might be one objective. Or
7 I don't know what else. So what is the picture that I'm
8 trying to form in my mind by having this set, and receiving
9 the information, you know, from the performance or the
10 facility. Is this to make sure that what I license is the
11 way I thought it was. Or is there something else?

12 MR. KADAMBI: I would take as a given that
13 licensees are meeting their license conditions and the
14 licensing basis. What we observe is that a lot of the
15 licensing basis at this point is--has a lot of prescriptive
16 and some consider unnecessarily prescriptive elements to it.
17 So what I would see as the overall objective is if we can
18 decrease the level of prescriptiveness and increase the
19 level of performance-based application, then there will be
20 an overall increase in the effectiveness and efficiency,
21 which is one of the agency's goals.

22 MR. APOSTOLAKIS: But isn't it a little bit
23 contradictory to say that you start with the assumption that
24 they meet all the requirements, and then you collect
25 information, you know, from performance criteria. To do

1 what? I mean, why should you do that? If you assume that
2 they meet their commitments, then leave them alone. I mean,
3 that's a pretty drastic assumption.

4 I thought the whole idea of a performance-based
5 system was to form an opinion regarding how well they meet
6 their commitments. Otherwise, I don't see why you should
7 monitor anybody, if you assume that they already do.

8 MR. KADAMBI: Well, I mean, you know, this may be
9 something that we will explore a little more in-depth as we
10 get into the guidelines. But as a general concept, what I
11 would suggest is that some of the performance monitoring
12 that is being done now will help us define what new
13 performance criteria may be. You know, and what may be--

14 MR. APOSTOLAKIS: To achieve what? Why would you
15 have--

16 MR. KADAMBI: To achieve greater effectiveness and
17 efficiency.

18 MR. WALLIS: If you're at a high level, I think it
19 would help me a great deal if you applied the high level,
20 and had some success. If you could say, here's an example
21 where we used our thought processes and our principals, and
22 we actually applied them to a particular area of the
23 regulations. And what we came up with is somehow better on
24 some scale than what we had before. So you've
25 actually--instead of philosophizing about what you might do,

1 by example. I know you're at the high level, but if you
2 stay at a high level too long, you may come up with just
3 words and waffle.

4 MR. BIRMINGHAM: My name is Joe Birmingham. I'm in
5 the Office of NOR. We don't exactly assume the licensees
6 are meeting the license requirements. We have ongoing ways
7 of inspecting to see that they are. And what we've been
8 getting are reports and inspections that tell us how
9 licensees are doing, and then what we do after that--once we
10 get a report or inspection, and we see a licensee is failing
11 or something, we then pursue an avenue of enforcement, which
12 ultimately is months, possibly a year, later in the
13 enforcement action.

14 What we want to do is become more
15 performance-based, which is a more timely way of analyzing
16 how licensees are doing. We believe we can do this and
17 still maintain that the licensees are meeting their license
18 requirements, and in fact that we can help them focus their
19 efforts in areas where the need is the most, where the risk
20 is the most. An example might be in the radiation
21 protection area. We know that licensees have determined
22 that some of their greatest risk are in the high rad rather
23 than in the low rad areas. Therefore, they're concentrating
24 on performing better in the high rad areas. Based on this,
25 I think that, you know, going to a more performance-based

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1 way of regulating these activities. They're--not all
2 activities can be performance-based, but those that can--we
3 can do it on a more timely and a more effective basis.

4 MR. SHACK: Yeah, and I think, George, this is not
5 just an oversight process. I mean, your licensing basis
6 would become a performance-based rule. So that instead of
7 your licensing basis, meaning you would have a process or
8 some description of doing thing, your licensing basis would
9 be meeting this performance measure.

10 MR. APOSTOLAKIS: Well, that's why I am here. I
11 mean, where is the staff going with this? Is that where
12 they're going?

13 MR. SHACK: Well, it includes both kinds of things.
14 I mean, you know, but I think that you would make the
15 licensing basis performance-based, as well as making the
16 oversight process, which is where you were coming from,
17 performance-based.

18 MR. SIEBER: Well, I guess there's a couple of
19 questions here. I agree with Bill, in that there are two
20 aspects to it. One is the oversight process, and we already
21 have about 20 performance indicators that are being
22 monitored on a regular basis and reported as colors--you
23 know, green, white, red, what have you. And that's a
24 supplement to the inspection program. On the other hand,
25 you have rules, like the station blackout rule, where there

1 is a performance aspect to it. Your diesel generators have
2 to operate at a certain reliability in order to have the
3 risk profile that that particular sequence of events would
4 engender.

5 On the other hand, my question is, is it the
6 intent of the staff to add to the group of performance
7 indicators that they now monitor on a regular basis to
8 supplement the inspection program. Or, is it your intent to
9 say I'm going to look at risk based rules and incorporate
10 performance indicators as a part of satisfying the
11 requirements of that rule to assure that I meet the risk
12 goals? It's got to be one or the or both, and I'm not sure.

13 MR. APOSTOLAKIS: Yeah, that's what confuses me,
14 Jack, because if the objective is to make sure that the
15 current licensing basis is satisfied, then one way of doing
16 it is to go through each requirement and say, well, gee,
17 what performance indicator can I have for this one to assure
18 myself that they're meeting.

19 If, on the other hand--which means now, according
20 to what Dr. Shack said--I would also change the licensing
21 basis, then I might want to make sure that certain risk
22 criteria are satisfied, in which case now my approach would
23 be different. And, in fact, I may start changing the
24 licensing basis and maybe eliminating some requirements and
25 impose some others. But these are different objectives.

1 MR. SIEBER: Yes.

2 MR. APOSTOLAKIS: And when you talk about the
3 high-level approach, I think that has to be cleared up.

4 MR. KADAMBI: But I do hope that I will be able to
5 clear up some of these questions, but perhaps, you know,
6 what this points to is the fact that we do need to really go
7 one step further in an actual application mode before we can
8 really know how much value added comes from applying these
9 high-level guidelines. As Dr. Wallace said, you know, we
10 can't remain at a high level for very long. But right now,
11 that's where we are, and it's part of our plan to, you know,
12 make it into a practical application.

13 MR. WALLIS: No, no. There are two sides to this.
14 I would say performance-based regulation, where instead of
15 having a whole lot of prescriptive things, like
16 temperatures, pressures and so on, you have to meet some
17 objective, which is at a higher level and more general and
18 can be met in many ways. That would mean rewriting the
19 regulation.

20 On the other level, performance-based enforcement
21 it seems to me just enforcing the prescriptive regulation in
22 another way, and may even impose extra work, because you're
23 now doing it in the prescriptive way and the performance
24 way. You know, that doesn't seem to help very much. The
25 first objective I thought was to look at the risks really

1 are.

2 MR. APOSTOLAKIS: I thought so, too. But again,
3 the objective of doing the--

4 MR. WALLIS: That's tough. That's tough. You have
5 to look at one of those regulations, and say, what is the
6 real objective of this regulation. How do we define some
7 performance to replace what's in the regulation.

8 MR. KADAMBI: I believe ultimately that's where we
9 want to go.

10 MR. SIEBER: Well, it seems to me, though, that the
11 objectives with regard to the high-level guidelines as they
12 stand today are not clearly stated.

13 MR. APOSTOLAKIS: They're not.

14 MR. SIEBER: That would be my comment.

15 MR. APOSTOLAKIS: Let me give you the--

16 MR. KADAMBI: Well, I take that as something that
17 we would seek to correct--

18 MR. APOSTOLAKIS: One last comment on this. There
19 are two extremes. This Committee has heard some people from
20 the industry claim that the only business that the NRC has
21 is to make sure there are quantitative health objectives on
22 that. That could be one objective, to start with that.

23 The other extreme is to take every piece of
24 regulation and try to define some performance criteria for
25 every single one to make sure that it's met. There are two

1 extremes. Now, somewhere in between there, you probably
2 will end up being--

3 MR. KADAMBI: Well, I--I mean, I don't want to, you
4 know, jump the gun too much, but I believe it's very
5 important to keep this sense of a hierarchy--

6 MR. APOSTOLAKIS: Sure.

7 MR. KADAMBI: In mind, and that is incorporated
8 into the conceptual framework of the guidelines.

9 MR. APOSTOLAKIS: And my question is related to how
10 far down in the hierarchy you're going to.

11 MR. KADAMBI: Well, in fact, that was a question
12 that we asked for public comment on, and we did receive
13 comment, which I think to me makes sense, you know, that we
14 can deal with. So, anyway, going through the historical
15 background, I believe that the Commission has expressed a
16 firm commitment to, you know, taking this concept as much as
17 is feasible, recognizing that, you know, we are not where we
18 might want to be right now. The strategic plan mentions
19 performance-based approaches in each of the three arenas.
20 While significant progress was made in the risk-informed
21 initiatives, the initial focus of the performance-based
22 initiatives was in those issues not amenable to PRA, which
23 is the way sort of dealt with this in the SECY-98-132, about
24 which the ACRS also had a briefing.

25 The most paper was SECY-99-176, and frankly it was

1 not received favorably by the Commission because their plans
2 lacked specificity, and I believe the magnitude of progress
3 that the Commission perceived was considered insufficient.
4 But again, we are trying to do what we can right now to
5 correct that also.

6 The ACRS wrote a letter in June, on June 10, 1999,
7 in which the performance-based activities was one of the
8 subjects covered in this letter. And the ACRS suggested
9 that the diverse activities should be better focused.

10 The SRM for SECY-99-176 I believe clearly provides
11 the Commission's expectations, and most of the actions
12 described in this presentation I believe do meet those
13 expectations.

14 I would like to quickly go over the SRM to
15 SECY-99-176. In the SECY itself, we wanted to learn some
16 lessons from ongoing performance-based activities before
17 developing the guidelines, but the Commission directed the
18 staff to, as it says, develop high-level guidelines to
19 identify and assess the viability of candidate
20 performance-based activities. Essentially, what the
21 Commission said advanced the schedule significantly.
22 We--this was considered. We were thinking of it as a
23 downstream activity. They said, no, just get it done. You
24 know, the original schedule was actually by February of
25 2000.

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1 In addition, the SRM also said that we should get
2 input from stakeholders and the program offices. I believe
3 we are doing that. The guidelines should include a
4 discussion on how risk information might assist in the
5 development of performance-based initiatives. And I think
6 this goes to some of the questions that have been brought up
7 here. The guidelines should be provided to the Commission
8 for information, and that's our plan to do it. The schedule
9 is, by the way, August 21st to the Commission of the
10 commissioned paper. And the staff should periodically
11 update the Commission on its plans and progress in
12 identifying and developing performance-based initiatives.
13 We plan to do all these, and I believe the high-level
14 guidelines do accomplish what the ACRS had wanted as--I
15 would think develop a framework within which we could focus
16 some of the performance-based activities, which are going on
17 in all the offices.

18 Now, very quickly, for internal and external
19 stakeholder input, we created a performance-based regulation
20 working group, which includes NRR, NMSS, two of the
21 divisions in research. We now also have a result of public
22 comment a representative from the regions, and we plan to
23 include as, I'll discuss--describe later all the advisory
24 committees also as stakeholders in this. As was mentioned,
25 we issued Federal Register notices, publishing the comments.

1 We had a facilitated workshop on March 1st. The transcript
2 for this workshop is on the Web. We had people from UCS,
3 Public Citizen, utilities, radiopharmaceuticals
4 representatives, people from medical applications area, NEI,
5 and others participate in this workshop.

6 We had written comments from a range of external
7 and internal stakeholders. On May 9th, we published the
8 response to the comments, and the revised high-level
9 guidelines. And, as was mentioned, we are going through
10 another workshop today, which is an on-line workshop. And
11 we'll be looking to see what comes out of that.

12 In terms of the stakeholder input, I would say
13 that it was not necessarily unfavorable to the guidelines in
14 the sense that those who favored performance-based
15 approaches, seem to favor the guidelines. Those who were
16 opposed to performance-based approaches had significant
17 problems with the guidelines. But it seems like uniformly
18 there were some what I would characterize as implementation
19 and trust concerns. By implementation, I would--I mean
20 that, you know, the level of objectivity that would be
21 exercised in actually implementing these guidelines. And by
22 trust, I mean that some stakeholders had a concern whether
23 the NRC would in an even-handed application use the
24 guidelines to increase as well as decrease regulatory
25 requirements as justified.

1 MR. SEALE: Excuse me. In your internal
2 participation, how many of the people directly involved
3 would you appropriately characterize as being inspection
4 oriented people?

5 MR. KADAMBI: The representatives from NRR and NMSS
6 are primarily--Joe, you can correct me if I'm wrong--but I
7 believe in the rulemaking end of the offices.

8 MR. SEALE: Yeah, that's why I asked the question.

9 MR. KADAMBI: Well, I mean, the idea is that
10 through these representatives, you know, the other
11 activities in the office would also find, you know, a way to
12 be reflected in--

13 MR. SEALE: In several other activities in the
14 recent past, we've been impressed, or at least I've been
15 impressed by the more than proportional contribution to such
16 joint efforts that have been made by people who have an
17 inspection background.

18 MR. KADAMBI: Right, and that's the--

19 MR. SEALE: And I was wondering if this effort
20 might benefit from such participation as well?

21 MR. KADAMBI: Well, that's the reason primarily
22 that we got a regional representative. In fact, this was a
23 point that was made at the public workshop, and we
24 immediately took action to--

25 MR. SEALE: And this regional person is

1 specifically an inspector and not a senior reactor analyst
2 or something like that?

3 MR. KADAMBI: Well, I don't really know what Steve
4 Reynolds does, but Steve Reynolds from Region III is our
5 regional representative. And he certainly, you know, in our
6 discussions brings the--I think--the inspection perspective
7 into, you know, whatever we're trying to accomplish.

8 MR. SIEBER: I'd like to ask a question by way of
9 stating a very short hypothetical situation. Let's say, for
10 example, the NRC and the industry wanted to take a
11 deterministic rule and make it a risk-informed rule. And,
12 as part of doing that, they wanted to have performance
13 indicators that would determine and assure that the
14 parameters that go into the PRC gave the right risk profile
15 for that sequence. And after the rule was imposed and the
16 data was [sic] was collected, some licensees data showed
17 that they weren't meeting the objectives, would that not
18 result in an increase in effort, work, and requirements on
19 the utility to meet that risk profile?

20 MR. KADAMBI: Well, I think if we found that, you
21 know, the risk profile was not meeting the performance
22 objectives, that's when we would take action. And, you
23 know, maybe that goes into the next slide where I--

24 MR. SIEBER: Yeah, well, I guess there's a
25 conclusion that comes of that is that it is not a good

1 expectation to believe that moving to risk-informed and
2 performance-based regulations automatically results in a
3 lowering of requirements. I don't believe that, and I can
4 see it going both ways.

5 MR. KADAMBI: I certainly see it going both ways,
6 also.

7 MR. APOSTOLAKIS: Now, if, again, if we're dealing
8 with the licensing basis, why would we care about risk?
9 That's not part of the licensing basis. Why would we impose
10 performance criteria requirements that are based on risk
11 profiles, when the risk profile was not part of the
12 licensing basis. So, you see, that's why it's very
13 important to make it very clear up front what the objective
14 of the whole effort is.

15 MR. WALLIS: Well, it seems to me that if you're
16 going to have performance-based, you've got to have a scale
17 for measuring performance. The only scale which is more or
18 less universal is risk.

19 MR. APOSTOLAKIS: Yes, but the legal problem there
20 is that it's not part of the licensing basis, so we have to
21 somehow define the objective in a way that allows that.

22 MR. SIEBER: I think that this is why they made
23 moving to risk-informed regulation an option. If you accept
24 and elect to do that, then that becomes part of your
25 licensing basis. Or, that's one way to interpret it.

1 MR. APOSTOLAKIS: Well, not so far. I don't think
2 so.

3 MR. SIEBER: Okay.

4 MR. APOSTOLAKIS: I don't think that any PRA or IPE
5 has been incorporated into the licensing basis--

6 MR. SIEBER: Not yet.

7 MR. MARKLEY: No, but if you look at a licensing
8 submittal, if it was approved based on risk, then that part
9 of it is linked in an informal way.

10 MR. APOSTOLAKIS: That is correct. But this
11 are--these are, you know, specific isolated instances.

12 MR. MARKLEY: Right.

13 MR. SIEBER: Well, that could be another
14 problem--is establishing that chain.

15 MR. MARKLEY: But the performance-based is also
16 voluntary as well, according to the guideline, correct?

17 MR. KADAMBI: Yeah, I would think unless we find a
18 reason to increase the set of regulatory requirements that
19 addresses the safety issue and then subject to the backward
20 rule, we would impose it, you know, mandatorily if that is
21 justified by the regular process that the staff has in
22 place.

23 MR. APOSTOLAKIS: So, again, are we trying, then,
24 to develop performance criteria for the two tiers that
25 presumably we will have. One will be the risk-informed and

1 the other the present one? Or are you using risk
2 information wherever you find it?

3 MR. KADAMBI: The short answer, Dr. Apostolakis, is
4 I don't know. But I hope as we go forward on this, we will
5 be able to better define what the course might be.

6 MR. APOSTOLAKIS: But if we're talking about
7 high-level requirements, though, these are the kinds of
8 questions that it seems to me have to be resolved before we
9 proceed to the specific cases that Dr. Wallace asked for. I
10 mean, these are really important questions, high-level
11 questions. Anyway.

12 MR. KADAMBI: Well, anyway, if I can--

13 MR. WALLIS: I think you want to do that. You
14 would think look at something. I mean, I'm sort of
15 imagining suppose that I were to replace the LOCA rules by
16 performance-based. It's very difficult, because no one has
17 LOCAs, so you can't say, I happen to have LOCAs, therefore,
18 it's a good plan. You've got to go back to initiating
19 events or something way down the chain, which is a very
20 small measure of overall performance really. So you'd
21 probably fall back on prescriptive regulation.

22 MR. APOSTOLAKIS: Oh, in some cases, for sure,
23 yeah.

24 MR. KADAMBI: I think that's true that in some
25 cases, you know, prescriptive regulations really make the

1 most sense, so that's part of what might fall out of the
2 discussion that will happen when we go to apply the
3 guidelines.

4 MR. APOSTOLAKIS: By the way, do you have a
5 definition of performance?

6 MR. KADAMBI: In fact, I don't. All I can say is
7 I've participated in many discussions where that has been
8 one of the most difficult questions. That, depending on the
9 context, it can have many different characteristics.

10 MR. WALLIS: So your study might end up concluding
11 there's no measure of performance; therefore, this whole
12 performance-based idea is a fantasy?

13 MR. KADAMBI: If what you are suggesting is that
14 one has to develop a definition of performance that applies
15 across the board, that may well be the case.

16 MR. WALLIS: Or you're going to have to develop
17 several systems--

18 MR. KADAMBI: Correct. May I add we believe that's
19 possible.

20 MR. ROSENTHAL: Perhaps my pragmatism will come
21 through. The--clearly, where risk-informed--the reactor
22 oversight process we believe is the most risk-informed,
23 performance-based approach. And that was done well in
24 advance of these formal guidelines. We have another major
25 activity at the NRC, and that's to risk inform regulations

1 that you've been briefed on separately. We have this
2 initiative to come up with some guidelines which will
3 hopefully be a--some unifying principles and something to
4 check our work against to make things more
5 performance-based. We have clearly an obligation to link or
6 coordinate all these efforts together. But we're clearly
7 not doing a hierarchical process where we're starting out
8 the guidelines, and, you know, clipping through them. So
9 why do this effort now? Because we moved ahead with the
10 reactor revised oversight process. We're moving forward
11 with risk informing the regulations. We're moving ahead on
12 individual regulations in areas from QA and fire protection
13 and fitness--I mean, just all over the place. And this
14 provides some sort of unifying, at least thought processes,
15 to test our ideas.

16 So pragmatically, it's a good time to do this.

17 MR. BIRMINGHAM: I'd like to also say in those
18 individual areas--emergency preparedness, radiation
19 protection, fire protection--we find that the definition of
20 performance varies in that it has to be very specific to the
21 attitude, you know, to the context. And a general, we
22 probably could develop a general definition of performance.
23 In fact, Prasad had a paper developed that talked about how
24 do you measure performance. But we find that it has to be
25 specific to the context or to the activity that it's being

1 applied to.

2 MR. APOSTOLAKIS: See, Jack, the reactor oversight,
3 the revised reactor oversight process has defined the
4 cornerstones as something that the staff cares about. So
5 they have defined some high-level objectives. But there is
6 also the problem of objectives there. I mean, if you
7 recall, there was an ACRS letter where there were
8 differences of opinion as to the thresholds, and I think
9 that stems from the fact that the objective, the overall
10 objective, has not been clearly stated. And I think we have
11 to do this here to avoid controversies of this type in the
12 future. What exactly are we trying to do to assure
13 ourselves that something is satisfied? What is that
14 something? And you have several ideas, you know, meeting
15 the current basis, changing the current basis to meet
16 something else. What is it?

17 MR. BARTON: Something measurable and calculable.

18 MR. APOSTOLAKIS: As long as it's measurable or
19 calculable, we will accept it.

20 MR. WALLIS: Unless there's something that actually
21 happens. Not having a ability to fight, Greg, it's not very
22 measurable. It could be something measurable.

23 MR. SHACK: I mean, just take a good example. In
24 the steam generators, you know, your performance measure is
25 thou shall not have a tube at the end of the cycle that has

1 a strength less than three delta--you know, three times the
2 pressure across it. And if the licensee comes to the end of
3 the cycle, and he's got a tube that doesn't meet three delta
4 P, he's--you know, he's in violation of his performance
5 measure. He's in trouble. He's going to have to--you know,
6 he's going to have maybe do extra inspections. He's going
7 to have to be more conservative. But, you know, he has a
8 clear performance measure that he has to meet.

9 MR. WALLIS: Sounds prescriptive to me.

10 MR. SHACK: Yeah, no, it's a performance measure.

11 MR. WALLIS: But it's also prescriptive.

12 MR. SHACK: Yeah, but in the sense that it
13 prescribes a performance measure, yes.

14 MR. APOSTOLAKIS: No, but the question is why that
15 measure and not something of the higher level?

16 MR. SHACK: That's a different question.

17 MR. APOSTOLAKIS: No, it's not. It's not. Because
18 setting up the criteria is exactly that question. I mean, I
19 can always give--have well-defined performance objectives,
20 but the question is why this and not that?

21 MR. SHACK: Well, we've had this discussion before
22 on performance-based--

23 MR. APOSTOLAKIS: Yeah, I know.

24 MR. SHACK: Criteria. How you pick the criteria is
25 one subject. Whether having a performance-based rule is a

1 different subject.

2 MR. APOSTOLAKIS: But I thought that the high-level
3 objectives that we are discussing today is how to pick them?

4 MR. SHACK: No, because I think he's been careful
5 to distinguish that in some cases, he will have, you know, I
6 think everybody agrees that the most desirable performance
7 measures are those directly linked to risk. The question
8 is, is it useful to have performance-based measures in other
9 cases that you can't link so directly to risk?

10 MR. APOSTOLAKIS: Yeah, yeah. That's exactly the
11 problem here.

12 MR. SHACK: And he's saying yes. And he's giving
13 you guidance for both cases.

14 MR. APOSTOLAKIS: Where is the guidance? I missed
15 it?

16 MR. WALLIS: Well, we're going to get to it.

17 MR. KADAMBI: Mr. Chairman, may I ask how much time
18 do I have?

19 MR. POWERS: I think you've certainly got another
20 15 minutes. Right.

21 MR. KADAMBI: I see. Well, then I'm going to have
22 to zip through these because I think you do have other
23 speakers also on the agenda.

24 Well, the Commission asked us to discuss how risk
25 information might assist in the development of

1 performance-based initiatives. And our preliminary cut
2 right now is to categorize areas--these are three categories
3 of areas where risk information may assist in the
4 development of performance-based initiatives. That is, risk
5 information may provide the basis for undertaking an
6 initiative. And under that, it could be a safety
7 enhancement. It could be a reduction of unnecessary burden,
8 and it could be the sort of things that are going on under
9 options two and three and the risk-informed initiatives.

10 Risk information could be used in the metrics and
11 thresholds or regulatory response. This is the framework
12 for the revised reactor oversight program. And the third is
13 the category of areas where one could classify as not
14 amenable to PRA.

15 But what is common about this I believe is that
16 risk information helps determine what is important. And
17 performance-based considerations form the basis for assuring
18 that the systems, functions, or whatever else provide the
19 requisite level of performance. So it is in that sense that
20 risk- and performance-based initiatives I believe come
21 together.

22 Now we go to the guidelines themselves, and if you
23 don't mind--you know, I'd rather use the sheets in front of
24 you on the guidelines if there are--if one wants to look at
25 the actual wording of the guidelines, because this wording

1 was arrived at with some discussion and, you know, it could
2 be important what it actually says.

3 Now, first of all, the high-level guidelines are a
4 starting point, and they don't represent, in my mind, a
5 roadmap of how to get from here to there. It's a way to get
6 started on, you know, what might be possible, and how
7 worthwhile is it to undertake a performance-based
8 initiative. The other point is that there is a high degree
9 of context specificity that should be expected during the
10 application of these guidelines. So, although they are at a
11 high level, really you need to define the regulatory issue
12 in some level of detail before we can really get much out of
13 the guidelines, I believe.

14 Now, the guidelines themselves are divided into
15 three categories, and they are the viability, the
16 assessment, what we call guidelines to assess
17 performance-based regulatory improvement, and the guidelines
18 to assure consistency with regulatory principles.

19 The guidelines to assess viability are directly
20 out of the Commission's white paper. They are the four
21 measurable, calculable attributes--the objective criteria,
22 which would constitute the demarcation between what is
23 acceptable and what is not acceptable. And then the two--

24 MR. WALLIS: These are other questions in the white
25 paper?

1 MR. KADAMBI: Yes.

2 MR. WALLIS: They're not the result of your work?

3 MR. KADAMBI: No, these are the result of the
4 Commission's white paper.

5 MR. WALLIS: I see.

6 MR. KADAMBI: But they--they meet the needs for
7 high-level guidelines, and so we've chosen to use them.

8 MR. WALLIS: Chosen. What is the--why has the
9 staff had to commission this white paper?

10 MR. APOSTOLAKIS: Would you say again?

11 MR. WALLIS: What did the staff add? I mean,
12 you're just repeating what's in the Commission's white
13 paper.

14 MR. APOSTOLAKIS: I think that part of the matter
15 is the next viewgraph, where you talk about consistent, the
16 appearance with overriding goals. Everything else we have
17 seen before I believe. So if you go to--I mean--

18 MR. KADAMBI: Okay, I'll go to the next slide.

19 MR. APOSTOLAKIS: That's really where a lot of my
20 questions are directed. No, the next one. So under roman
21 III. First of all, there is an A, and I don't see a B
22 anywhere. Is there a B someplace?

23 MR. KADAMBI: No, there isn't. This is just to
24 keep a consistent notation.

25 MR. APOSTOLAKIS: So this is really where I guess

1 my questions, you know, belong.

2 MR. KADAMBI: Certainly.

3 MR. APOSTOLAKIS: I would expect to see more
4 guidance, because the rest of it really has been discussed
5 in the past and so on. What does it mean to assist them
6 with regulatory principles? I mean, how far down will you
7 go? How do you decide these things? That's where you need
8 guidelines in my view.

9 MR. KADAMBI: Well, I--I guess the structure that
10 we have offered over here in the guidelines is that, you
11 know, the questions that you ask are part of the kind of
12 inquiry that these guidelines would lead us into, and then,
13 at the end of it, we would, you know, make sure that we're
14 consistent with the overriding Commission's goals.

15 Now, there's no reason why this could not, and, in
16 fact, if we expect that it will be an iterative process
17 whereby, you know, we would begin at some point; and perhaps
18 it will be with, you know, the Commission's goals; and then
19 allow the guidelines to lead us through a process where we
20 would see where it is in the hierarchy. And, for example,
21 the kind of hierarchy we may think about or, you know, would
22 it be the component train system or release or dose where
23 you would apply the performance criterion. And it may be a
24 different type of regulatory requirement that attaches at
25 those, once you define that kind of performance criterion.

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1 You know, and that's the reason why in the
2 regulatory framework itself, you know, we would consider the
3 regulations in the Code of Federal Regulations. We would
4 consider regulatory guides and new regs and standard review
5 plan, technical specifications, inspection guidance. You
6 know, depending on where it is that, at least in my mind, I
7 would say the unnecessary prescriptiveness occurs, which is
8 what is the situation that needs to be corrected as it were.

9 MR. WALLIS: Can I call in on this A, 3-A?

10 MR. KADAMBI: Sure.

11 MR. WALLIS: Now, I think the overall objective of
12 what you're doing sounds very good. But this doesn't tell
13 me anything. This is just eliciting what I say is invoking
14 the names of the saints. I mean, these are phrases which
15 everyone uses to justify anything they're doing. It doesn't
16 tell me anything about actually making something happen.

17 And that's where you've got to go. You've got to
18 show you've got some vision or creativity or some view of
19 how you're going to make something happen.

20 MR. APOSTOLAKIS: Are you planning to develop
21 guidance as to how one can be consistent and coherent with
22 overriding goals? How one will handle defending that
23 uncertainties? I mean, this is really the issue here: A, B,
24 C, D, E. You do this, you do this, you do that. Is that
25 part of your plan?

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1 MR. KADAMBI: The short answer is yes. We do plan
2 on doing it. We are not there yet, and what it requires is
3 for us to be dealing in a specific arena with a more
4 specific regulatory issue before we can get to that level of
5 the guideline as it were.

6 MR. APOSTOLAKIS: So you will do a few--several
7 case studies perhaps, to gain more insights?

8 MR. KADAMBI: Right.

9 MR. APOSTOLAKIS: That's what--and this will be
10 released by August?

11 MR. KADAMBI: That's right. What we call them are
12 the validation and testing of the guidelines. I mean, you
13 can as well call them case studies. That's the proposed
14 plan. You know, what I would say is that we're planning to
15 really apply these to new initiatives, but, in the meantime,
16 in order to gain confidence in the guidelines, we would plan
17 to validate and test the guidelines on either ongoing
18 activities or, you know, I don't know if even hypothetical
19 situations can be generated where we can test these.

20 But what we need to do as the next step, and this
21 is what we would offer the Commission as part of our
22 immediate plan is what--how we would validate and test them,
23 and what we are doing to integrate this into the regulatory
24 improvement activity, a big part of which is the
25 risk-informed initiative. So--

1 MR. APOSTOLAKIS: So when will this happen? By
2 August? You said that it is a--

3 MR. KADAMBI: The obvious time frame is for the
4 commissioned paper--

5 MR. APOSTOLAKIS: Which will not have the case
6 studies?

7 MR. KADAMBI: I hope by then that we are able to
8 conduct case studies. The commissioned paper may report on
9 these. But to cut to the conclusions, you know, we do have
10 a paper that's due August 21st, and in that paper, we will
11 describe how we have met each of the elements of the
12 Commission's SRM. And, by then, if we are able to have
13 conducted some of these case studies or validation
14 exercises, we will also report on that, and we will
15 certainly inform the advisory committees.

16 MR. APOSTOLAKIS: How many committees do you have?
17 Advisory committees?

18 MR. KADAMBI: Well, all three of the committees I
19 believe will be--

20 MR. APOSTOLAKIS: ACNW is involved?

21 MR. KADAMBI: ACNW as well as ACMUI.

22 MR. APOSTOLAKIS: ACNW, they are very familiar with
23 the term performance assessment. Is that what you mean by
24 performance, too?

25 MR. KADAMBI: Well, I can't answer that yet,

1 because I'm not sufficiently familiar with what they're
2 talking about right now.

3 MR. POWERS: Let me ask a couple of questions about
4 a slide you skipped over--that was your guidelines to assess
5 performance-based regulatory improvement. It may be similar
6 in nature to Professor Apostolakis' questions. You have a
7 variety of items listed down here. It says, ensure adequate
8 safety margins. Is there going to be guidance that gives me
9 some idea of what an adequate safety margin is?

10 MR. KADAMBI: Well, the adequacy of the safety
11 margin has to be based on the analysis methodology and the
12 assumptions that go into it, and, of course, the uncertainty
13 associated--

14 MR. POWERS: It has all of those things?

15 MR. KADAMBI: It includes all those things.

16 MR. POWERS: Alright. Suppose I have all of those
17 things. And I have an analysis methodology. I have a
18 result that comes out of that. I have an uncertainty on
19 that result. Now, how do I decide whether the margin is
20 adequate or not?

21 MR. KADAMBI: That is where the particular--

22 MR. POWERS: Let's say the number is 12.

23 MR. KADAMBI: Regulatory issue has to--

24 MR. POWERS: The number is 12. The uncertainty on
25 that number is--has a--the square root of the variance is 3.

1 Now, what is an adequate margin.

2 MR. KADAMBI: It depends on whether this is a
3 transportation issue, you know, whether you're talking about
4 transporting a package of radioactive materials.

5 MR. POWERS: Okay, you're transporting--

6 MR. KADAMBI: Whether it's a reactor.

7 MR. POWERS: We're transporting a package of
8 radioactive materials.

9 MR. KADAMBI: Okay, then I can give you, you know,
10 my off the cuff assessments right now.

11 MR. POWERS: That's fine.

12 MR. KADAMBI: That's all. I would say one has to
13 consider the level of risk associated with this package of
14 material and what this number 12 means relative to the risk
15 to the public from--

16 MR. POWERS: Okay, so you do not, then, make any
17 use of my number 12 rule--or the uncertainty that I have?

18 MR. KADAMBI: Well, I mean, the number 12 may mean
19 that this transportation meets the regulatory requirement or
20 it does not meet the regulatory requirements. I mean, one
21 would have established what is the acceptance criterion
22 ahead of time, and you would compare this number 12 with the
23 acceptance criterion.

24 MR. POWERS: Okay. For understanding, let's say
25 the acceptance criteria, and is 10.

1 MR. KADAMBI: Is it good to be more or bad to be
2 more?

3 MR. POWERS: It's good to be more.

4 MR. KADAMBI: Then the regulatory requirement is
5 met.

6 MR. POWERS: Twelve is good enough, and it doesn't
7 matter that my--the square root of the variance is three?

8 MR. KADAMBI: I--

9 MR. POWERS: Suppose the square root of the
10 variance is 12?

11 MR. ROSENTHAL: You know, we did have a fair amount
12 of discussion, recognizing that it would be very, very
13 context specific, because, you know, you have to think of
14 this not only in terms of your DMB criteria, the 95-95
15 level, but you also have to think about if you were
16 developing a rule on fitness for duty. I mean, you know,
17 will you allow one drunk in the control room, but not two?
18 And I--if I'm being rude, I apologize in advance. I didn't
19 mean to be snippy. But rather, we use that as an example of
20 just how context-specific these considerations require.

21 MR. POWERS: Except that you're planning all these
22 problems, and you're not giving me anything on anything.
23 Okay. I mean, you're telling me, I can find cases where it
24 would be difficult to use a mean and the square root of the
25 variance for any kind of decision, because it would be

1 difficult to calculate those. But I can find cases where I
2 can do those sorts of things, and I don't have any guidance
3 on either one of them. I still don't know what an adequate
4 safety margin is for any case, let alone the difficult case.

5 MR. APOSTOLAKIS: At the plant level, I mean,
6 typically when you have goal sets and criteria, it meant
7 that if the licensee, for example, failed to meet the
8 criterion, margin meant that you do not have an immediate
9 safety concern; that you had enough time to recover from it.
10 You have--

11 MR. POWERS: If that is the case. And this
12 particular entry is superfluous because that's covered in
13 another entry.

14 MR. APOSTOLAKIS: Okay.

15 MR. POWERS: So, I--that--and I think there's a
16 redundancy in here that has not resulted in the
17 clarification.

18 Let me ask you another question: on your item B,
19 you say increase public confidence. And it says an
20 assessment would be made to determine if the emphasis on
21 results and objective criteria can increase public
22 confidence. Can you tell me what you mean there?

23 MR. KADAMBI: Well--

24 MR. POWERS: I mean, it seems to me the answer is
25 unequivocally yes on this.

1 MR. KADAMBI: I think it ought to be yes, but I'm
2 not sure that we can be confident that having objective
3 criteria and the ability to measure, let's say, for example,
4 in a waste application.

5 MR. POWERS: Well, what's the word can in here. I
6 mean, it says, yes, in principle--it seems to me that in
7 principle it is possible given the right alignment of the
8 moons and the suns and things like that that some--this
9 thing could, indeed, increase public confidence. Isn't what
10 you what you know is if it does or doesn't?

11 MR. KADAMBI: Well, I, hopefully it's a little bit
12 lower than that level of moons and the stars, but what this
13 should drive us to is at least ask the question how it
14 affects public confidence. And if there is a way to
15 structure the regulatory requirement in such a way that it
16 does increase public confidence, that is what the staff
17 should be thinking about when it looks at this set of
18 guidelines.

19 MR. APOSTOLAKIS: I think that you're entering a
20 territory that's minefield. Who is the public? Whose
21 confidence are you talking about? I'm not sure we want to
22 get into that too much, but I mean, I don't know. I mean,
23 what if one stakeholder disagrees? Have you increased
24 public confidence? I don't know. I mean, I always have
25 problems with this public stuff. I don't understand who the

1 public is. Well, anyway, I think we are running out of
2 time.

3 MR. KADAMBI: Well, these are--yeah, these are
4 difficult questions.

5 MR. WALLIS: Can I make a statement here. I'm
6 trying to verbalize it. It seems to me that you have a
7 wonderful opportunity to be creative and innovative and bold
8 and visionary and all that, and something about the way in
9 which you have to operate in a regulatory agency, with all
10 its baggage, seems to me making it difficult. And I don't
11 know what it is, but I wish somehow you could sort of get
12 free from all the shackles and actually go out and do
13 something that was exciting. I don't know how to make it
14 happen, but there's got to be somewhere that can happen in
15 this agency.

16 MR. APOSTOLAKIS: The problem, Graham, is that you
17 can't do that.

18 MR. WALLIS: You can't do that?

19 MR. APOSTOLAKIS: You can't just ignore, you know,
20 50 years of regulations.

21 MR. WALLIS: I know that. But someone, at some
22 level, has to do that; otherwise, nothing eventually happens
23 which is new.

24 MR. APOSTOLAKIS: That's correct. Yeah.

25 MR. WALLIS: And it doesn't have to be presented

1 because you're in a public forum and all that kind of
2 stuff--need to be careful what you say. But, at some level,
3 there's got to be a way in which that sort of activity
4 happens in this agency it seems to me.

5 MR. APOSTOLAKIS: What would be the platonic
6 regulatory system?

7 MR. SIEBER: Are there any other questions or
8 comments?

9 MR. APOSTOLAKIS: There are but they will not be
10 asked.

11 [Laughter.]

12 MR. SIEBER: Okay. Thank you. According to our
13 schedule, we are to hear from Biff Bradley of NEI. Is he
14 here? I don't see him.

15 MR. APOSTOLAKIS: No, he's not.

16 MR. SIEBER: Anybody from NEI who is to speak? If
17 not, we have a request from Lisa Gue of Public Citizen, who
18 would like to address the committee. And, Lisa, if you
19 would come up here, please. Thank you very much.

20 MR. KADAMBI: Thank you, Mr. Chairman.

21 MR. POWERS: You may want to turn that thing off.
22 Lisa, this is your first opportunity, I believe, to speak
23 before the Advisory Committee. And we traditionally ask our
24 rookie speakers to give us a little background on themselves
25 before they give us their prepared presentation.

1 MS. GUE: Okay. Well, good morning. I have just
2 recently began in the position of policy analyst with Public
3 Citizen's Critical Mass, Energy, and Environment Program.
4 And I've previously been working in another campaign of the
5 same group within Public Citizen, the Campaign on Food
6 Irradiation.

7 So I do thank you for allowing me to comment today
8 on the proposal for high-level guidelines for
9 performance-based regulation. As I mentioned, I am
10 representing Public Citizen's Critical Mass, Energy, and
11 Environment Program. And Public Citizen is a non-profit
12 research, lobbying, and litigation organization founded by
13 Ralph Nader in 1971. As you may be aware, and with
14 reference to the comments and questions about who the public
15 is, in this case, we advocated for consumer protection and
16 for government and corporate accountability, supported by
17 our 150,000 members throughout the country.

18 I'd like to begin by noting that it's
19 disappointing that, as of yet, our previous comments in
20 opposition to the proposed guidelines have generally been
21 dismissed. The process for public participation, which
22 would purport to be open and responsive, has, in fact, only
23 been able to integrate comments which can be incorporated
24 within the basic paradigm of a performance-based regulatory
25 framework.

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1 Our more fundamental concerns with the framework
2 itself have been systematically excluded from consideration.
3 Nevertheless, I want to reiterate that Public Citizen has
4 grave concerns about the Nuclear Regulatory Commission's
5 proposed high-level guidelines for performance-based
6 regulations, not least in terms of how they would affect the
7 regulation of nuclear waste.

8 We have also submitted written comments detailing
9 our concerns with performance-based regulations as they
10 relate to reactor safety. And unfortunately, my colleague,
11 Jim Riccio, who submitted those comments, is unable to
12 attend today. But please take them into consideration,
13 nonetheless.

14 I will focus my comments on the implications for
15 waste management. We feel that it's important for this
16 Committee to take into account these considerations, given
17 that the proposed guidelines would inform all Commission
18 regulations concerning the entire nuclear cycle.

19 Maintaining safeguards in the transport and
20 storage of nuclear waste requires the NRC to take a more
21 proactive approach to waste management than the proposed
22 guidelines would suggest. Once a waste storage cannister or
23 a transportation cask leaks, public health and environmental
24 safety are already threatened. There is no margin of safety
25 to protect the public if part of the already flawed system

1 fails. In this respect, a performance-based approach is
2 clearly inadequate, since it can only respond to failure,
3 not predict or prevent it.

4 As well, the many uncertainties associated with
5 waste management make it difficult to adequately assess the
6 risks involved, including the entire range of probable and
7 improbable events affecting the control of radioactive
8 materials.

9 MR. APOSTOLAKIS: Excuse me. Didn't the staff say
10 that when they set the performance guideline, one of the
11 criteria is that there would be no immediate safety concern
12 if the criterion is not met? So, in that case, having a
13 cask leak could not be acceptable. I mean, that
14 cannot--there could not be a criterion related to that
15 because you will have an immediate safety concern. So, it
16 seems to me the staff has covered your concerns. They would
17 impose prescriptive requirements at a much lower level
18 before, in fact, it leaks. So I don't understand where the
19 disagreement is.

20 MS. GUE: Well, I agree that that is the concern;
21 that as soon as--that at the larger scale, a
22 performance-based method would seem to beg the question in
23 that way. And I guess to us it seems difficult to imagine
24 how, again, in terms specifically of waste management, how
25 performance-based criteria could be established in a

1 meaningful way that would not immediately threaten public
2 safety as soon as they are violated. It seems difficult to
3 envision how the bright line on the margin of safety can be
4 applied to risk--or to waste management scenarios.

5 MR. POWERS: So let's take an example from the
6 reactor field that might be applicable here. Dr. Shack
7 pointed out that you've got a criterion on a steam generator
8 tube that says at the end of the cycle, the strength of this
9 tube cannot be less than three times the delta pressure that
10 it experiences during operation. Assuming it hasn't leaked,
11 but it has got a criterion such that, based on a variety of
12 information, says it has some probability of leaking if we
13 ran it in the next cycle. But right now, it hasn't. And
14 that seems to have met the requirement that no catastrophic
15 failure has occurred, to find out that the tube has failed.

16 MR. SHACK: And, if, in fact, the tube is only 2.5
17 times delta P, the probability that you're going to actually
18 have a failure is still very, very small, so there is, you
19 know, there is a margin built into the performance
20 indicator.

21 MS. GUE: Again, my comments are focused more
22 specifically on the effect for this--of this approach, on
23 the waste side of the scenario. And I realize that's not
24 the specific focus of your committee. And yet, as I began,
25 we do feel it is important for your committee to consider

1 these implications, and that these are high-level guidelines
2 being proposed; and that the reactors do inevitably generate
3 waste material.

4 And I think I was just about to get into another
5 relevant aspect that I think applies to that scenario, which
6 is that the many uncertainties in terms of dealing with
7 waste and perhaps also with reactor safety make it perhaps
8 difficult to adequately, to target what the risky situations
9 are before we have experience in them causing failure. And
10 so, in general, we fear that this general outlook will set a
11 precedent, a dangerous precedent that results more in
12 responding to failure than ensuring safety.

13 MR. POWERS: It seems to me that if I was thinking
14 about a very, very uncertain situation, from my ability to
15 quantify and characterize all of the threats, I would be
16 tending toward a more performance-based criteria and away
17 from a prescriptive base, because I don't think I could
18 prescribe everything that threatened a system. But I'd want
19 to back up a little bit and take a more holistic view and
20 say, here are your performance criteria. Don't threaten the
21 integrity of the barriers here. Or install multiple
22 barriers so that if one of them does fail, it's okay. I've
23 got another barrier to prevent then. I mean, it seems to me
24 that performance is not inconsistent with a highly uncertain
25 situation that you probably have in particular things like a

1 waste repository, or even a transportation situation.

2 MS. GUE: Of course, it's not our intention to
3 suggest that we disagree that the overall performance should
4 be towards safety. It's just in terms of what the
5 implications of these guidelines would be for--at a high
6 level for the regulatory outlook that's adopted. And from
7 our reading of the proposals, it would seem that this
8 relaxes the regulatory conservatism that we feel is
9 necessary to guarantee as much as possible the safety; and
10 that once again, while we can say that safety is the--you
11 know, is at the end of the day, the performance criteria; in
12 order to guarantee that--just to identify that as a
13 performance criteria is not enough to be able to guarantee
14 it, I guess. And in this case, excessive conservatism would
15 be a virtue.

16 MR. APOSTOLAKIS: Now, let me see if I understand.
17 I believe what you're--the message you are sending us is
18 that you're concerned that when the time comes to implement
19 these things, maybe some of the conservatisms would be
20 eliminated, and some of the criteria would be set at a level
21 which you find unacceptable. But in principle, because the
22 staff really spoke at a very high level earlier, you don't
23 seem to disagree with the principles they have set, like,
24 you know, no immediate safety concern if the criterion is
25 not met. They have objective criteria and so on. It's the

1 future implementation that seems to be of concern to you. I
2 mean, am I understanding it correctly? Because, you know,
3 principles are principles.

4 MS. GUE: Well, I think as you yourself pointed out
5 in some aspects of the previous presentation that, you know,
6 these words are very nice to have, but the comments that I'd
7 like to put forward have to also address what kind of
8 precedent they would be setting; what kind of orientation
9 they would be putting the regulatory structures towards.

10 Of course, I'm not going to tell you that I
11 disagree or that Public Citizen disagrees with the objective
12 of safety. At the same time, reading some of the language
13 in terms of lessening some of the regulatory burden,
14 allowing the agency, or the licensees to focus attention on
15 certain safety concerns, where it can be most efficient--it
16 seems clear that the objectives, as they are being stated,
17 are coming, of course, out of a specific direction. And we
18 do have concerns with that. And so perhaps by implication
19 those are concerns with the general objectives of these
20 guidelines.

21 MR. KRESS: It sounds to me like you're questioning
22 what seems to be a basic assumption in this process, and
23 that assumption is that one can actually find performance
24 indicators that are directly related to the safety and the
25 risk of an activity. That seems to me like what you're

1 questioning; that such indicators are such a loose
2 connection to real safety and hazard that they don't cover
3 all the aspects or all the objectives that you might be
4 interested in preserving. Was that a way to interpret it?

5 MS. GUE: That's certainly one element of our
6 concern. I think a related element is that we tend to be
7 best able to articulate these safety criteria after we have
8 experience of their failure. And given, in some cases, the
9 newness of the scenarios that we're dealing with--again, the
10 many uncertainties involved, I just need to restate the need
11 for conservatism and the need to not only--to not be content
12 with evaluating eventual outcomes in instances where the
13 eventual outcome can already be a threat to public safety.

14 MR. APOSTOLAKIS: I think the basic position of
15 Public Citizen, which has been articulated by Mr. Riccio in
16 the past and today by you, is that this whole initiative of
17 risk-informing the regulation and developing
18 performance-based criteria is motivated by the industry's
19 desire to become more efficient, and, you know, to save
20 money. And the public safety is not a concern here. I
21 think that's a fundamental position that Public Citizen has.
22 And today, you know, you're addressing this particular
23 issue, but, again, coming from that perspective. And last
24 time we heard this was when we talk about technical
25 specifications, when there was a letter from Mr. Riccio that

1 I read that expressed that basic point of view. Is that
2 correct? That before--

3 MS. GUE: Yes, that's true. It's our perspective
4 representing our membership that public safety concerns
5 should be central and integral to any policy direction.

6 MR. APOSTOLAKIS: I want to ask another question
7 before we run out of time. This issue of public
8 participation puzzles me, and I'd like to understand a
9 little better how you see it. You sort of complained
10 earlier that you made a lot of comments, and the staff
11 dismissed them. So what is public participation? I mean,
12 why can't the staff dismiss them? I mean, is public
13 participation--does it mean that the staff will have to
14 accept what you are telling them, or accept maybe 20
15 percent? I mean, how do we decide that we have had a
16 successful stakeholder participation in the process, when,
17 you know, there are so many interests and different views
18 and so on. I don't know myself, but I'm curious how you see
19 this process. I mean, if the staff rejects your positions
20 then they have not really listened to the public?

21 MS. GUE: I certainly agree with you that having
22 public participation in a meaningful way is a very difficult
23 objective to achieve and to articulate in a clear way. But
24 to the extent that these processes are being labeled as
25 participatory, our complaint, the complaint that I

1 articulated was actually not so much that, or not only I
2 guess, but our input was rejected by the staff, but that it
3 was categorically deemed out of order, if you will. In
4 looking over the Federal Register notice that contained the
5 staff response to public comment, in several places it was
6 noted that other comments at a more fundamental level were
7 also noted, but since they didn't respond to the specific
8 detail of implementation or the specific detail of how of
9 wording or whatever the specifics were, they couldn't be
10 incorporated. So I guess there is a veneer of public
11 participation, but it already, but it was already within the
12 context taken for granted that the public was, in general,
13 in favor of a performance-based approach. And it was only a
14 matter of, and the public was only invited to participate to
15 the extent that they had comments on how those guidelines
16 should look, rather than looking--taking first thing first,
17 and looking, in fact, is a performance-based approach itself
18 in the public interest. I don't know if you see the
19 distinction that I'm making?

20 MR. APOSTOLAKIS: No, yeah. It appears to me that
21 your complaint is really that you did not receive any
22 logical arguments why your positions were rejected. They
23 were just dismissed. Is that really? I mean, you would--

24 MS. GUE: Right. Because that's--

25 MR. APOSTOLAKIS: You would have accepted perhaps a

1 logical argument as to why this particular recommendation
2 cannot be accepted. But just to be dismissed off-hand--

3 MS. GUE: Right, that.

4 MR. APOSTOLAKIS: Is something that is a little
5 offensive. Is that it?

6 MS. GUE: Not only offensive, but also I would say
7 patronizing to the extent that we are being asked to
8 support, to give witness to a process to be labeled
9 participatory, when, in fact, the very sense in which
10 participation is invited begs the question.

11 And I guess just to pick up again and this relates
12 to some of the comments that I've just made. And as I was
13 assessing the risk-informed aspect of this discussion, is
14 just to summarize, then, a performance-based regulatory
15 structure can never be truly risk-informed, but is subject
16 to failure based on the opportunity for undefined
17 assumptions, statistical manipulation to disguise potential
18 impacts, and even the limits of human imagination to
19 conceive of all potentially risky scenarios.

20 Furthermore, it seems irresponsible to base
21 nuclear safety standards on a probabilistic analysis of
22 risk. The probability of any particular accident may be
23 minute, but the potential consequences devastating.
24 Therefore, risk assessment must not be used to justify the
25 relaxation of regulatory conservatism.

1 Similarly, we are alarmed that the proposed
2 guidelines would allow licensees to evaluate and prioritize
3 safety concerns according to measures of economic
4 efficiency. It is inappropriate to take such a utilitarian
5 approach toward public health and safety. To be viable, the
6 nuclear industry must demonstrate its ability to protect
7 comprehensively against both probable and improbable risks.
8 Otherwise, it should be shut down.

9 Having participated in the workshop process,
10 Public Citizen maintains the position that regulatory
11 conservatism is desirable to ensure that nuclear materials
12 remain isolated from the biosphere. It seems necessary to
13 point out that prescriptive regulations do not prevent
14 licensees from acting creatively to exceed prescribed
15 standards.

16 On the other hand, what is being referred to as
17 flexibility in the proposed guidelines for performance-based
18 standards is likely to result in the industry cutting
19 corners in an effort to meet minimum performance criteria
20 with as little cost as possible.

21 The staff response to these concerns about safety
22 has been to make semantic changes to the proposed
23 guidelines. These superficial amendments, however, do not
24 address adequately our concerns, which relate to the fact
25 that the fundamental orientation of performance-based

1 regulation is not to emphasize safety.

2 With the prospect of a high-level dump at Yucca
3 Mountain currently under consideration, the public can only
4 fear what this regulatory approach will mean for the
5 transportation campaign and the waste site if it is
6 approved.

7 The NRC is mandated to protect public safety.
8 Yet, this proposal for a performance-based regulations would
9 shift the regulatory emphasis away from safety concerns and
10 place it instead on cost reduction. Compromising safety
11 guarantees in the name of economic efficiency will certainly
12 do nothing to promote public confidence in the NRC's
13 policies and procedures. Indeed, reduced regulatory burden
14 for the nuclear industry effectively amounts to an increased
15 and unmeasurable burden of risk for the environment and
16 public health.

17 With respect to waste regulations, the drive for
18 performance-based standards is yet another instance of the
19 nuclear industry seeking to shirk responsibility for the
20 waste it has created and continues to create. The push to
21 license Yucca Mountain as a permanent repository, the move
22 to allow designing and building of storage casks before they
23 are certified, the plan to make it easier for licensees to
24 change their procedures, the search for the cheapest method
25 to decommission plants, and the push to recycle radioactive

1 materials into the marketplace all show that the NRC is
2 willing to grant the industry's wish to dump its
3 responsibility on the public.

4 The nuclear industry is not clamoring to be more
5 creative in order to better protect the people and the
6 environment around reactors and dumps and along nuclear
7 transportation routes. The industry wants a bail-out to
8 escape the burden of dealing with its own mess, and the
9 proposed guidelines for performance-based regulations
10 further this agenda.

11 Finally, and as I've already stated, the process
12 surrounding consideration of the proposed guidelines, by
13 which public comments have been categorically ignored, has
14 in itself weakened public confidence in the NRC's
15 willingness and ability to pursue a publicly informed
16 regulatory option that protects public health and the
17 environment.

18 These proposed high-level guidelines for
19 performance-based activities make it clear that the NRC is
20 ready to subjugate these safety concerns to the economic
21 interests of the nuclear industry.

22 MR. POWERS: Thank you. Do any members have any
23 additional questions?

24 MS. GUE: Thank you for the opportunity to present.

25 MR. POWERS: Thank you. In view of there are no

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1 further comments, I will recess us until 16 after the hour.

2 [Recess.]

3 MR. POWERS: Let's come back into session. We're
4 going to turn now to the topic of use of industry
5 initiatives in the regulatory process. Mr. Barton, you can
6 guide us through this thicket of controversy.

7 MR. BARTON: Thank you. Thank you, Mr. Chairman.

8 The purpose of this session this morning is to
9 hear presentations by representatives of the NRC staff and
10 Nuclear Energy Institute regarding a proposed commissioned
11 paper concerning guidelines to ensure industry initiatives
12 will be treated and evaluated in a consistent, predictable
13 manner.

14 The guidelines being proposed contain substantial
15 detail and reflect the staff's recommended approach for
16 including industry initiatives in the regulatory process.
17 The staff, working with stakeholders, have developed the
18 proposed guidelines for considering industry initiatives in
19 the regulatory process. These initiatives, as successfully
20 implemented, would preclude the need for regulatory action.

21 At this time, I'll turn it over to NRC staff and
22 Dick Wessman to take the lead.

23 MR. WESSMAN: Thank you, sir. I'm Dick Wessman,
24 Deputy Director of the Division of Engineering at NRR, and
25 with me, on my left, is Gene Carpenter. If you look at the

1 view graphs, you see two names on there--Gene Carpenter and
2 Bob Herman, and they have been principal staff who have
3 worked on this initiative over the course of the past year
4 or so.

5 We delivered, or the EDO delivered to the
6 Commission, SECY-00-116 to the Commission on the 30th of
7 May. So that SECY dealing with this subject is now pending
8 before the Commission, and my understanding is it would be
9 publicly available within the allotted working day period
10 whatever.

11 What we want to do is describe the approach and
12 the guidelines that are in that particular SECY in more
13 detail and share our views with you and hear your views on
14 this particular approach. We're treating it as an
15 information briefing and are not seeking a letter from the
16 ACRS on the subject.

17 Before I pass it to Gene, I would point out that
18 this whole activity has its origins back in DSI-13, which
19 was entitled The Role of Industry. DSI-13 originally had
20 two parts. One part dealt with codes and standards
21 activity, and Gil Millman I think came before you sometime
22 back and helped describe some of that activity. And there
23 is actually management directives and material in place on
24 how we work with the codes and standards consensus bodies.

25 The other half of that DSI dealt with the concept

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1 of industry initiatives. Earlier, it was called voluntary
2 industry initiatives. We've since kind of shortened it to
3 just industry initiatives in response to some of the
4 stakeholder comments.

5 But that's a snapshot of background activities,
6 and let me turn it over to Gene Carpenter, and he'll take us
7 through the briefing view graphs.

8 MR. CARPENTER: Good morning. As Dick said today,
9 we'll be talking about the industry initiatives and the
10 regulatory process. What we will be discussing today--we'll
11 be discussing the purpose of the--of this presentation.
12 I'll give you a little bit of background on this that will
13 include some brief discussion on DSI-13, the SECY-99-063,
14 which was in response to DSI-13, and some of the actions to
15 develop the proposed response. I'll then be going through
16 the proposed guidelines, and giving you a brief overview of
17 those. Some of the recommendations and further actions that
18 the staff is making to the Commission, and then we'll wrap
19 up with some conclusions.

20 Okay, the purpose of this meeting is to discuss
21 the proposed guidelines, which we intend to ensure that
22 future initiatives that are proposed by applicable industry
23 groups, and I will get to that in just a moment--what an
24 applicable industry group is--would be treated and evaluated
25 in a consistent, controlled, and open manner. And

1 basically, what this means is that we are trying to ensure
2 that we will maintain safety, reduce unnecessary regulatory
3 burden, improve the efficiency and effectiveness and
4 realism, and improve public confidence through these
5 industry initiatives.

6 Now, it should be noted here that an applicable
7 industry group, if we have multiple industry groups that are
8 coming in with multiple and different ways to address a
9 target, we will address each one of those as a separate
10 industry group.

11 And it is not the intent of our proposal in these
12 guidelines that we have in front of the Commission at this
13 time to create any new policies or procedures in existing
14 areas that the NRC already has policies and procedures in
15 place. We do reference those throughout the guidelines.

16 MR. APOSTOLAKIS: Is it inconceivable that you will
17 have to impose necessary regulatory burden?

18 MR. CARPENTER: Yes, it is conceivable that we will
19 have to--

20 MR. APOSTOLAKIS: So why don't you state it?

21 MR. CARPENTER: But--that--I'll be coming to that
22 in just a moment, sir. The--at the time that we come across
23 an issue, if we cannot find a way around imposing additional
24 regulatory burden, then, of course, that is an option that
25 is always available to us.

1 MR. APOSTOLAKIS: Well, the reason why I'm--

2 MR. CARPENTER: But the purpose of industry
3 initiatives is to reduce the amount of regulatory burden
4 that would be imposed by the staff on the industry.

5 MR. WESSMAN: If we're faced with inadequate safety
6 issue, or if we're faced with a clear-cut issue that, you
7 know, the generic letter is compelling regardless of whether
8 the industry may have taken initiative or not, we're going
9 to take those actions. Those are right and proper to do.

10 MR. APOSTOLAKIS: Right. And I believe you. I
11 mean, I think you will do that, but the problem seems to be
12 that we are--we seem to be emphasizing this reduction in
13 unnecessary too much and some of the public groups have been
14 complaining about it. So it seems to me that it will be
15 appropriate to also include it on the list. But, if
16 necessary--

17 MR. BARTON: But really the intent of the industry
18 initiative is to reduce the burden.

19 MR. APOSTOLAKIS: Is to reduce the burden.

20 MR. WESSMAN: Right. In some cases. But let's Gene
21 go through the story a little bit, but clearly there are a
22 spectrum of complexity of issues and significance of issues,
23 and there are situations where if a generic letter is not
24 issued, that's less burden on us, and potentially less
25 burden on the industry. If they embrace the issue and go

1 forward with addressing it, it makes good sense for us to
2 make sure it's all done openly and everyone understands
3 what's being done, and we monitor it. So that's this--this
4 aspect of burden.

5 MR. WALLIS: Isn't it completely incredible that
6 industry would come in and say we've found something which
7 we really need to fix up, and therefore--

8 MR. CARPENTER: They have already done it.

9 MR. WALLIS: I mean, to reduce the burden?

10 MR. CARPENTER: They have already done it. That's
11 happened.

12 MR. WALLIS: We need to have that clear.
13 Otherwise, you're going to undermine the fourth objective,
14 which is to improve public confidence. So it can both ways.
15 You've got to emphasize that it can go both ways.

16 MR. CARPENTER: Yes. Yes. And I'll come to that
17 in just a moment, sir.

18 I'll do the background. Direction setting
19 initiative 13, the role of industry, as Dick mentioned
20 earlier, was issued by the Commission, in fact, SECY-97-303
21 on December 31, 1997. And it directed the staff to do
22 various actions, including develop guidelines to describe a
23 process and submission criteria that the staff would use to
24 evaluate industry activities that would be substitutes for
25 regulatory actions, and also to develop an implementation

1 plan that addressed a number of issues related to NRC
2 utilization of codes and standards. The--we did that, the
3 second one, about codes and standards with SECY-99-029, NRC
4 Participation in the Development and Use of consensus
5 standards. That was dated January 28th, 1999.

6 But we also put together SECY-99-063, the Use of
7 Industry--by Industry of Voluntary Initiatives in the
8 Regulatory Process. And that provided the requested
9 analysis that the Commission's SRM had given us. And it also
10 included review of stakeholder comments that had been
11 received dealing with some of the DSI-13 public meetings.
12 It also discussed the resource implications of implementing
13 industry voluntary initiatives, the staff's conclusion of
14 the analysis that was performed, and various recommendations
15 by the staff.

16 Some of the actions that we developed for the
17 proposed guidelines. The staff met with the industry. It
18 also met with the Nuclear Energy Institute, NEI, and other
19 stakeholders on multiple occasions.

20 We developed a Web page to provide information on
21 the guidelines, and that Web page is at the address
22 <http://www.nrc.gov/NRC-reactors/VII-->

23 MR. POWERS: Thank you very much. I wonder how
24 many members got that down? Would you repeat it, sir?

25 MR. CARPENTER: And that, of course, may be gotten

1 to directly from the NRC's home page, under the reactor
2 systems.

3 The staff issued a Federal Register notice in
4 December of 1999 that solicited stakeholder comments on
5 technical and regulatory aspects related to the development
6 of the proposed guidelines. And we--at that time, we had
7 asked interested stakeholders to give us any comments that
8 they had up and including an entire set of proposed
9 guidelines. Unfortunately, we did not receive any comments
10 at all from that Federal Register notice.

11 We did receive comments later on, but not
12 specifically in response to the FRN. The staff provided
13 draft guidelines by letter dated February 11th, 2000, and
14 that is included on the Web page. These guidelines were
15 used as discussion points and later readings. We then
16 received comments during several meetings, and we also
17 received comments during the March 28th, 2000 regulatory
18 information break-out session on this issue.

19 Again, the following proposed guidelines went up
20 to the Commission in SECY-00-0116, dated May 30th, 2000.

21 Now I'll get into the proposed guidelines. Before
22 we get heavily into it, there are a couple of definitions
23 that the staff put together for industry initiatives.
24 Specifically, we defined just what industry initiatives.
25 And we broke those into two basic types: Type 1 being Type

1 1-A, and Type 1-B.

2 Type 1-A are those developed by applicable
3 industry groups in response to some issue of potential
4 regulatory concern A, to substitute for or complement
5 regulatory actions for issues within existing regulatory
6 requirements, or B, which are potential cost beneficial
7 safety enhancement issues outside existing regulatory
8 requirements.

9 Type 2 are those that are initiated and developed
10 by the applicable industry groups to address issues of
11 concern to the applicable industry groups, but are outside
12 existing regulatory requirements and are not cost beneficial
13 safety enhancements, or ones that are used specifically for
14 information-gathering purposes.

15 And again, an applicable industry group is a
16 member of one or more owners groups, an industry
17 organization, or two or more licensees. And you can have
18 multiple industry groups addressing an issue at one time.

19 MR. WALLIS: A group of one is not allowed?

20 MR. CARPENTER: A group of one is plant specific.

21 MR. WESSMAN: You could have a group of one such as
22 the BWU owners group with the multiple plants in it. An
23 entity of one could be a single plant, and we're dealing
24 with that issue on a plant-specific basis.

25 MR. CARPENTER: In fact, the BWU IP would be

1 classified as an AIG, applicable industry group.

2 Now this is the proposed flowchart for industry
3 initiatives processes. This was included in the SECY paper.
4 I'd like to go through some of the boxes and the decision
5 points that are made in this.

6 Box one is issue identification, right up here at
7 the top. Once an issue has been identified by the staff, it
8 is characterized and assigned to an appropriate process.
9 Either you'd use the industry initiatives process that we're
10 proposing. It could be classified as an allegation, in
11 which case it would fall out from industry initiatives. It
12 could come as a 2.206 petition, and then go into the
13 industry initiatives at some point, et cetera. There are
14 multiple ways to get at this.

15 The emergency issue would be documented by the
16 staff, and the staff would perform a preliminary evaluation
17 of the technical and policy implications, and then present
18 them to the NRR Executive Team for review and initial
19 dispositioning.

20 At this point, it should be pointed out that the
21 guidelines are written specifically to NRR. They could be
22 applicable to other offices, but at this time, NRR has the
23 most applicable industry groups that would be interested in
24 this. At a future date, if NMSS or other groups decide that
25 they would like to have a process similar to this, they

1 could certainly make use of it.

2 We would have public meetings and or workshops to
3 obtain additional information as necessary and also to
4 receive individual views from appropriate stakeholders on
5 the issue. This is very important. We want to make sure,
6 as this says here, that we keep all stakeholders informed of
7 issues, and what we're doing at all times.

8 The public will, of course, be notified of the
9 issue and all meeting and all workshops, and they would be
10 open to public participation.

11 MR. SEALE: Will that notification occur prior to
12 or following the initial NRR Executive Team decision on
13 whether or not to pursue the issue?

14 MR. CARPENTER: It will occur before we go out to
15 pursue the issue. If we need to gather some more
16 information.

17 MR. SEALE: But initially, the Executive Team will
18 make a decision which could be to not look at it, in which
19 case the issue is dropped?

20 MR. CARPENTER: At which case if the issue is
21 decided to be dropped, we will appropriately document that,
22 and put it out in a public forum.

23 MR. SEALE: So that the decision to drop it--

24 MR. CARPENTER: Yes.

25 MR. SEALE: Becomes a matter of record?

1 MR. CARPENTER: Yes. It will not just completely
2 disappear at this point.

3 MR. HERMANN: Bob Hermann. The other piece of this
4 that will fit in there is part of what DET is using. Some
5 of these things are going to get bounced off of basically
6 5109 in terms safety enhancements, and this 5109 criterion
7 in terms of that will be part of making the judgement as to
8 whether or not what we do with the issue.

9 MR. CARPENTER: Looking at Box 2, the decision box
10 here. If the NRR ET does take a look at the initial
11 evaluation. They review it. They decide that the emergency
12 issue of sufficient importance to either meet with
13 applicable industry groups and other stakeholders to present
14 the staff's view or to immediately pursue the regulatory
15 action--other than an applicable industry group performing
16 an industry initiative. They will decide either to pursue
17 the issue, pursue the issue on an expedited basis, pursue
18 the issue via industry initiative, or not pursue at all.
19 Okay.

20 If we determine not to pursue the issue, and this
21 goes back to the question you had, sir, that based on the
22 considerations, the technical issue, the policy
23 implications, whatever, the NRR ET may decide that the
24 safety significance and existing regulatory basis precludes
25 the need to pursue the issue, and at that point, the AIG's

1 may have been involved with this and other interested
2 stakeholders will be informed of the decision and the bases
3 for that decision. But this would not preclude AIGs from
4 pursuing this through other avenues or as an item through
5 the type of--

6 MR. WALLIS: Shouldn't there be a loop from down
7 below. I mean, that's the gate where you decided to pursue
8 or not. Once you decide to pursue, you seem to be on track
9 all the way down to the bottom. It may be something you
10 discover along the way will make you go back to Box 3.

11 MR. CARPENTER: Please bear in mind, this is a very
12 simplified diagram. There are also sorts of--

13 MR. WALLIS: But I don't see any loop that says go
14 back to not pursue any further.

15 MR. WESSMAN: Well, I think your point is very well
16 taken. It is conceivable that as either more--maybe the
17 decision is made, hypothetically, I'm taking a situation
18 where not to pursue it. Some new information comes
19 available, and the issue would be revisited and we would
20 continue to look at the process. It is conceivable we say
21 the decision is to pursue the issue. Information again
22 becomes available that renders it almost moot, and a
23 decision would be made. I think the important thing is that
24 there is this structure to the process, and that there is
25 openness to the process and opportunity for participation by

1 all of the possible interested stakeholders, and that's an
2 aspect that we would continue to emphasize as Gene goes
3 through here.

4 But your concept of a revisit is certainly very
5 likely--you know, very possible, and is not precluded by the
6 way the guidelines are structured.

7 MR. WALLIS: Okay.

8 MR. CARPENTER: If decision two, decision one being
9 not to pursue the issue. Decision two being to expedite
10 resolution occurs, then we will go on to pursuing an
11 expedited basis to performing some corrective action. And
12 that would be based on the level of risk involved and the
13 need for the prompt corrective action to occur. And some of
14 the expeditious approaches could include activation of
15 appropriate owners groups regulatory response groups,
16 issuances of orders or bulletins in accordance with SECY
17 99-143, which is the generic communications SECY paper. The
18 staff may defer formal regulatory actions while appropriate
19 owners groups, regulatory response groups are activated to
20 address the issue. And again, we will keep all stakeholders
21 informed of what's going on through appropriate
22 communications.

23 If we decide not to pursue, if we decide that
24 it--we don't need to pursue or we don't need to pursue as a
25 regular expedited, just to go to industry initiatives, we

1 will then move on Box 5, which we will then send a letter to
2 identified AIGs, one or more as the case may be, and other
3 interested stakeholders, inviting an evaluation and
4 development of proposal for addressing the issue.

5 At this time, we will also be developing a Web
6 page to keep people informed of what's going on.

7 MR. WALLIS: Who's keeping informed? Presumably,
8 this is so that, if necessary, you can listen to what they
9 have to say?

10 MR. CARPENTER: We--

11 MR. WALLIS: Or just telling them.

12 MR. CARPENTER: Keeping informed means that it's a
13 two-way street. We want communications to and from
14 stakeholders.

15 MR. WALLIS: Thank you.

16 MR. CARPENTER: The staff will evaluate any
17 proposal that the AIGs will bring to us after they've had
18 the issue identified to them, and also any stakeholder
19 comments or proposals before holding any further meetings or
20 workshops on this issue.

21 We want to make sure that we have a better
22 understanding of the issue. And once that is in place, if,
23 again, going back through the do loops here, we go and
24 decide to continue at this point, we'll have an industry
25 initiative action setting and communication plan

1 established. And those will be done by the applicable AIGs
2 with appropriate tasks, milestones, resources required,
3 responsible parties, licensee commitments, as appropriate,
4 et cetera, to be utilized in pursuing the resolution of the
5 issue of concern.

6 The staff will also establish its own action task
7 plan and communications plan to ensure that we are tracking
8 and monitoring what's happening and appropriately
9 communicating the actions to our stakeholders.

10 Some of the possible approaches for resolving the
11 issue could include development and implementation of an
12 industry program, voluntary licensing amendments, revision
13 to industry guideline documents, modifications to code and
14 standards, or even creation of a generic safety issue, and
15 others as appropriate.

16 MR. SHACK: These are really all applicable only to
17 the Type 1 initiatives, right? The Type 2 would more or
18 less bypass this whole process?

19 MR. CARPENTER: Type 2 would basically bypass this.
20 The--the action plan would be developed by the action group,
21 the applicable industry group as necessary, but the staff
22 would be once removed from this, because it is outside of
23 regulatory concerns.

24 MR. HERMANN: Well, except for the
25 information-gathering ones.

1 MR. CARPENTER: Except for the information
2 gathering, yes.

3 MR. HERMANN: That's basically an issue where there
4 was insufficient information available to do something, and
5 it would basically be an arrangement to work with an AIG to
6 provide the information to be able to make a decision if
7 something needs to go forward or not.

8 MR. CARPENTER: Going on to Box 6, the regulatory
9 acceptance of proposed industry initiative. Once the staff
10 has reviewed a proposal from the industry on how to address
11 this, and their action and communication plans, we will
12 proceed as described in Boxes 8 and 9 below. The industry
13 initiative in action, if they are found to be unacceptable,
14 the issues leading to the staff's rejection of those plans
15 for whatever reason will be communicated to the AIGs and
16 other stakeholders in an attempt to revise the issues--I
17 mean, those action plans that are not acceptable. Then, the
18 NRC will determine, if they remain unacceptable, if we need
19 any further regulatory action, which could move us back up
20 here to the issue resolution being expedited.

21 Staff acceptance or rejection of the proposed
22 industry initiative will be appropriately communicated
23 either through a Federal Register notice, placing it on the
24 NRC's Web page, or other communication means.

25 Going on to Box 7, if we determine that

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1 appropriate regulatory action is necessary, that the staff
2 does not accept the AIG's proposed actions, individual
3 licensees that fail to commit to these accepted industry
4 initiative, or if member licensees fail to implement
5 committed to actions, the staff may take independent action
6 at that time.

7 Any regulatory actions taken will be determined
8 consistent with existing regulations and NRC policies and
9 procedures. And for items requiring back-fit analysis per
10 CFR 50.109, accrediting of industry initiatives, would
11 follow latest applicable guidance.

12 And we do have a SECY paper on that presently
13 before the Commission.

14 MR. POWERS: Doesn't that mean that once you come
15 to this Box 5, and say establish industry initiative, that
16 it's almost essential that there be a parallel activity
17 established by the staff so that they can act in the event
18 that licensees nominally susceptible to whatever
19 vulnerability has been identified but chose not to accept
20 the AIG's proposed solution can be dealt with?

21 MR. CARPENTER: By the time you've reached Box 5,
22 and you've decided that this is an issue of concern, and you
23 want to present it to the industry to see if they would take
24 it on an industry action, you have performed a regulatory
25 analysis sufficient to move forward with appropriate actions

1 from a regulatory perspective.

2 MR. POWERS: Okay. So you probably would have a
3 proposed regulatory action of some sort in mind at least,
4 maybe a conceptual idea, by the time you went to the Box 5?

5 MR. CARPENTER: Yes.

6 MR. WESSMAN: And, in fact, as Gene mentioned, in a
7 sense, there are parallel action plans. There may be the
8 industry's groups action plan and our action plan. And
9 obviously, that it should have some common points to them,
10 but there are slightly different motivations for certain
11 things that we may do or oversight type of things, and as
12 compared to what the industry may do.

13 Some of this is obviously a level of detail that
14 may depend on the type and the significance of the
15 particular issue, ranging all the way down to the Type 2
16 that we've talked about, where it's really outside our
17 purview, and the industry may have its own plans or less
18 rigorous activity depending on the importance of the issue.

19 MR. WALLIS: Okay. It's kind of useful to have
20 that in the diagram, because the impression here is that it
21 doesn't give that impression.

22 MR. CARPENTER: Well, the diagram, again, is very
23 simplified. If you go through the discussion of this in the
24 proposed SECY paper, we do discuss it to a greater degree.

25 MR. WESSMAN: We were making the effort of keep it

1 simple, and keep it on one page. And I think we're reaching
2 into nuances of the thing, and it was hard to get it all on
3 one page and still be simple with the thing.

4 MR. CARPENTER: Box 8, the implementation of the
5 industry initiative. At this point, we the staff have
6 agreed that the industry has a good proposal of how to
7 address the issue. It basically scratches ours. Now, what
8 we need to do is just have them go out, implement the
9 proposal, and we monitor what they do. Various milestones
10 in the action plan will be documented in the staff's task
11 action plan. And it will be tracked by the NRR director's
12 quarterly status report and incorporated into the NRR's
13 operating plan, as appropriate.

14 The milestones will be monitored via periodic
15 reviews, through periodic public meetings with the AIGs and
16 other stakeholders, and audits and or inspections as
17 necessary.

18 MR. HERMANN: The other comment might be making
19 general overall, to answer a little of that earlier question
20 on the appropriate regulatory actions. This diagram and the
21 process--we looked at a Commission paper that went upstairs
22 on preparing things for generic communications, and it's
23 reasonably similar to this in terms of the way the process
24 looks, and some of the other things. So we did consider
25 that in part of the development of the process and that this

1 is consistent with that.

2 MR. WALLIS: I go back to the issue I raised about
3 Box 5. I read the details of Box 5. The only thing I can
4 find there about what the staff is doing besides just sort
5 of processing the industry's initiative, it says the staff
6 should establish its own industry initiative action task
7 plan. Now that to me simply indicated a way to push this
8 thing through the works. But you indicated it was more than
9 that; that it was actually thinking about the whole issue
10 and whether or not staff should go off and do something in
11 addition, because there was an important issue here of some
12 sort.

13 MR. CARPENTER: When we establish our action plan,
14 one of the milestones in that--and again, forgive me for
15 diverging, but we were trying to keep it as high level as
16 possible when we were putting this together.

17 MR. WALLIS: But I think you don't want to give the
18 impression that this is just sort of--I don't know to put
19 this--it's greasing the skids on something for industry to
20 just push something through, and you say, yes, all the time.
21 I think you have to be careful not to give that impression.

22 MR. CARPENTER: Oh, no. That is not the impression
23 that we're trying to give at all, sir. When we go out, and
24 we have an issue that we deem is of sufficient importance
25 that we want something to occur on it, if the industry comes

1 back and tells us that they want to do A, B, C, and D, and
2 we were thinking A, B, E, F, G, we'll say, you've got part
3 of it. We'd like for you to go back and take a look at this
4 over here. There will be communications back and forth on
5 this. The stakeholders may come back and say, yes, but what
6 about J and K over here? And we'll consider that also. But
7 it's not a foregone conclusion that simply because we offer
8 it up to the industry a possible industry initiative that it
9 will go forth, however they present it.

10 Box 9 now, inspection and or monitoring and
11 enforcement as necessary. And now Type 1 issues may
12 required that AIG member licensees will implement changes in
13 their programs, technical specifications, or take some other
14 actions as established in the industry initiative action
15 plan. The staff will perform inspection and or monitoring
16 of the implementation of Type 1 activities, and that will
17 depend upon the nature of the activities agreed to, to
18 address the issue. And enforcement will be available if
19 violations of regulatory requirements occur.

20 Type 2 industry initiatives involve actions that
21 are outside of existing regulatory requirements or that are
22 used as information-gathering mechanism for the need for NRC
23 overview of Type 2 activities is not anticipated and
24 enforcement actions will not be available. Need of
25 inspection and or monitoring will be determined consistent

1 with reactor oversight process and will be established on a
2 case basis consistent with the requirements associated with
3 implementation of the issue and revised risk-informed
4 inspection program.

5 If specific licensees or AIGs in general fail to
6 adequately implement agreed upon actions, the NRC will
7 address in the context of existing regulatory policy and or
8 additional regulatory action consistent with the guidance.

9 And, again, throughout all this we will
10 appropriately document the results and have stakeholders
11 informed of the issue status. Going on to other items that
12 will be involved in this process. We will need project
13 management, and basically we'll have a lead project manager
14 for the initiative appointed, and it will be either from the
15 Division of Project Management or the Division of Regulatory
16 Improvement Programs, as appropriate. And they'll be
17 responsible for facility and staff review of the industry
18 initiative, for assuring that activities described in the
19 action plan above are accomplished, and acting as the
20 staff's point of contact between the AIGs, stakeholders, and
21 other interested members of the public.

22 Also, want to--

23 MR. SHACK: Excuse me, Gene. Just a--at one point
24 in this process are the technical basis documents, for
25 example, for the industry initiative to be available to the

1 public?

2 MR. CARPENTER: As soon as we put together their
3 proposal, we will have--that goes back, Bill--we go back to
4 establishing the industry initiative. They will come in
5 with meetings in this point, right here. The industry will
6 come in with their proposals, and those will be publicly
7 available. If there are proprietary concerns on these, we
8 will have non-proprietary versions of them available to the
9 public. So, we're trying to be as open as possible
10 throughout this process.

11 MR. WESSMAN: It's conceivable all the way back in
12 the Box 1, Box 2 phase, there could be information that on a
13 technical basis that becomes available as we are trying to
14 understand the issue, and these may be part of either
15 documents sent to us or part of meeting summaries, depending
16 on, you know, exactly how the interactions took place. The
17 idea is always openness.

18 MR. SHACK: Okay, so it will be different than the
19 VIP process, where, in fact, the documents were sort of
20 proprietary--

21 MR. CARPENTER: Initially.

22 MR. WESSMAN: Well, yeah, you can't violate the
23 proprietary aspects, because--I mean, I think, you know,
24 there are other laws that you run foul of, but as long as
25 you're not dealing with a proprietary aspect, any of the

1 interactions between the staff and the group with a
2 characterization of the problem, we want to make sure it's
3 public.

4 MR. HERMANN: Yeah, Bill, the other piece of that
5 is I think with the VIP programs, early on there were
6 non-proprietary documents, okay. But I think what this or
7 any other process is going to take is judicious
8 implementation of what can be proprietary and
9 non-proprietary--

10 MR. SHACK: I guess you always had that problem all
11 the time. I never thought about it before. I mean, you
12 know, how do you make available the information that the
13 public might need to make a judgement when much of that
14 information is proprietary.

15 MR. HERMANN: Well, I think you need to get enough
16 things in there to make sense to people versus giving a
17 document where somebody just somebody just basically blanks
18 out lots of pages without too much thinking. I think
19 whoever's managing the project needs to do a good job of
20 control of the project in terms of making sure that the
21 non-proprietary version isn't just a bunch of blank pages.

22 MR. WESSMAN: And we face that with technical
23 reviews now. It may be on a thermal hydraulic code activity
24 or something like that, or going back to core shroud repairs
25 and the design--certain aspects of the design of core shroud

1 tie rods, for example, was a proprietary aspect. You had to
2 describe it in sufficient detail to inform the public and
3 the stakeholders and still maintain the proprietary. So
4 there is a balance there.

5 MR. SHACK: And the person in the public who felt
6 he wasn't getting enough would then go to a Freedom of
7 Information Act, is that his appeal process?

8 MR. CARPENTER: If necessary. He can always
9 contact the staff up front and ask us if, you know, more
10 information is available, and we will try to accommodate as
11 possible putting more information into the public domain.
12 But if, for whatever reason, the industry group says that
13 no, this is as--the maximum that is possible, we will
14 communicate that as appropriate.

15 MR. HERMANN: Well, one of the things we found in
16 the experience now, though, is some of the VIP reports are
17 going to be used for a basis for license renewal, and the
18 non-proprietary versions to say were a little skimpy. Those
19 were getting rewritten, and people can put out
20 non-proprietary versions that provide sufficient information
21 to be able to let people what's going on. You don't have to
22 put in all the numbers, but you certainly can describe
23 things sufficiently to let people know what's going on.

24 MR. CARPENTER: And just as a side note, VIP is the
25 BWR Vessel and Internals Project, and we've discussed with

1 the ACRS before. It's a good example of a voluntary
2 industry initiative.

3 MR. POWERS: And we have another presentation from
4 that particular group coming up in the next couple of
5 meetings.

6 MR. CARPENTER: I believe in September is when
7 we're--

8 MR. POWERS: It's probably when we need to move
9 ourselves along if we can. I'm not sure of how our time is.

10 MR. CARPENTER: Public participation. The
11 stakeholders will be given an opportunity to provide their
12 individual views on the industry initiative action plan and
13 to participate as possible. And, again, as we were just
14 mentioning, the staff will disclose to the public all
15 information possible.

16 Communications plan. The staff will develop for
17 each issue, and the lead PM has the primary responsibility
18 for implementing that.

19 Resource planning. This is a particular concern
20 these days. The staff will meet publicly with industry
21 groups and other stakeholders to obtain information on the
22 status of ongoing and potential future industry initiatives.
23 And we will address our industry needs using the add shed
24 process as part of the PPP hand process, to prioritize
25 resource needs.

1 Fees. Right now, TIMSY part 170 allows for the
2 exempting of fees for generic reviews. And we are proposing
3 to the Commission that no licensee-specific charges
4 associated with industry initiatives will be charged. Sort
5 of a way to sweeten the pot to do this.

6 MR. WESSMAN: On the other hand, if you're in the
7 license amendment process, there are certain rules for that.
8 And so sometimes you reach into a situation where a fee
9 would be appropriate.

10 MR. SHACK: Well, then who pays for it, especially
11 if you don't get fees?

12 MR. CARPENTER: Well, the fees will be charged to
13 the overhead, and that's what 10 CFR part--

14 MR. WESSMAN: It's a part of the industry's
15 packages. I mean, NRC is a fee recovery agency, of course.
16 The cost of our doing business is spread across the industry
17 as a whole. And in that case, when we say there are no fees
18 charged, it's not charged to a specific group or it's a
19 specific collection of licensees.

20 MR. SHACK: So the generators pay for the fees?

21 MR. CARPENTER: Yes. And by source, as the case
22 may be.

23 MR. WESSMAN: Yeah. The generators get spread
24 around.

25 MR. SEALE: It's called take out of the--

1 MR. WESSMAN: The VIPs get spread around. It goes
2 both ways.

3 MR. SEALE: You're familiar with that, aren't you,
4 Bill? Take it out of your budget?

5 MR. WALLIS: But eventually then it's recovered
6 from industry?

7 MR. CARPENTER: Yes, it will still be recovered
8 from industry. You're dealing with multiple licensees in
9 this case, and we feel that the added benefit of charging
10 for a small amount will be more than offset rather than
11 charging directly to these groups.

12 Tracking of the commitments will be consistent
13 with existing regulatory procedures, and enforcement
14 guidelines that we use throughout are consistent with the
15 reactor oversight process improvements.

16 Now, it should be noted and NEI will be talking in
17 just a moment that we did receive some stakeholders'
18 comments, mostly from NEI. And their views on this process
19 I will allow NEI to give them to you. I don't want to
20 mischaracterize those in any way.

21 The recommendations and future actions that we are
22 recommending to the Commission is that we are requesting the
23 Commission's approval of the proposed guidelines, which we
24 will issue for public comment. After considering the
25 further stakeholder comments, the staff will communicate a

1 final revised guidelines and implement for future industry
2 initiatives. And we'll go back to the Commission if the
3 final guidelines are of substantial difference from what the
4 present proposed guidelines are to be.

5 The final guidelines, as will the SECY-00-0116,
6 will be posted on the NRC's Web page for public review.

7 The expected milestones are that once the
8 Commission has approved the issue, the issuance of the
9 guidelines that we will have these out for public comment by
10 July 31st. The guidelines will be issued for a 45-day
11 comment period, and by August 31, and then the comments
12 resolved and final guidelines issued by January 5th, 2001.

13 In conclusion, the proposed guidelines for
14 including industry initiatives in the regulatory process
15 provide the maximum flexibility possible while making
16 optimum use of existing regulatory processes to provide a
17 framework for consistency and for efficient and effective
18 use of issues. The guidelines provide for public
19 participation in the process and for making information
20 available to all stakeholders. And interactions by the
21 staff with the industry groups or other members of the
22 public in utilizing these guidelines will be carried out so
23 that we do not run afoul of the Federal Advisory Committee
24 Act.

25 MR. WALLIS: What is the criterion for optimum?

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1 MR. CARPENTER: For optimum?

2 MR. WALLIS: For making optimal use?

3 MR. CARPENTER: We want to make sure that it is
4 available to the extent practical.

5 MR. WALLIS: I don't think it's an appropriate
6 adjective to use. I think you--that it wouldn't change any
7 sense, unless you used some criterion.

8 MR. CARPENTER: Okay. Thank you.

9 MR. HERMANN: Well, thank you. We'll take that
10 under consideration.

11 MR. CARPENTER: And that concludes our discussion.

12 MR. WESSMAN: And I guess, as I wind up, we wind
13 up, I would point out a couple of things. In the past the
14 work with the industry over the last few years on industry
15 initiatives I think has worked quite effectively. It has
16 been somewhat ad hoc in nature. And yet, the communications
17 with the industry and the meetings with the industry all
18 follow our processes for, you know, public awareness and
19 this sort of thing. I think what we are bringing with this
20 approach is a little more structure and rigor to how we do
21 the process, and assure that we work such interactions with
22 the industry in a consistent and very open manner. And this
23 was I think a principal motivation to develop the sort of
24 process that you see.

25 And I think also, as we pointed out earlier, the

1 level of detail in the process may be dependent on the type
2 of issue. And I think the meat of your VIP happens to be an
3 issue, although handled on an ad hoc basis, is a very
4 complex and a large issue and has been and shows a path of a
5 lot of interactions between the staff and the industry and a
6 lot of interaction that has included the public, where all
7 of the proprietary rules and this sort of thing allow. It
8 may be that a less significant issue or something that may
9 be focused on a--for example, a certain class of valves or
10 something like that--may be, but much less rigorous and
11 structured just by virtue of the nature of the issue.

12 But these general guidelines help push the staff
13 into a level of structure that I think provides that
14 confidence to the other stakeholders and the industry that
15 we are following a process, and it's an understood process,
16 and it's working.

17 MR. HERMANN: But it also might provide a benefit
18 of some efficiencies in the process in terms of reaching
19 resolution on issues so things don't drag out for quite
20 maybe as long as some other things have.

21 MR. WESSMAN: And quite true, and, as we mentioned,
22 the efficiency may stretch to where generic correspondence
23 may not be necessary or appropriate because of the actions
24 being taken.

25 Well, without any further questions or else we

1 want to turn over the remaining time to NEI.

2 MR. BARTON: Do any members have any other
3 questions of the staff at this time? If not, thank you very
4 much.

5 MR. WESSMAN: Thank you, sir.

6 MR. BARTON: And now turn it over to Alex Marion
7 from NEI. Alex?

8 MR. MARION: Good morning. My name is Alex Marion.
9 I'm the Director of Programs at the Nuclear Energy
10 Institute, NEI.

11 Good morning, and thank you for the opportunity to
12 speak with you on this interesting topic. I have to tell
13 you that I've been involved in the stakeholder meetings
14 going back to the first one, which I believe was in
15 September of 1998. And, as the staff indicated, NEI had
16 submitted two letters offering comments and concerns
17 relative to the NRC's process that was articulated a few
18 minutes ago. And those comment letters, along with the
19 transcript of the stakeholder meetings I think represent a
20 broad spectrum of issues and concerns with the NRC's
21 intended use of industry initiatives as a substitute or an
22 alternative for regulatory action.

23 I do have one question relative to the purpose of
24 the guidance that I would like to ask the staff. It wasn't
25 clear to me during the presentation whether the guidance was

1 intended for internal NRC use or was it intended for another
2 purpose?

3 MR. WESSMAN: This is Dick Wessman from the staff.
4 The guidance is really intended to help guide both internal
5 and external organizations. It's essentially a process for
6 us on the staff. It's our document, and it's our process.

7 On the other hand, as we interact with the
8 associated industry groups, we would hope that they would
9 embrace the concept of the process and work constructively
10 with us on the process.

11 MR. MARION: Okay. Thank you. The--one of the key
12 points that we've made as a first step in any process
13 associated with addressing technical and regulatory issues
14 was to take advantage of the opportunities to have early
15 frequent communications with the industry. And these
16 communications and interactions, of course, would be held in
17 the public forum; in other words, public meetings.

18 And we have found historically that those
19 interactions have been extremely important, because
20 fundamentally there are two types of issues that often
21 arise. They are either technical or regulatory, right up
22 front. Initially, it's a technical concern of some sort,
23 and you need to understand that. And once you get that
24 understanding, then it becomes clear what the regulatory or
25 associated regulatory issues may be. Or, there's a

1 regulatory concern--one of straightforward compliance with
2 one of the existing NRC requirements.

3 And that needs to be understood, right up front,
4 as soon as possible. As the staff indicated, some issues
5 and interactions are more complex than others. What I'm
6 suggesting from the standpoint of these interactions with
7 the NRC, it may take one meeting. It may take several
8 meetings. It may take additional information to be gathered
9 to either address the technical and or regulatory concern.

10 But once that's been addressed and identified and
11 understood, it becomes quite clear to everyone involved what
12 the proper course of action is. And that proper course of
13 action may be a complementary set of activities between the
14 NRC and the industry. And by that, I mean the NRC will need
15 to pursue some regulatory action and possibly in the form of
16 a generic communication. Industry may decide to pursue some
17 complementary course of action on their own, as opposed to
18 waiting for the generic communications to hit the street so
19 to speak. And there may be instances where there will be
20 separate and independent courses of action. The industry
21 may indicate to the NRC that this is clearly a regulatory
22 issue that must be addressed by the NRC, and the NRC should
23 move forward and address it expeditiously. And, in that
24 particular case, the industry may decide not to do--not to
25 pursue anything, but rather wait until the NRC has

1 articulated the regulatory course of action.

2 Most of the times that's been in the form of
3 rulemaking effort. There may be other instances where, when
4 all the information is brought to bear to support the
5 understanding of the technical regulatory nature of the
6 issue, that it becomes clear action on the part of the NRC
7 is not warranted. But the industry may decide to pursue
8 some action to improve performance, and I think the NRC
9 alluded to that framework, if you will. And this would
10 apply to areas that are outside the regulatory framework.
11 But again, you can't make that determination of what's
12 inside or what's outside the regulatory framework until you
13 get a good understanding of the technical nature of the
14 problem--scope and magnitude--and then move forward in
15 regulatory space.

16 So we believe that's--those interactions and
17 communications are extremely important. And I think
18 historically, we have found that to be very successful and
19 very effective in terms of understanding the issues before
20 us.

21 However, I need to make this perfectly clear. If
22 the NRC has an expectation that an action undertaken by
23 industry is subject to inspection and enforcement, then our
24 position simply put is that the NRC must pursue regulatory
25 action, because fundamentally if they want to hold someone

1 accountable through the inspection and enforcement process,
2 then there clearly has to be a nexus to safety and a nexus
3 to a clear regulatory requirement that falls within the
4 framework of the current body of regulations.

5 That's a very fundamental principle that cannot be
6 compromised. And we feel very strongly about that.

7 Can I assume for a minute that the Committee has
8 copies of the letters that we submitted with our comments
9 and has reviewed them? Okay. Very good.

10 Just an observation on the flow chart and the
11 presentation by staff on this guidance. I'm kind of
12 surprised, and I arrived here this morning about 10 minutes
13 before the break in which the young lady from Public Citizen
14 was expressing concerns about public participation,
15 stakeholder input, et cetera. And I have to admit, I share
16 her concerns, because I'm interested in the NRC's
17 dispositioning of the comments that we have submitted over
18 the past couple years relative to NRC's use of voluntary
19 industry initiatives. I look forward to an opportunity to
20 see the SECY paper, and we look forward to an opportunity to
21 provide comments on NRC's--excuse me--NRC's guidance
22 document.

23 And with that, I complete my comments, and I would
24 like to give you a few minutes to ask any questions you
25 might have.

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1 MR. POWERS: Let me just follow up on what you
2 ended with. If I look at this flow chart, it does not seem
3 to highlight that fundamental position you articulated
4 concerning enforcement. I mean, it's almost a closure
5 thing. Inspection or monitoring and enforcement. I mean,
6 it's just a box at the end. It doesn't say--it doesn't have
7 an arrow that ties off to a fundamental regulatory objective
8 or anything like that. I mean that's clearly an objection
9 you had to this flow chart. I mean, it is such a thing that
10 it--it's so important to you that it really ought to appear,
11 even on a highly simplified chart, is what you're saying?

12 MR. MARION: It should appear on--in the first step
13 of the process when we interact on the scope and magnitude
14 and the technical nature of the issue, and the regulatory
15 basis, et cetera. And once you have that understanding,
16 then it becomes clear that the NRC has an inspection and
17 enforcement authority.

18 MR. POWERS: And it may be that that's what they
19 intend.

20 MR. MARION: If that is the case, that should be
21 determined right up front.

22 MR. POWERS: Maybe that that's what they intend in
23 Box 2. Dick, can you enlighten us on that?

24 MR. HERMANN: Yeah--

25 MR. POWERS: Go ahead, Bob.

1 MR. HERMANN: I think that we have a little history
2 with working with industry initiatives, and I think the type
3 of initiative that it is, for instance, let's take the VIP,
4 for instance, as an example. The activities that BWR VIP
5 were in our view enforceable when those things--a lot of the
6 issues that started there started as addressing things that
7 were later adopted into plant-specific programs. For
8 instance, some of these items would have--if you had to went
9 generic letter route, would have been probably compliance
10 exceptions to the rule. When the procedures in the
11 inspection guidelines and things like that were implemented
12 for those activities, they were implemented under an
13 Appendix B program at the plant sites. And those items,
14 just like any other activity at the plant, were inspectable
15 activities once they were implemented by the licensee under
16 Appendix pre-control QA program. Things like, say, you had
17 the shut-down risk type issues that were done voluntarily at
18 the plants, we would consider those issues probably not to
19 be an enforceable issue because it's outside of the current
20 regulatory basis. If a utility, and this is discussed in
21 the paper--if those things, say a licensee decided not to do
22 a shutdown risk program, I think at that point, it would be
23 incumbent on the staff to take a regulatory action if they
24 thought it was necessary. But it wouldn't be in the
25 enforcement world.

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1 And I think some of that discussion is in the
2 paper in terms of differentiating between what's inspected
3 and what's monitored. Things that are--that may be risk
4 significant that are outside of the regulatory basis are
5 monitored. And if additional regulatory action is required
6 based on something, then the staff will take that action.

7 MR. WESSMAN: Yeah, the only thing I'd supplement
8 Bob's remarks with is part of the narrative description in
9 the SECY paper that deals with Box 1, which is the
10 identification phase, touches on the aspects of, you know,
11 is it a Type 1 or a Type 2 issue? Are there regulatory
12 responsibilities there that compel regulatory action by
13 virtue of the significance of the issue or the type of
14 issue? Is there a backfit consideration? You know, I don't
15 think we should start our paper with the most important
16 thing is enforcement. The most important thing is the
17 consideration of the regulatory responsibility, and we think
18 that's encompassed in the discussion of the issue
19 identification and characterization as part of Box 1.

20 So I think we've addressed it there, and yet we've
21 tried to keep the overall diagram simple.

22 MR. POWERS: I know we're just a victim of optics
23 here. And when he says this is a fundamental principle of
24 one of your stakeholders, I think I would pay attention to
25 those optics in the flow chart.

1 MR. WESSMAN: Yes, sir. I understand, and we
2 certainly hear the NEI comment. And as we interact with
3 them further after these guidelines are put out for public
4 comment, from any of the stakeholders, we will listen, and
5 we will, you know, disposition and respond accordingly.

6 MR. BARTON: Thank you. Alex?

7 MR. MARION: That's it.

8 MR. BARTON: Thank you. Thank you very much. At
9 this point, Mr. Chairman, you've got the meeting back.

10 MR. POWERS: Thank you. We now turn to the topic
11 of safety culture, and I think we have a presentation by one
12 of our own fellows. And ordinarily, I would ask Dr.
13 Apostolakis to lead us through this, but he doesn't look
14 like he's in any capacity, so I will take on my own weak
15 shoulders this chore, and introduce our Jack Sorenson to the
16 Committee, in case you don't know him; and bring up the
17 issue of safety culture.

18 Safety culture is an issue that we have been
19 dancing around now for some three years that I know of. It
20 is sometimes a topic whose elements are a bit in the eyes of
21 the beholder. It has for a long time been considered an
22 important aspect in the safety of a nuclear power plant;
23 that is, the safety culture that prevails there. There have
24 been numerous attempts to try to quantify what's meant by
25 safety culture, because there's a belief that our tools for

1 assessing safety, that is, the probabilistic risk assessment
2 ought to reflect safety culture in some way. These
3 possibilities and probabilities have been kicked around by a
4 lot of people. The Committee decided that there was enough
5 rumor, innuendo, and the like surrounding safety culture
6 that maybe it was an issue that should be pursued by one of
7 our fellows to give us a clear picture on that subject. And
8 so Jack's here to give us a clearer picture on what's meant
9 by safety culture. Okay, we'll--

10 MR. SORENSEN: I will do my best. For the record,
11 I am Jack Sorensen. The discussion today is structured
12 around the -- basically three questions that were posed when
13 we started down this path sometime ago now. I will touch on
14 what is safety culture, focusing primarily on the IAEA, your
15 International Nuclear Safety Advisory Group, since they
16 introduced the term; talk a little bit about why it is
17 important; and, finally, touch on what the NRC can do about
18 it.

19 The International Nuclear Safety Advisory Group
20 introduced the term safety culture in their report on the
21 Chernobyl accident in 1986. They expanded on it later in a
22 third -- I think INSAG-3 on nuclear power plant safety and
23 then in 1991 wrote a -- wrote INSAG-4, which is devoted
24 entirely to the concept of safety culture. And they divided
25 the concept into basically three parts: a policy level

1 commitment that reflects the intent of the regulator and the
2 corporate management of the facilities; a manager's
3 commitment, which is -- basically addresses middle
4 management functions; and individual commitment, which is,
5 you know, the response of individuals to the provisions made
6 for safety and for implementing safety.

7 INSAG starts off by saying that you have to have a
8 policy statement at the highest level and you have to have
9 management structures that provide clear lines of
10 responsibility and authority. You have to provide resources
11 and there has to be an element of self-regulation. What
12 they're calling self-regulation is what we would call
13 self-assessment, basically.

14 At the management level, they ask for definition
15 of responsibilities, definition and control of safety
16 practice, adequate qualifications and training, a system of
17 rewards and sanctions that promotes safety conscious
18 behavior, and an audit review and comparison function that
19 helps guide the program and provide feedback. These areas,
20 the policy level commitment and the manager's commitment,
21 are basically what are called management and organization
22 factors at other places in the literature. The individual
23 commitment, maintaining a questioning attitude, implementing
24 rigorous and prudent approaches to carry out procedures or
25 addressing safety problems, and communicating within the

1 organization are obviously extremely important and fall more
2 or less in the category of attitudes and beliefs, as they're
3 addressed elsewhere in the literature.

4 Interestingly enough, there's an article in the
5 May issue of Nuclear News on a human performance improvement
6 program implemented at Duke Power. This was -- if you have
7 not read the article, I would recommend it. The program was
8 started at the McGuire Station in 1994, after several years
9 of what the management perceived to be declining
10 performance, and the program was later propagated to other
11 Duke Power plants. The figure here, which I borrowed from
12 the Nuclear News article, embodies a number of elements that
13 they think were important to human performance improvement
14 and do not use the term safety culture. It doesn't appear
15 in the article. I don't know if it's used elsewhere in the
16 program, but it was not mentioned in the article.

17 But, the thing to note is that the elements here
18 correspond fairly closely to the elements that the INSAG
19 document I just referenced corresponds to. I haven't done a
20 one-to-one mapping of every element in the diagram, but it's
21 pretty evident that it covers the same territory. The upper
22 part of the arrow corresponds to the individual commitment
23 in the INSAG documents. The lower part, the supervisors and
24 managers portions of the arrow here correspond to the --
25 what INSAG calls manager's commitment. The program, as

1 represented here, doesn't cover the policy level issues, but
2 they're certainly implicit in the existence of the program.

3 In terms of results, it's worth to comment,
4 according to the article, since the program has been
5 implemented, outage times at McGuire, in particular, have
6 been reduced from about 90 days for a typical refueling
7 outage to around 33 days, and their capacity factor has
8 increased from about 72 percent to about 89 percent, and
9 that is --

10 MR. WALLIS: Excuse me, words are fine in this
11 figure. The victory is strange. I mean, this event, the
12 human performance, is teetering an unstable equilibrium on
13 one point.

14 MR. SORENSEN: I cannot defend the graphic.

15 [Laughter.]

16 MR. SORENSEN: I simply present it as it was
17 presented in the article.

18 MR. WALLIS: It looks like a very solid structure
19 until you get up to the top.

20 MR. UHRIG: That's the target, the hidden target.

21 MR. POWERS: I found the article interesting,
22 because, as Jack said, they do not, at any time, use the
23 word safety culture. They did encounter a situation,
24 where the management perceived there to be a declining
25 performance. They set about trying to solve that and they

1 came up with a solution that involved things -- all things.
2 It seemed to be in the realm of safety culture. You don't
3 see them changing the hardware here. It's changing what I
4 would call the wet ware.

5 MR. WALLIS: The questioning attitude is
6 interesting. I mean, at some point, you want to know
7 questioning obedience to the level of procedures are.

8 MR. SORENSEN: Interestingly enough, that's one of
9 the -- one of the conflicts that's identified in the whole
10 nuclear safety area. You want to proceduralize all of your
11 routine activities; you want people to adhere to procedures;
12 and, at some point, you have to provide, through the
13 culture, presumably, the freedom to go do the right thing
14 when the unexpected happens. And how you accomplish both of
15 those things in an organization is acknowledged as a very
16 difficult problem.

17 MR. APOSTOLAKIS: It, also, I think, questions the
18 procedures, themselves, you know, why are we doing certain
19 things. It doesn't mean disobedience.

20 MR. SORENSEN: Right.

21 MR. APOSTOLAKIS: It means that people are not
22 passive receptors of whatever comes down from the top.

23 MR. SIEBER: I'll do whatever you want --

24 MR. APOSTOLAKIS: Yeah. But, I think Jack is
25 right. I mean, it's really difficult to draw the lines.

1 MR. UHRIG: Verbatim compliance is there.

2 MR. SORENSEN: Well, I think the --

3 MR. APOSTOLAKIS: I'm sorry, you can still have
4 verbatim compliance, but you can have people questioning
5 what they're about to comply with. After the law is set,
6 they have to comply.

7 MR. SIEBER: And the idea is to have a questioning
8 attitude such that questions are asked before the -- asked
9 to be, which is all of your review procedures. I think that
10 it's available.

11 MR. SHACK: What you're doing, if you do it.

12 MR. SORENSEN: The element that I was referring to
13 really is when one encounters an area that is not covered
14 adequately by procedures or processes or whatever.

15 MR. SIEBER: Where you get the wrong response,
16 different than expected.

17 MR. SEALE: Perhaps it's not an awkward fact that
18 even when you do everything right, you still have to hit the
19 objective at the appropriate balance point, in order to get
20 this event free human performance. This doesn't guarantee
21 you won't have a problem. It does prepare you to achieve
22 that situation, if you do it right.

23 MR. APOSTOLAKIS: I wonder what kind of high-level
24 guidelines they had, when they developed their performance
25 monitoring system. That would be a very interesting thing

1 to pursue. They have performance monitoring under monitors.

2 MR. SEALE: Maybe we should ask them.

3 MR. SORENSEN: Yeah. The -- there are a number of
4 interesting questions that are suggested by the article. It
5 was reasonably brief, if you will, three or four pages in
6 the document.

7 MR. APOSTOLAKIS: I like this guideline, stop when
8 I'm sure. Does that apply to the operators during an
9 accident?

10 [Laughter.]

11 MR. WALLIS: If you applied that to PRAs, you'd
12 never complete one.

13 [Laughter.]

14 MR. SORENSEN: One of the comments that was made
15 in the article, it quotes from one of the Duke Power people,
16 was if you analyze an entire event, you'll find that it
17 wasn't just one mistake. It was five, six, or seven
18 mistakes that occurred and there weren't enough
19 contingencies or barriers built in to prevent the event from
20 happening. And this common cause assessment identified the
21 need for focus human error reduction training for
22 technicians and supervisors. This has been observed by a
23 number of people in a number of places, if you will; that a
24 lot of the literature on safety culture is devoted to the
25 fact that these so called latent errors can perhaps only be

1 attacked by safety culture or something very much like it.

2 Back in March, there was a presentation from -- by
3 the Idaho National Engineering and Environmental Laboratory
4 on a study sponsored by the NRC staff and they looked at 35
5 operating events, 20 of them using PRA techniques with the
6 one objective being to identify the influence of human
7 performance in significant operating events. The events
8 that they looked at using the PRA techniques, the importance
9 range from one times ten to the minus six, to five times ten
10 to the minus three. What they're calling importance here, I
11 inferred from the presentation, was conditional core damage
12 probability and the event on the high end of that was the
13 Wolf Creek drain down event.

14 They, again, found that the ratio of latent errors
15 to active errors was four to one, specifically in the cases
16 they looked at. Latent errors included failure to correct
17 known problems, failure to respond to information notices,
18 included engineering problems, design, design change,
19 testing, engineering evaluations, resources of failure. The
20 main point here is that the -- it reenforces the thought
21 that latent errors are important and leads one to look for
22 ways to deal with them effectively.

23 MR. SEALE: Jack, I would urge you to reconsider
24 one of the words -- one of the things that's not on that
25 slide. Your slide suggests that you're better off if you

1 don't even do an engineering evaluation. The point is that
2 the engineer that does the evaluation has the responsibility
3 to make sure his engineering evaluation has quality in it.
4 It's a faulty engineering evaluation that gets you into
5 trouble.

6 MR. SORENSEN: I would not argue with that. This
7 falls in the category of a quote.

8 MR. SEALE: Yeah, but I think it's a significant
9 -- you know, the suggestion is, if you -- you know, I don't
10 agree, it's nice to keep the engineers out of the plant,
11 because they need to run it; but, that's going a little far.

12 MR. SORENSEN: I suspect that they did not mean to
13 imply -- but, I tried to --

14 MR. SEALE: Yeah, I understand.

15 MR. SORENSEN: -- quote the slide directly from
16 that earlier presentation. One of the issues with respect
17 to safety culture is identified in the management and
18 organization factors that are important. There are a number
19 of attempts in the literature to do that. One is from Weil
20 and Apostolakis, a 1999 paper, where they identified half a
21 dozen elements, management and organization factors that
22 appear in other articles, other papers, as specifically
23 elements of safety culture.

24 MR. WALLIS: Can I ask about this paper?

25 MR. SORENSEN: Yes, sir.

1 MR. WALLIS: I'm not familiar with these authors.
2 Some authors simply write down something that comes off the
3 top of their head; others carefully research evidence and
4 these things are important. Into which category does this
5 fall?

6 MR. SORENSEN: There's some evidence supporting
7 this. This is actually a reduction of a somewhat longer
8 list of about 20 factors by -- that originated in some
9 NRC-sponsored work at Berkhaven National Laboratory. There
10 was some preliminary work done, establishing statistical
11 significance, if you will, for the 20 -- or for most of the
12 20 elements. One of the problems with 20 elements is it's
13 hard to work with and the paper, which I would be happy to
14 make available to you, provides the logic for reducing the
15 20 to six, by combining certain factors, by looking for
16 factors that are more important than others. So, yes, it
17 has some basis.

18 MR. APOSTOLAKIS: I vaguely recall, from reading
19 this paper some time ago, that they relied on 15 -- about 15
20 vendor inspection team reports, doing root cause analysis
21 and looking for things that were -- so, and these are fairly
22 significant events, is the IAEA reports. But, I can
23 certainly call up your --

24 MR. WALLIS: Well, which one of those two was the
25 ultimate?

1 MR. UHRIG: Is this the URC report?

2 MR. APOSTOLAKIS: Uh?

3 MR. UHRIG: Is this the URC report?

4 MR. APOSTOLAKIS: Probably URC.

5 MR. SORENSEN: One of the points made in this
6 paper, again, supports the previous slides on latent errors
7 and many organization factors or cultural issues. Potential
8 for organization factors to lead to common cause failures is
9 strongly suspected. They acknowledge that the evidence is
10 not complete, at this point; but, they do give an example
11 where word prioritization led to the failure of dissimilar
12 components. In particular, they described a case study of a
13 loss of feed water event at a pressurized water reactor.
14 The progress of the event and the recovery from it were
15 complicated by the failure of both an atmospheric steam dump
16 valve and a startup boiler availability to provide glance
17 ceiling steam.

18 When the authors looked at the event, the
19 conclusion was that there was corrective maintenance that
20 had been identified on both of those components. It had not
21 been performed. And it seems reasonable to conclude, then,
22 that the work prioritization was not correct -- you know,
23 that work should have been done and that that element of the
24 process led to the failure of -- or unavailability of
25 dissimilar components.

1 Going back for a moment to the International
2 Nuclear Safety Advisory Group and pick up the issue of
3 performance indicators relative to safety culture, the
4 INSAG-4 approach to safety culture is, if you'll forgive the
5 reference, very similar to their approach to defense in
6 depth. They write down everything that they could possibly
7 think of that might have some positive influence on safety
8 culture. They end up, I think, with about 150 questions,
9 you know, to be asked in a safety culture evaluation.

10 Following INSAG-4, there was a -- there were ASCOT
11 guidelines written, analyzing safety culture in organization
12 team ASCOT -- assessment of safety culture in organization
13 team. And they wrote guidelines based on the 150 questions,
14 which amount to another 300 or so guide questions. And,
15 typically, at the operating organization level, a basic
16 question might be: has a safety statement -- policy
17 statement been issued. The ASCOT guide questions addressed
18 to plant personnel might be: explain what you know of the
19 company safety policy statements. And the indicators that
20 ASCOT identifies are existence of safety policy statement,
21 policy reminders of statement to the staff, and so forth.

22 The problem with this approach, as you might
23 guess, is that you end up with answers to 450 questions and
24 there's nothing in the process that I have been able to find
25 that tells you how to prioritize those things or how to

1 proceed to fix the most important one.

2 MR. WALLIS: I'm asking myself, what's magic about
3 the word safety? If you look at organizations who do
4 anything, like manufacture of automobiles, or some -- in
5 some mysterious way, seems to make it much more reliable
6 than the other one. It's not something about the culture
7 and it's not the safety of the good. And maybe the words
8 you use here would apply to that sort of question, too. I
9 mean, a good x culture --

10 MR. SORENSEN: Absolutely true; absolutely true.

11 MR. APOSTOLAKIS: In 1995, there was a conference
12 on safety culture in Vienna and I proposed that we drop the
13 current safety culture and talk about the general culture or
14 quality culture at the plant, because it's hard to separate
15 them. And the suggestion was universally rejected. In
16 fact, some people from the IAEA got upset. I don't know why
17 they got upset, but they got upset. And they said, well,
18 gee, you know, the whole idea here is to focus on safety and
19 you're trying to take that away. So, the suggestion has
20 been made. It really does not -- it's non-culture; it's
21 non-culture is the concept. But, I guess, INSAG really
22 wanted to focus on the safety part.

23 MR. SIEBER: And I think that everybody, who has,
24 from an industry viewpoint, sponsored safety culture has
25 done the same thing under the supposition that if you tried

1 to put forth operating culture, then there would be a
2 conflict of interest between operations and safety. And so,
3 they picked the term safety culture to say this is first
4 and all of these other things come next.

5 MR. APOSTOLAKIS: On the other hand, Jack, if you
6 had the good culture, if you're having a conflict, you would
7 try to harmonize things and make sure, because, it's a fact
8 of life, you cannot forget your main mission.

9 MR. SIEBER: Strangely enough, a safe plant, a
10 well-maintained plant, and a plant with good control and
11 highly trained and responsive workers operates very well.

12 MR. APOSTOLAKIS: And that's what Jack told us
13 about.

14 MR. SEALE: It's like discrediting integrity. You
15 know, you have integrity overall or you don't have it
16 anywhere; and you have culture in the positive sense in
17 everything you do or you really don't have it anywhere.

18 MR. APOSTOLAKIS: I would really like the ACS to
19 make that point somewhere, because I really think it's one
20 culture. But, we have to discuss it --

21 MR. BONACA: It's more complex than that. What I
22 mean is that there are plants that -- you know, where the
23 culture is not necessarily one of meaning harm or whatever.
24 It's a culture of being used to to reduce the size of the
25 procedures, less prescriptive procedures, more intuitive

1 processes, and that's very different from big -- that you
2 have today for the way you run the power plant. And I'm
3 saying that that's what culture, to simply say, you know,
4 the issue of integrity. I mean, you find people that you
5 disagree with, insofar as what they want to do or how; but,
6 it's all because you tell them that integrity -- is because
7 they simply don't want to move into a different world, where
8 the professions are high.

9 MR. APOSTOLAKIS: But, then, I would say they have
10 -- culture, period, because it's a fact -- it's a fact that
11 the reason why we build these plants is to produce power.
12 You can't ignore it. So, here, the decisionmaking processes
13 and so on, I mean, that's an element of --

14 MR. BONACA: Yeah. And it may be an issue of, you
15 know -- present the fact that it's a more complex issue than
16 that.

17 MR. APOSTOLAKIS: It is very complex, there's no
18 question about it.

19 MR. BONACA: Yeah. And I think that -- I
20 understand where you're going, but I think that using the
21 word --

22 MR. APOSTOLAKIS: Well, I tell you, wait until you
23 see Vienna.

24 [Laughter.]

25 MR. APOSTOLAKIS: But, I would like to know your

1 views and I'm glad that Graham raised the issue.

2 MR. SORENSEN: Okay. Another attempt to develop
3 or identify performance indicators, there was a study done
4 by the Swedish Regulatory Authority, which Dr. Bonaca
5 participated in, and they went very directly to identifying
6 indicators using entirely an expert opinion process. They
7 started out with a list of, I think, 75 or 80 possible
8 indicators of safety culture and then using this expert
9 elicitation process, narrowed that list down to the five
10 that are on the view graph here: safety significant error
11 rate, maintenance problem rate, ratio corrective to
12 preventive maintenance, regular problems with repeated root
13 causes, and rate of plant changes not documented. They
14 actually went a step further from this and using -- by
15 assigning the numerical scores to the items here, developed
16 an algorithm for changing PRA parameters and PRA results
17 probability of a component failing or being unavailable.

18 The thing that is missing from this particular
19 process, you know, appears to be the mechanism by which
20 these particular indicators, you know, reflect safety
21 cultures. It's not clear what that -- what that connection
22 is.

23 MR. APOSTOLAKIS: It's just adjustment of the
24 experts.

25 MR. SORENSEN: Right.

1 MR. APOSTOLAKIS: We have one of them here.

2 MR. BARTON: What does the bottom one mean?

3 MR. SORENSEN: Number of plant modifications --

4 MR. BARTON: Oh, modifications.

5 MR. SORENSEN: -- of every system --

6 MR. BARTON: Okay.

7 MR. SORENSEN: -- that have been carried out, but
8 not documented.

9 MR. POWERS: When I look at this list of
10 indicators, when I go back to the Duke Power approach, what
11 they did to correct them, I guess I don't see a clear
12 correlation between the corrective action that generally are
13 taken to and redressing these -- as a consequence of that.
14 But, they don't seem to get close -- is there any attempt to
15 validate these?

16 MR. SORENSEN: I have not seen that. Mario may
17 know.

18 MR. BONACA: I think the issue here was -- the
19 focus of this was more to provide some models for using --
20 and that, therefore, kept -- you were discussing there of
21 trying to identify linkages between culture and this
22 particular indicators. And, in fact, there was really a
23 shortcut, that if you had to really use this as peer
24 indicators, successfully perform -- it was a type proof. It
25 was an identified approach, to go down from 75 or 80

1 recorded indicators, to five, you know, indicates that they
2 were -- and so the top five were selected, as I said, as to
3 the final approach.

4 Second, it's so easy to do. You eliminate a lot
5 of other indicators that normally paralyze -- because they
6 all stay put. So, you are forced to an end and output five.
7 And what we felt is that these indicators for most power
8 plants are seen as significant indications of poor culture.

9 MR. APOSTOLAKIS: Is anybody tracking, for
10 example, the rate of performance with repeat of crew costs?

11 MR. BARTON: Yes.

12 MR. APOSTOLAKIS: The ratio of correct to --

13 MR. BARTON: Yes, everybody does that.

14 MR. APOSTOLAKIS: So all of these are available?

15 MR. BARTON: Yes.

16 MR. SIEBER: No, they aren't. Maybe not the
17 bottom one, because the last one is because it hasn't been
18 documented.

19 MR. BARTON: That's right.

20 [Laughter.]

21 MR. SIEBER: Very observant; very observant.

22 MR. BARTON: There was actually the result from
23 inspections, from regulatory inspections. But, the --

24 MR. SIEBER: The rest of them are.

25 MR. BARTON: -- some of them appear the problems

1 --

2 MR. BONACA: Specific problems could be root
3 causes?

4 MR. BARTON: It's an indicator of --

5 MR. APOSTOLAKIS: Mario, is, that I don't know
6 what their root cause is, unless we all agree on the root
7 cause analysis. I mean, you look at root causes analyses,
8 they do all kinds of -- there are all kinds of --

9 MR. BARTON: True.

10 MR. APOSTOLAKIS: I mean, unless you tell people,
11 look, I really want you to go down and look at such and such
12 for such and such a thing, then it's kind of open ended.

13 MR. BONACA: Well, it's, also, -- I mean, what
14 that meant was that you find problems that repeated
15 themselves for which root causes have been identified and
16 corrective action --

17 MR. BARTON: But -- in effect, you didn't have the
18 right root causes.

19 MR. APOSTOLAKIS: I mean, if you don't look at the
20 prioritization part of your work, for example, you'll never
21 see it.

22 MR. BONACA: I think the value of this is that,
23 you know, these are just a sample of the type of issues that
24 are being tracked by power plants. They're very important
25 that they track this and they are indicators.

1 MR. APOSTOLAKIS: Well, and I looked at the list
2 of names of the participants and with the exception of some
3 people, they were --

4 [Laughter.]

5 MR. POWERS: With the exception of one. I mean, I
6 raise this -- I raised the question about the validation,
7 because in your magna opus, you say that it's -- and I think
8 it was in the chemical industry, where there's people, who
9 looked at indicators that subsequently be able -- they were
10 able to find correlated accident rates or event rates and
11 that had a great deal of attraction to me, that you can
12 identify indicators that had some correlation. Those seem
13 to have some particular validity and I can't remember what
14 they were.

15 MR. SORENSEN: Well, the literature on the
16 chemical industry is particularly interesting, because they
17 do have accident rate data, which the nuclear power
18 business, in general, does not have. And there are a number
19 of studies. The best ones appear to have been done in the
20 United Kingdom, that correlate -- that show a good strong
21 statistical correlation between certain management and
22 organization factors that we, in this business, would call
23 safety culture, they call safety climate or something else,
24 and actual accident rates.

25 The little bit of field work that has been done in

1 this country on nuclear plants has shown the same kind of
2 correlation between certain management and organization
3 factors and good plant performance. But the data is pretty
4 fragmented and the terminology is different and whether you
5 can extrapolate between the technologies is not so clear.
6 But the evidence -- the evidence is there. One would like
7 perhaps to tie it up in a more convincing package, but there
8 are enough pieces out there to make it worthwhile looking.

9 MR. WALLIS: FAA has studied airline safety. It
10 must have been very similar.

11 MR. SORENSEN: Yes, obviously, they do. I'm
12 trying to remember now what -- how they treated safety
13 culture per se. They certainly look at management and
14 organization factors. I don't think they call it safety
15 culture, as such.

16 MR. WALLIS: They may not call it that, but these
17 indicators would still be useful to them.

18 MR. SORENSEN: Yes.

19 MR. SIEBER: They've done a lot of work with
20 crews, flight crews.

21 MR. SORENSEN: Right.

22 MR. BARTON: Most of theirs is team and crew.

23 MR. SIEBER: That's right, command and control.

24 MR. APOSTOLAKIS: I think the Navy, also, has done
25 the same thing for submarine --

1 MR. WALLIS: But the maintenance problem, too, I
2 mean, that comes up a lot with airlines.

3 MR. SORENSEN: Yes. In fact, that is the source
4 of latent errors in the airline industry.

5 Touching on root cause analysis provides the
6 transition to this slide that I was trying to figure out how
7 to make a transition to. The last point that I wanted to
8 touch on was the importance of making sure that the root
9 cause analyses that are done adequately cover the human
10 performance safety culture issues, if you will.

11 ATHEANA comes very close to doing what needs to be
12 done there. This is a selection of the certain elements
13 from the ATHEANA analysis of the Wolf Creek drain down
14 event, as reported in NUREG 1624, I think: incompatible
15 work activities; compressed outage schedules; poor metal
16 models of systems and valves, that should read; heavier
17 reliance on the control room crew to identify potential
18 problems; inadequate pre-execution review of procedures.

19 MR. POWERS: One of the things that puzzles me
20 about this is in the beginning, you talked about the Duke
21 experience instead of this tremendous success, because they
22 were able to compress their outage schedule from 90 days to
23 33 days.

24 MR. BARTON: I don't think they're directly
25 related, just because you don't put a lot of faith in that

1 reducing your outage time.

2 MR. POWERS: There's a lot of other things --

3 MR. BARTON: Yes, there's a lot of other stuff
4 that goes in to reducing outage time magnitude, other than
5 the arrow chart.

6 MR. APOSTOLAKIS: But, it was a part of it though.

7 MR. BARTON: Oh, definitely; yes.

8 MR. SORENSEN: Well, I think -- in fact, the Duke
9 Power article does make a point of the fact that the -- that
10 their experience with reducing outage time is a result of
11 better planning.

12 MR. BARTON: Right.

13 MR. SORENSEN: And the clear implication was that
14 you can't simply make the schedule shorter. You've got to
15 do things to make it possible to get the work done.

16 MR. BARTON: Both control and better planning and
17 all of that; a lot of preparation.

18 MR. BONACA: The other thing is that, you know,
19 those elements of the Duke Plant are widespread. I mean, in
20 different forums, they'll look like an arrow or something
21 else; but, everybody has tried those things. And
22 oftentimes, they're not successful, but they're elements
23 that --

24 MR. BARTON: I think then what you get into, then
25 you get into individuals -- individual's performance. I

1 mean, you can have the buzz words, but you have to go and
2 implement that and you have to have management believing
3 that and always communicating it. And if you don't have
4 that -- you can have all kinds of bullet charts or arrow
5 charts, whatever. It looks nice, but it won't work. It
6 won't happen. That's when you get into the people aspect of
7 this thing.

8 MR. WALLIS: Jack, I have one question for you
9 now. As an academic, I guess, I tend to feel that one
10 understands something when one is able to teach it -- when
11 one is able to teach it and you don't really know if you
12 understand it, until you try to teach it. And if safety
13 culture is to be understood and useful, then, eventually,
14 it's got to be taught, so that every manager, every plant
15 isn't learning on the job, but can learn from other people's
16 experience and can, therefore, acquire safety culture
17 without learning by failures. So, hopefully, if this is
18 ever to get somewhere, these observations, which are very
19 useful, have to be put into a form, which is transferrable
20 to other folks and helps them develop this safety culture.

21 MR. SORENSEN: Yes, that's certainly correct. I
22 think one of the remarkable things that I took away from the
23 brief description of the Duke Power program was that this
24 was something that they started on the basis of their
25 observation of declining performance, and they started it

1 and got it working in a very positive way before there was
2 any regulatory -- apparently any overt regulatory pressure
3 on them. You know, they didn't get forced into a long get
4 well outage like some plants in the past have.

5 I guess I would, also, make the observation that
6 what works at Duke may not work at other utilities and
7 that's your real challenge.

8 MR. BARTON: The culture is the people.

9 MR. APOSTOLAKIS: But, the fundamental question
10 here, you know, that I think Jack is about to raise -- I
11 mean, all of this is nice, the first 11 slides. And, you
12 know, you can argue about the details; but, essentially, you
13 know, the basic elements have been captured. But, let us
14 not forget that this is the advisory committee to the U.S.
15 Nuclear Regulatory Commission. What -- the fundamental
16 question is: should the NRC be doing anything in this area;
17 and if so, what? In other words, what is the proper role of
18 the regulator here? So, it's not -- is it our business, for
19 example, to do what Graham said, go and make sure that
20 everybody understands it and, you know, teach them, or it is
21 the appropriate role of -- this is the proper role for Duke
22 Power, for Entergy, and so on, and we should stay out? But,
23 should we stay out completely? Is there anything we should
24 do? I don't know. But, we have --

25 MR. POWERS: It seems to me that the question that

1 this committee has is perhaps the one you identified, but it
2 is more technical than that; that is, is this a feature of
3 the plant that ought to be incorporated in our attempt to
4 quantify residual risk posed by plants?

5 MR. APOSTOLAKIS: I think that's part of it. This
6 is part of it, yes.

7 MR. BONACA: I think, you know, it's a couple of
8 questions, but I think it's a good presentation here,
9 because on one hand, you have the model from Duke. That's
10 really management business. Then, you have the example of
11 SKI, which is really the outcomes -- potential outcomes of
12 culture. That's really a result and that's clearly
13 regulatory business. Where do you -- well, sure.

14 MR. POWERS: Where did they put the dividing line
15 between the two?

16 MR. BONACA: There is a path in between that I
17 think, Jack, in fact, in his paper has well outlined and I
18 believe that there is regulatory involvement at someplace in
19 between.

20 MR. APOSTOLAKIS: There is another fine line,
21 which is related to Dana's comment. Whenever people raise
22 the issue of is a safety culture included, the answer comes
23 back, well, sure, it's in the failure rates --

24 MR. BONACA: That's right.

25 MR. APOSTOLAKIS: -- the plants will tell you.

1 But, my answer is that's not true.

2 MR. BONACA: I agree with you.

3 MR. APOSTOLAKIS: Maybe to some extent, but it's
4 not quite true, because if you have coupling -- if you're
5 dependent failures and you don't have -- I mean, your PRA,
6 you know, you'll never get those effects there. On the
7 other hand, you can't ignore the fact that, yes, I mean, if
8 you're using plant specific, say, human performance data and
9 so on, the safety culture is part of it. So, that's another
10 fine line that has to be defined.

11 MR. BONACA: But, my thought was, again, even the
12 -- even Duke, although they have this program, they
13 recognize the outcomes of the important things and they
14 track indicators.

15 MR. APOSTOLAKIS: The question is to what extent
16 indicators we all view as important to safety are excluded
17 by our -- by a regulatory review. Right now, there are a
18 lot of those and those that we put out for the SKI report,
19 for example, rate the problems with costs, are looked at
20 very seriously by the licensees and the inspectors have to
21 -- the resident inspectors are looking at them. Somehow,
22 for example, they are not an indicator in the performance
23 process. Now, I think that's really the question that we
24 should be asking.

25 MR. WALLIS: So, you're saying there is actually

1 some performance-based activity going on, although it's not
2 formalized, as it may. Inspectors do look at these things
3 and companies do have their own measures.

4 MR. BONACA: Oh, yes.

5 MR. APOSTOLAKIS: Oh, yes.

6 MR. WALLIS: It is actually happening, but in an
7 informal way.

8 MR. APOSTOLAKIS: Yeah. I mean, if you look at
9 what happened the last few years, superficially, you would
10 think that the NRC has never gotten involved into management
11 and organizational issues. And then you go and look at
12 these operatings and how they decide it, you know, where to
13 place the plants, you say, my God, you know, there is some
14 conflict here. I mean, we have been doing it for a long
15 time; maybe we didn't call it that. And the moment you use
16 the word management, you know, everybody gets --

17 MR. SIEBER: On the other hand, licensees have
18 been managing plants using performance indicators since the
19 early 1980s and on a big scale basis.

20 MR. SORENSEN: You know, one thing that I think is
21 interesting is if you -- again, if you're looking at the
22 literature on safety culture or whatever one wants to call
23 it, there is a consensus, if you will, that less
24 prescriptive regulatory schemes provide an opportunity for
25 safety culture or management and organization factors to

1 play a much bigger role in safety, where you're not dealing
2 in a compliance regime.

3 And if you look at the NRC's new reactor oversight
4 program, you know, they identify seven cornerstones to
5 provide the basis for safety inspection, if you will, and
6 there are performance indicators associated with each of
7 those cornerstones. Then, they identify, in addition to the
8 cornerstones, three crosscutting issues: human performance,
9 safety conscious work environment, problem identification
10 and corrective action, and there are no performance
11 indicators for those crosscutting issues. And those are
12 precisely the issues that are at the heart of something that
13 one would call safety culture.

14 The technical framework for licensee performance
15 assessments includes a statement to the effect, The risk
16 informed performance-based regulation will involve a shift
17 in the NRC role for improving human reliability to one of
18 monitoring human reliability, and that would appear to
19 imply a need for some sort of a performance indicator,
20 which, at the moment --

21 MR. UHRIG: This, also, implies that they're
22 improving human performance -- human reliability, at the
23 present time. Is this, in fact, in your view, true?

24 MR. SORENSEN: I didn't argue -- I didn't look at
25 the document with the -- the statement with the intent of

1 arguing with their articulation of it.

2 MR. APOSTOLAKIS: I think it is improving.

3 MR. SORENSEN: I think it is absolute -- but, I
4 think it's correct that the intent of NRC requirements
5 imposed over some period of time following the TMI accident
6 was to improve human performance. That was the goal. Now,
7 you can -- there's, I think, can be a huge argument about
8 how effective it was --

9 MR. APOSTOLAKIS: I think, Jack, what they --

10 MR. SORENSEN: -- but that was the intent.

11 MR. APOSTOLAKIS: -- what they really mean there
12 is they are switching from prescriptive regulatory
13 requirements to monitoring. But, how can you monitor --

14 MR. UHRIG: That's very different than what it
15 says here.

16 MR. APOSTOLAKIS: Yeah. But, I think that's what
17 they mean.

18 MR. BARTON: The quote, I think, is accurate.

19 MR. APOSTOLAKIS: I think you monitor something,
20 if you don't have performance indicators. It says,
21 monitoring human reliability. It don't understand how
22 you're going to do it, if you don't have something -- you
23 know, some guidance as to what to monitor.

24 MR. BARTON: I tell you what -- put that back up
25 again -- I'll tell you what the inspectors are -- what they

1 are doing, is utilities are tracking human errors, and they
2 are, and they are tracking, you know, error free days and
3 all this kind of stuff. And they got a structured -- they
4 follow an impost structure, human performance models. So,
5 they track it. So, the inspectors are going over and saying
6 how come your average error free data is only down to three
7 days on average? What's going on? So, they're digging into
8 that and finding out what the utilities are doing to improve
9 that item.

10 I, also, know what they're doing on the bottom, on
11 identification of corrective action. They're really looking
12 hard at the corrective action system and questioning as to,
13 you know, times of actions, times they are not being
14 resolved, and, you know -- I don't know what they're doing
15 on the second one. I have no evidence of what they're doing
16 with the second one, but I know what they're doing on the
17 first and third.

18 MR. WALLIS: Jack, it comes to mind --

19 MR. BARTON: The inspectors are actively looking
20 at that.

21 MR. WALLIS: -- this human reliability is not just
22 human, it's human plus context plus the tools available. In
23 the old days, the secretary had to type and not misspell,
24 because it was a struggle to change it; nowadays, type away
25 and let the spell check do it. The context and the tools

1 available make a difference. Sometimes, humans are asked to
2 do things, which is just difficult and not very reliable.
3 It's not just human owned.

4 MR. SORENSEN: Yeah. There are a lot of things
5 that go into, you know, the issue of human performance. The
6 person, machine interface, for example, is a very important
7 issue. And there are a lot of management and organizational
8 factors that make it easy or difficult to do a particular
9 job and that are not related in an obvious way to safety.
10 I've -- I am playing with sort of a mental model, myself,
11 where you can think of -- might think of safety culture as
12 the intersection between management and organization
13 factors, in a general sense, and human performance, in the
14 specific sense, where the safety culture is the management
15 and organization factors that provide the environment that
16 the human operators -- technicians operate in.

17 Last slide, tentative recommendations on where one
18 might go with this. I think an important first step is to
19 identify the essential attributes of safety culture, to
20 bring some sort of conclusion from the fragmentation in the
21 literature. And I think it's probably not so important how
22 you define safety culture, as what attributes you ascribe to
23 it and then how you go about measuring those attributes.
24 Once you've done that, then I think you can take the next
25 step, which is to identify performance indicators that

1 provide some indication of safety culture.

2 And the last item, ensure an effective root cause
3 analysis process, make sure that whatever process is used in
4 conjunction with the new reactor oversight program will, in
5 fact, uncover and define the safety culture issues.

6 MR. WALLIS: Jack, you said first, you should, who
7 is you? Is you NRC staff?

8 MR. SORENSEN: If you're going to make it -- if
9 one is going to make use of this concept, then I think these
10 are the steps that you have to implement. If the NRC is
11 going to make use of the concept of safety culture, then
12 it's the NRC that has to do this.

13 MR. SIEBER: Licensees are already doing this.

14 MR. SORENSEN: To a large degree, of course; yes.
15 And there's the perennial issue of, you know, to what degree
16 does the NRC get involved without stepping on --

17 MR. WALLIS: Would the licensees do it better, if
18 the NRC got involved?

19 MR. SORENSEN: That's a legitimate issue and one
20 of the --

21 MR. SIEBER: Or worse; or worse.

22 MR. POWERS: One of the -- just to illustrate how
23 poor my own thinking is about this, the two things that I
24 found most remarkable about Jack's report on this subject,
25 he's left out completely in his presentation of the

1 highlights of his report. The preamble, I tell you, I don't
2 know squat about this, obviously. One of those --

3 MR. SIEBER: It qualifies you to be an expert,
4 then.

5 MR. POWERS: Well, one of the -- one of the things
6 that emerged from his examination of this field that struck
7 me as so very important was the ability to quickly get into
8 a diminishing returns to scale, when there's regulatory
9 involvement; that is that in the extremes, if one has a
10 regulator overlooking each worker, there's no point in
11 having any kind of safety culture at all, because if you
12 make a mistake, there's somebody to catch it. And so
13 enhanced regulation can lead to poor safety cultures. On
14 the other hand, if you have nobody catching mistakes, then
15 you will quickly evolve a very good safety culture, because
16 the fellow dies, if he makes a mistake. I thought the
17 finding of quantitative evidence of that kind of what I call
18 a Laffer curve relationship between regulatory involvement
19 and safety culture was a singularly important discovery.

20 The second one, of course, is that there are
21 indicators that do quantitatively correlate with accident
22 events in the chemical culture -- the chemical process
23 industry, which I didn't appreciate, that our understanding
24 of safety culture was so advanced that we could actually
25 come down and say here's a -- here's something that you can

1 monitor and as it goes up or down, as is the case, your
2 accident rate should go up and down, as well. Now, I'm
3 surprised that somebody would actually be able to find such
4 things.

5 MR. WALLIS: Maybe this is an area where the NRC,
6 rather than looking over the shoulder, should try to reward.
7 Now, somewhere, I think this morning, I saw some other
8 transparency, where someone put up something to reward
9 certain behavior by industry. I failed to ask a question.
10 It seems to me that would be very useful, if the NRC has a
11 mechanism for rewarding some things --

12 MR. POWERS: We used to have one.

13 MR. WALLIS: -- rather than just punishing them.

14 MR. SIEBER: Well, that's sort of --

15 MR. POWERS: One plant didn't get inspected one
16 cycle.

17 MR. WALLIS: Yeah.

18 MR. SIEBER: But that's sort of a two-edge sword,
19 too, and NRC has gotten into that and then backed away, when
20 they found out that they would give an reward now and two
21 months later, they would have a big incident, and it lessens
22 the credibility of the agency.

23 MR. SORENSEN: I think it may well turn out that
24 the -- that if you go through step one and two here and come
25 up with some performance indicators, that the conclusion may

1 well be that the NRC doesn't do anything, except inform the
2 licensee of what the performance indicators appear to be
3 saying.

4 MR. SIEBER: Unless you're in the
5 performance-based and risk-informed realm, you don't have a
6 regulatory basis for delving into management issues, which
7 all of this is. And so, you have to approach this by
8 approaching it from a risk-informed performance-based
9 regulatory system. And that won't be universal, because
10 people have to opt into that. Licensees have to decide do I
11 want to be in this world or not. It seems to me that would
12 be the straightforward way to get into it.

13 MR. APOSTOLAKIS: But the new oversight process, I
14 think, is mandatory for everyone, isn't it? You can't say
15 I'm not risk informed, so use the old one.

16 MR. SIEBER: Yeah. On the other hand, you could
17 stick with the 20 indicators that they now have and what a
18 power plant may use, which might be 300 indicators. Once
19 you get into that, you got burden arguments.

20 MR. APOSTOLAKIS: No, but by point is that all
21 three bullets really are directly relevant to the reactor
22 oversight process. I mean, they defined their three
23 crosscutting issues and then they said, you know, am I going
24 to do anything about it, because other things will tell us
25 whether they are good or bad. And here, we're telling them,

1 well, others have tried. It's not impossible. You know,
2 why don't you try to understand it a little better and maybe
3 define some indicators. Maybe these indicators really
4 exist. I mean, you told me that four of the five SKI
5 indicators are already being monitored. Maybe we reach the
6 same conclusion.

7 I think the problem here, Jack, is that for some
8 reason, this agency is unwilling to even study these issues,
9 to try to understand them, because the safety culture, or
10 whatever, has been tied to management.

11 MR. BARTON: That's right. And you're going to
12 find out that if you really delve into it, that the reason
13 it's not working is because of certain managers at a
14 utility, and that's what the NRC doesn't want to get in to.
15 They don't want to go and say Jack and John are bad
16 management, change them out. They already tried that.

17 MR. APOSTOLAKIS: Wouldn't the performance
18 indicators allow you not to do that? Because, I don't care
19 what you do or what you know; but, I'm looking at the
20 performance. But, I don't -- why is this different from
21 getting a performance indicator -- I mean, ultimately, it's
22 management. Like Dana said, everything is human error, in
23 the final analysis, right? Somebody designed it; somebody
24 did something. I mean, given that the -- you know, the
25 Bible doesn't say that you can -- so, humans created it and

1 so, ultimately, it's -- the same way that ultimately it
2 needs monitoring.

3 MR. SORENSEN: The U.K. regulator appears, at the
4 moment, to be on a path, where they view their mission as
5 making sure that the licensees have the right safety culture
6 and making sure that they don't -- that they, the regulator,
7 don't do anything to interfere with the development of the
8 safety culture.

9 MR. APOSTOLAKIS: And we should do the same thing.

10 MR. POWERS: Well, I mean, I do see a difference
11 between the rate of automatic scrams and these performance
12 -- these safety culture indicators, in that when I have an
13 automatic scram, I know something is wrong, something caused
14 that scram to occur that I hadn't anticipated. When I know
15 -- when I find out something happened to my safety culture
16 indicator, unless I have some demonstration that there's a
17 tie to that overall, then this indicator may not be
18 indicative of anything.

19 MR. SORENSEN: That's right.

20 MR. POWERS: And we have certainly, at least
21 within the DOE complex, find instances where plants with
22 large amounts of maintenance backlog are the lukewarm
23 performers. On the other hand, we found facilities with
24 large maintenance backlogs that were just excellent
25 performers.

1 MR. APOSTOLAKIS: Maybe that not a good indicator.

2 MR. BARTON: I go through their backlog and can
3 it, because it doesn't mean anything.

4 MR. POWERS: That's right. What we're finding was
5 -- all we were finding was that the threshold for putting
6 things into the maintenance program was different between
7 the two facilities. That's all you'll find.

8 MR. APOSTOLAKIS: Well, that's exactly why, I
9 think, the first bullet is there. I don't think we really
10 have ever spent serious time in trying to understand this
11 instance. What are the essential attributes? Can you
12 correlate into real performance when you have indicators?

13 MR. WALLIS: Who is going to do the work to do
14 that?

15 MR. APOSTOLAKIS: The NRC staff.

16 MR. WALLIS: And I think, you know, be very
17 careful, because this is the kind of area that people, who
18 feel that unnecessary research is being done, pick on. We
19 should be very careful.

20 MR. APOSTOLAKIS: Well, that's certainly the major
21 problem.

22 MR. POWERS: That's one of the things that we will
23 discuss. Jack, have you completed your presentation?

24 MR. SORENSEN: It's complete from my viewpoint.

25 MR. POWERS: You've run out of slides?

1 MR. SORENSEN: I've run out of slides.

2 MR. POWERS: You're done.

3 MR. SORENSEN: I did not put up the two important
4 ones.

5 MR. POWERS: I'll get you for this.

6 MR. SORENSEN: I had those in an earlier draft and
7 my sponsor convinced me otherwise.

8 MR. POWERS: That would teach you to listen to
9 him, won't it?

10 MR. SORENSEN: Well, if you gentlemen decide which
11 of you is my boss --

12 [Laughter.]

13 MR. POWERS: I think that it's an appropriate
14 addition and the document, I think, is really worthwhile.
15 And I think the document is worthwhile in two forms: the
16 more abbreviated form that might be useful at some
17 conference; but the lengthier form -- the lengthier
18 document, with its blow by blow account of the literature, I
19 think, is, also, a useful document and I hope that we can
20 move to get them both in the appropriate body of literature.
21 The lengthy document probably is a NUREG report and the
22 shorter document I hope you can put that before some learned
23 body and get some feedback on that.

24 MR. SORENSEN: The plan right now is within the
25 next couple of weeks to have, you know, a short version of

1 the paper available for committee review. That's what I'm
2 aiming for.

3 MR. POWERS: Well, I don't want the lengthier form
4 to do into the dustpan -- MR. SORENSEN: Okay.

5 MR. POWERS: -- because I found that extremely
6 valuable as a resource document, I'll admit. It's lengthy,
7 I mean, that's all it is to it and it might be worthwhile
8 seeing if some other vehicle would appreciate a review
9 document, because it constitutes a good review. But, at the
10 very minimal, I hope we can get it into a NUREG report,
11 because I think it's an important contribution.

12 If there are no other questions, I will recess us
13 until 1:25.

14 [Whereupon, the recorded portion of the meeting
15 was concluded.]
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REPORTER'S CERTIFICATE

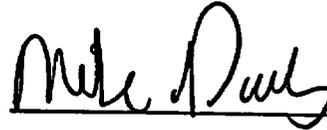
This is to certify that the attached proceedings before the United States Nuclear Regulatory Commission in the matter of:

NAME OF PROCEEDING: MEETING: 473RD ADVISORY
COMMITTEE ON REACTOR
SAFEGUARDS

CASE NO:

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.



Mike Paulus

Official Reporter

Ann Riley & Associates, Ltd.

tl

**INTRODUCTORY STATEMENT BY THE ACRS CHAIRMAN
473RD MEETING - JUNE 7-9, 2000**

THE MEETING WILL NOW COME TO ORDER. THIS IS THE SECOND DAY OF THE 473RD MEETING OF THE ADVISORY COMMITTEE ON REACTOR SAFEGUARDS. DURING TODAY'S MEETING, THE COMMITTEE WILL CONSIDER THE FOLLOWING:

- (1) PERFORMANCE-BASED REGULATORY INITIATIVES**
- (2) USE OF INDUSTRY INITIATIVES IN THE REGULATORY PROCESS**
- (3) SAFETY CULTURE AT OPERATING NUCLEAR POWER PLANTS**
- (4) VISIT TO DAVIS BESSE NUCLEAR POWER PLANT AND MEETING WITH NRC REGION III PERSONNEL**
- (5) PROPOSED PLAN AND ASSIGNMENTS FOR REVIEWING LICENSE RENEWAL GUIDANCE DOCUMENTS**
- (6) RECONCILIATION OF ACRS COMMENTS AND RECOMMENDATIONS**
- (7) FUTURE ACRS ACTIVITIES/REPORT OF THE PLANNING AND PROCEDURES SUBCOMMITTEE**
- (8) PROPOSED ACRS REPORTS**

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 NO WRITTEN STATEMENTS OR REQUESTS FOR TIME TO MAKE ORAL STATEMENTS FROM MEMBERS OF THE PUBLIC REGARDING TODAY'S SESSIONS. 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.

**HIGH-LEVEL GUIDELINES
FOR
PERFORMANCE-BASED ACTIVITIES**

PRESENTATION TO ACRS FULL COMMITTEE

JUNE 8, 2000

OFFICE OF NUCLEAR REGULATORY RESEARCH

N. Prasad Kadambi, REAHFB

J. E. Rosenthal, Branch Chief, REAHFB

OUTLINE

- OVERVIEW
- HISTORICAL BACKGROUND
- SRM TO SECY-99-176
- ACTIONS TAKEN FOR INTERNAL AND EXTERNAL STAKEHOLDER INPUT
- USE OF RISK INFORMATION FOR PERFORMANCE-BASED INITIATIVES
- DISCUSSION OF HIGH-LEVEL GUIDELINES
- DISCUSSION OF STAFF'S PLAN
- CONCLUSION

OVERVIEW

- THE STAFF IS MAKING STEADY PROGRESS TO DEVELOP PERFORMANCE-BASED APPROACHES CONSISTENT WITH COMMISSION DIRECTION
- THE DEVELOPMENT OF THE HIGH-LEVEL GUIDELINES AND THEIR VALIDATION REPRESENT A SIGNIFICANT MILESTONE IN PROGRESS TOWARD ACHIEVING THE GOALS OF THE PERFORMANCE-BASED REGULATION INITIATIVE.
- THE GUIDELINES WILL BE VALIDATED AND TESTED OVER A RANGE OF REGULATORY ISSUES TO GAIN CONFIDENCE IN THEIR USE AND IDENTIFY KEY CHALLENGES WHICH MAY LIMIT THEIR APPLICATION.
- THE STAFF WILL EVENTUALLY INTEGRATE THE PERFORMANCE-BASED ACTIVITIES INTO THE MAINSTREAM OF REGULATORY IMPROVEMENT ACTIVITIES WHICH CURRENTLY HAS A MULTITUDE OF RISK-INFORMED EFFORTS.

HISTORICAL BACKGROUND

- THE COMMISSION HAS EXPRESSED A FIRM COMMITMENT TO INSTITUTING PERFORMANCE-BASED APPROACHES WHEREVER FEASIBLE STARTING WITH THE DIRECTION SETTING PAPERS FROM 1996 ON THROUGH THE LATEST DRAFT OF THE STRATEGIC PLAN.
- WHILE SIGNIFICANT PROGRESS WAS BEING MADE ON RISK-INFORMED INITIATIVES THE FOCUS OF THE PERFORMANCE-BASED INITIATIVES WAS ON THOSE ISSUES "NOT AMENABLE TO PRA" (SRM TO SECY-98-132).
- THE MOST RECENT PAPER FROM THE STAFF, SECY-99-176, WAS NOT RECEIVED FAVORABLY BY THE COMMISSION BECAUSE THE PLANS LACKED SPECIFICITY AND THE MAGNITUDE OF PROGRESS IT REPRESENTED WAS INSUFFICIENT.
- ACRS LETTER OF JUNE 10, 1999 CALLED FOR FOCUSING OF DIVERSE ACTIVITIES ON PERFORMANCE-BASED REGULATION
- THE SRM TO SECY-99-176 EXPLICITLY PROVIDES COMMISSION EXPECTATIONS AND DIRECTS THE STAFF TO TAKE THE ACTIONS DESCRIBED IN THIS PRESENTATION.

SRM TO SECY-99-176

- THE COMMISSION DIRECTED THE STAFF TO:
 - "... develop high-level guidelines to identify and assess the viability of candidate performance-based activities."
- IN SECY-99-176, THE STAFF HAD PROPOSED GUIDELINES AS A DOWNSTREAM ACTIVITY. THE COMMISSION ADVANCED THE SCHEDULE SIGNIFICANTLY.
- THE SRM INCLUDED THE FOLLOWING ELEMENTS:
 - The guidelines should be developed with input from stakeholders and the program offices.
 - The guidelines should include discussion on how risk information might assist in the development of performance-based initiatives.
 - The guidelines should be provided to the Commission for information.
 - The staff should periodically update the Commission on its plans and progress in identifying and developing performance-based initiatives.
- THE PROPOSED GUIDELINES WILL PROVIDE THE FRAMEWORK FOR FOCUSING ACTIVITIES AS ACRS HAD SOUGHT TO DO.

INTERNAL AND EXTERNAL STAKEHOLDER INPUT

- **CREATION OF THE PERFORMANCE-BASED REGULATION WORKING GROUP (PBRWG) FROM ALL AFFECTED PROGRAM OFFICES.**
- **FEDERAL REGISTER NOTICES ISSUED ON JANUARY 24 AND FEBRUARY 17, 2000.**
- **FACILITATED WORKSHOP HELD ON MARCH 1, 2000.**
- **WRITTEN COMMENTS RECEIVED FROM A RANGE OF EXTERNAL AND INTERNAL STAKEHOLDERS.**
- **FEDERAL REGISTER NOTICE OF MAY 9, 2000, WITH RESPONSE TO COMMENTS.**
- **ON-LINE WORKSHOP OF JUNE 8, 2000**
- **STAFF CHARACTERIZES STAKEHOLDER INPUT AS BEING NOT NECESSARILY UNFAVORABLE PROVIDED CERTAIN "IMPLEMENTATION" AND "TRUST" ISSUES ARE ADDRESSED.**

USE OF RISK INFORMATION

- RISK INFORMATION MAY PROVIDE THE BASIS FOR UNDERTAKING AN INITIATIVE
 - SAFETY ENHANCEMENT
 - REDUCTION OF UNNECESSARY BURDEN
 - CHANGES RESULTING FROM RISK-INFORMED REGULATION (OPTIONS 2 & 3) WILL CONSIDER USING A PERFORMANCE-BASED APPROACH
- RISK INFORMATION IS USED FOR METRICS, THRESHOLDS AND/OR REGULATORY RESPONSE
- INITIATIVES MAY BE CLASSIFIED AS "NOT AMENABLE TO PRA", BUT WOULD BE CONSIDERED AS A PERFORMANCE-BASED INITIATIVE.

HIGH-LEVEL GUIDELINES

I. VIABILITY

A. MEASURABLE OR CALCULABLE PARAMETER

- (a) Directly measured and related to safety objective**
- (b) Calculated and related to safety objective**
- (c) Ready access to data**
- (d) Monitored periodically**

B. OBJECTIVE CRITERIA

- (a) Use risk insights, deterministic analysis or performance history**

C. FLEXIBILITY

- (a) Programs and processes at licensee's discretion**
- (b) Encourage and reward improved outcomes**

D. NO IMMEDIATE SAFETY CONCERN IF CRITERION NOT MET

- (a) Sufficient safety margin**
- (b) Time for corrective action**
- (c) Capability to detect and correct performance degradation**

HIGH-LEVEL GUIDELINES (Contd)

II. ASSESS IMPROVEMENT

A. MAINTAIN SAFETY

- (a) Safety plays primary role**
- (b) Adequacy of safety margins assured by assessing conservatism and treatment of uncertainty**

B. INCREASE PUBLIC CONFIDENCE

- (a) Assess impact of results and objective criteria with public participation**

C. INCREASE EFFECTIVENESS, EFFICIENCY AND REALISM

- (a) Methodology and assumptions consistent with accounting for uncertainty and defense-in-depth**
- (b) Assess placement in performance hierarchy**

D. REDUCE UNNECESSARY BURDEN

E. TEST FOR OVERALL NET BENEFIT

- (a) Merits of pursuing change**
- (b) Assess NRC or licensee benefits from change**
- (c) Simplified assessment preferred**

HIGH-LEVEL GUIDELINES (Cntd)

- F. INCORPORATION INTO REGULATORY FRAMEWORK**
 - (a) CFR; Reg Guide; NUREG; SRP; TS; Inspection Guidance**
 - (b) One or more components considered for change**
 - (c) Justified by proponent; feedback from stakeholders**
 - (d) Inspection and enforcement considerations (including reduced NRC scrutiny) addressed early**

- G. ACCOMMODATE NEW TECHNOLOGY**
 - (a) Difficulties due to change in technology**
 - (b) New technology provides better solutions**

- III CONSISTENCY WITH REGULATORY PRINCIPLES**
 - A. CONSISTENT AND COHERENT WITH OVERRIDING GOALS**
 - (a) Principles of Good Regulation; PRA Policy Statement; RG 1.174; Strategic Plan**
 - (b) Defense-in-Depth Philosophy; treatment of uncertainties**

PROPOSED PLAN

- THE OBJECTIVE OF THE PLAN IS TO BUILD ON THE PROGRESS MADE IN THE STAFF'S RESPONSE TO THE ELEMENTS OF THE SRM
- AS CONFIDENCE IS DEVELOPED IN THE USE OF THE GUIDELINES THE PLANNING, BUDGETING AND PERFORMANCE MEASUREMENT PROCESS WILL BE USED TO INCORPORATE THE ACTIVITIES INTO OPERATING PLANS AND BUDGET RESOURCES AS APPROPRIATE.
- BY SIX MONTHS AFTER ISSUANCE OF SRM:
 - HIGH-LEVEL GUIDELINES WILL BE VALIDATED AND TESTED FOR ONE ISSUE IN THE REACTOR ARENA AND ONE IN THE MATERIALS OR WASTE ARENA
 - PROVIDE OBSERVATIONS ON INTEGRATION OF INITIATIVES IN THE RISK-INFORMED AND PERFORMANCE-BASED AREAS AND PROPOSE LONGER TERM IMPLEMENTATION
- STAFF RECOMMENDS THAT THE COMMISSION APPROVE THE ELEMENTS OF THIS PLAN BECAUSE IT PROVIDES MILESTONES AND DELIVERABLES; LINKAGES AMONG THE ACTIVITIES; EFFECTIVELY AND EFFICIENTLY USES RESOURCES.

CONCLUSIONS

- STAFF HAS RESPONDED TO THE ELEMENTS OF THE SRM
- ADVISORY COMMITTEES' INPUTS WILL BE REFLECTED IN THE PAPER TO BE ISSUED BY AUGUST 21, 2000
- INPUT SO FAR FROM INTERNAL AND EXTERNAL STAKEHOLDERS FAVORABLE TO ADOPTING THE HIGH-LEVEL GUIDELINES FOR PERFORMANCE-BASED ACTIVITIES
- ADVISORY COMMITTEES WILL RECEIVE REPORTS FOR INFORMATION

High-Level Guidelines for Performance-Based Activities

The following are proposed guidelines to be applied in performance-based activities:

I. Guidelines to Assess Viability

The staff will apply the following guidelines (which are based on the four attributes in the Commission's White Paper, "Risk-Informed and Performance-Based Regulation", SRM to SECY-98-144) to assess whether a more performance-based approach is viable for any given new regulatory initiative. This assessment would be applied on a case-by-case basis and would be based on an integrated consideration of the individual guidelines. The guidelines are listed below:

- A. Measurable (or calculable) parameters to monitor acceptable plant and licensee performance exist or can be developed.**
 - a. Directly measured parameter related to safety objective is preferred;
 - b. A calculated parameter may also be acceptable, if it is related to the safety objective of the regulatory activity.
 - c. Parameters which licensees can readily access, or are currently accessing, in real time are preferred.
 - d. Parameters monitored periodically to address postulated or design basis conditions may also be acceptable.
- B. Objective criteria to assess performance exist or can be developed.**
 - a. Objective criteria are established based on risk insights, deterministic analyses and/or performance history.
- C. Licensees would have flexibility in meeting the established performance criteria when a performance-based approach is adopted.**
 - a. Programs and processes used to achieve the established performance criteria would be at the licensee's discretion.
 - b. A consideration in incorporating flexibility to meet established performance criteria will be to encourage and reward improved outcomes.
- D. A framework exists or can be developed such that performance criteria, if not met, will not result in an immediate safety concern.**
 - a. A sufficient safety margin exists.

- b. Time is available for taking corrective action to avoid the safety concern.
- c. The licensee is capable of detecting and correcting performance degradation.

II. Guidelines to Assess Performance-Based Regulatory Improvement

If a more performance-based approach is deemed to be viable based on the guidelines in (I. Guidelines to Assess Viability) above, then the regulatory activity would be evaluated against the following set of guidelines to determine whether, on balance, after an integrated consideration of these guidelines, there are opportunities for regulatory improvement:

- A. Maintain safety, protect the environment and the common defense and security.
 - a. Safety considerations play a primary role in assessing any improvement arising from the use of performance-based approaches.
 - b. The level of conservatism and uncertainty in the supporting analyses would be assessed to ensure adequate safety margins.
- B. Increase public confidence.
 - a. An assessment would be made to determine if the emphasis on results and objective criteria (characteristics of a performance-based approach) can increase public confidence.
- C. Increase effectiveness, efficiency and realism of the NRC activities and decision-making.
 - a. An assessment would be made of the level of conservatism existing in the currently applicable regulatory requirements considering analysis methodology and the applicable assumptions. Any proposal to increase or decrease conservatism would take into account uncertainty factors and defense-in-depth relative to the scenario under consideration.
 - b. An assessment would be made of the performance criteria and the level in the performance hierarchy where they have been set. In general, performance criteria should be set at a level commensurate with the function being performed. In most cases, performance criteria would be expected to be set at the system level or higher.
- D. Reduce unnecessary regulatory burden.
- E. A reasonable test shows an overall net benefit results from moving to a performance-based approach.

- a. A reasonable test would begin with a qualitative approach to evaluate whether there is merit in changing the existing regulatory framework. When this question is approached from the perspective of existing practices in a mature industry, stakeholder support for change may need to be obtained.
 - b. Unless imposition of a safety improvement or other societal outcome is contemplated, expending resources for a change in regulatory practice would be justified in most cases only if NRC or licensee operations benefit from such a change. The primary source of initial information and feedback regarding potential benefits to licensees would be the licensees themselves.
 - c. A simplified definition of the overall net benefit (such as net reduction in worker radiation exposure) may be appropriate for weighing the immediate implications of a proposed change.
- F. The performance-based approach can be incorporated into the regulatory framework.
- a. The regulatory framework may include the regulation in the Code of Federal Regulations, the associated Regulatory Guide, NUREG, Standard Review Plan, Technical Specification, and/or inspection guidance.
 - b. A feasible performance-based approach would be one which can be directed specifically at changing one, some, or all of these components.
 - c. The proponent of the change to the components of the regulatory framework would have the responsibility to provide sufficient justification for the proposed change; all stakeholders would have the opportunity to provide feedback on the proposal, typically in a public meeting.
 - d. Inspection and enforcement considerations would be addressed during the formulation of regulatory changes rather than afterwards. Such considerations could include reduced NRC scrutiny if performance so warrants.
- G. The performance-based approach would accommodate new technology.
- a. The incentive to consider a performance-based approach may arise from development of new technologies as well as difficulty stemming from technological changes in finding spare components and parts.
 - b. Advanced technologies may provide more economical solutions to a regulatory issue, justifying consideration of a performance-based approach.

III. Guidelines to Assure Consistency with Other Regulatory Principles

- A. A proposed change to a more performance-based approach is consistent and coherent with other overriding goals, principles and approaches involving the NRC's regulatory process.

- a. **The main sources of these principles are the Principles of Good Regulation, the Probabilistic Risk Assessment (PRA) Policy Statement, the Regulatory Guide 1.174, "An Approach for Using PRA in Risk-Informed Decisions on Plant-Specific Changes to the Licensing Basis," and the NRC's Strategic Plan.**
- b. **Consistent with the high-level at which the guidance described above has been articulated, specific factors which need to be addressed in each case (such as defense in depth and treatment of uncertainties) would depend on the particular regulatory issues involved.**



Buyers Up • Congress Watch • Critical Mass • Global Trade Watch • Health Research Group • Litigation Group
Joan Claybrook, President

June 8, 2000

Contact: Lisa Gue (202) 454-5130

**Statement of Lisa Gue, Policy Analyst,
Public Citizen's Critical Mass Energy and Environment Program,
on the Revised Proposal for High-Level Guidelines for Performance-
Based Regulation**

Thank you for allowing me to comment today on the proposal for high-level guidelines for performance-based regulation. I am a Policy Analyst for the Critical Mass Energy and Environment Program of Public Citizen, a non-profit research, lobbying, and litigation organization founded by Ralph Nader in 1971. Public Citizen advocates for consumer protection and for government and corporate accountability, and is supported by over 150,000 members throughout the United States.

It's disappointing to note that, as of yet, our previous comments in opposition to the proposed guidelines have generally been dismissed. The process for public participation, which would purport to be open and responsive, has in fact only been able to integrate comments which can be incorporated within the basic paradigm of a performance-based regulatory framework. Our more fundamental concerns with the framework itself have been systematically excluded from consideration.

Nevertheless, I want to reiterate that Public Citizen has grave concerns about the Nuclear Regulatory Commission's proposed High Level Guidelines for Performance Based Regulations, not least in terms of how they would affect regulation of nuclear waste. We have also submitted written comments detailing our concerns with performance based regulations as they relate to reactor safety. I will focus my comments on the implications for waste management. We feel it is important for this committee to take into account these considerations, given that the proposed guidelines would inform *all* Commission regulations concerning the entire nuclear cycle.

Maintaining safeguards in the transport and storage of nuclear waste requires the NRC to take a more proactive approach to waste management than the proposed guidelines would suggest. Once a waste storage canister or transportation cask leaks, public health and environmental safety are already threatened. There is no "margin of safety" to protect the public if part of the already flawed system fails. In this respect, a performance-based approach is clearly inadequate since it can only respond to failure, not predict or prevent it.

As well, the many uncertainties associated with waste management make it difficult to adequately assess the risks involved, including the entire range of probable and improbable events affecting the control of radioactive materials. A performance-based regulatory structure can therefore never be truly "risk-informed," but is subject to failure based on the opportunity for undefined assumptions, statistical manipulation to disguise potential impacts, and even the limits of human imagination to conceive of all risky scenarios.

Ralph Nader, Founder

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Furthermore, it seems irresponsible to base nuclear safety standards on a probabilistic analysis of risk. The probability of any particular accident may be minute, but the potential consequences devastating. Therefore risk assessment must not be used to justify the relaxation of regulatory conservatism. Similarly, we are alarmed that the proposed guidelines would allow licensees to evaluate and prioritize safety concerns according to measures of economic efficiency. It is inappropriate to take such a utilitarian approach toward public health and safety. To be viable, the nuclear industry must demonstrate its ability to protect comprehensively against both probable and improbable risks. Otherwise, it should be shut down.

Having participated in the workshop process, Public Citizen maintains the position that regulatory conservatism is desirable to insure that nuclear materials remain isolated from the biosphere. It seems necessary to point out that prescriptive regulations do not prevent licensees from acting creatively to exceed prescribed standards. On the other hand, what is being referred to as "flexibility" in the proposed guidelines for performance-based standards is likely to result in the industry cutting corners in an effort to meet minimum performance criteria with as little effort and cost as possible. The staff response to these concerns about safety has been to make semantic changes to the proposed guidelines. These superficial amendments do not adequately address our concerns, which relate to the fact that the fundamental orientation of performance-based regulation is not to emphasize safety. With the prospect of a high level dump at Yucca Mountain currently under consideration, the public can only fear what this regulatory approach will mean for the transportation campaign and the waste site, if it is approved.

The NRC is mandated to protect public safety. Yet this proposal for performance based regulations would shift the regulatory emphasis away from safety concerns and place it instead on cost reduction. Compromising safety guarantees in the name of economic efficiency will certainly do nothing to promote public confidence in the NRC's policies and procedures. Indeed, reduced regulatory burden for the nuclear industry effectively amounts to an increased and unmeasurable burden of risk for the environment and public health. With respect to nuclear waste regulations, the drive for performance based standards is yet another instance of the nuclear industry seeking to shirk responsibility for the waste it has created and continues to create. The push to license Yucca Mountain as a permanent repository, the move to allow designing and building of storage casks before they are certified, the plan to promulgate 72.48 to make it easier for licensees to change their procedures, the search for the cheapest method to decommission plants, and the push to "recycle" radioactive materials into the marketplace all show that the NRC is willing to grant the industry's wish to dump its responsibility on the public. The nuclear industry is not clamoring to be more creative in order to better protect the people and environment around nuclear reactors and dumps, and along nuclear waste transportation routes. The industry wants a bail-out to escape the burden of dealing with its own mess, and the proposed guidelines for performance-based regulations further this agenda.

Finally, the process surrounding consideration of the proposed guidelines, by which public comments have been categorically ignored, has in itself weakened public confidence in the NRC's willingness and ability to pursue a publicly informed regulatory option that protects public health and the environment. Indeed, the proposed high-level guidelines for performance-based activities make it clear that the NRC is ready to subjugate these safety concerns to the economic interests of the nuclear industry.



INDUSTRY INITIATIVES IN THE REGULATORY PROCESS

Presentation to the ACRS

June 8, 2000

C. E. Carpenter
R. A. Hermann

AGENDA

- PURPOSE
- BACKGROUND
- PROPOSED GUIDELINES
- RECOMMENDATIONS AND FUTURE ACTIONS
- CONCLUSIONS

PURPOSE

- Proposed Guidelines Intended To Ensure That Future Initiatives Proposed By Applicable Industry Groups (AIGs) Would Be Treated And Evaluated In A Consistent, Controlled And Open Manner and will
 - Maintain Safety,
 - Reduce Unnecessary Regulatory Burden,
 - Improve Efficiency, Effectiveness, and Realism, and
 - Improve Public Confidence

BACKGROUND

- **Direction Setting Initiative 13, “The Role of Industry”**
- **SECY-99-063, “The Use by Industry of Voluntary Initiatives in the Regulatory Process,” and Associated SRM**
- **Actions to Develop Proposed Guidelines**
 - **Staff Met with Industry, NEI, and Other Stakeholders**
 - **Staff Developed Web Page to Provide Information on Guidelines**
 - **Staff Issued Federal Register Notice (FRN) (64 FR 69574) Soliciting Stakeholder Comments on Both Technical and Regulatory Aspects Related to Development of Guidelines to Allow Drafting of Regulatory Framework from Interested Stakeholders**
 - **Final Proposed Guidelines Provided to Commission in SECY-00-0116, “Industry Initiatives in the Regulatory Process,” dated May 30, 2000**

PROPOSED GUIDELINES

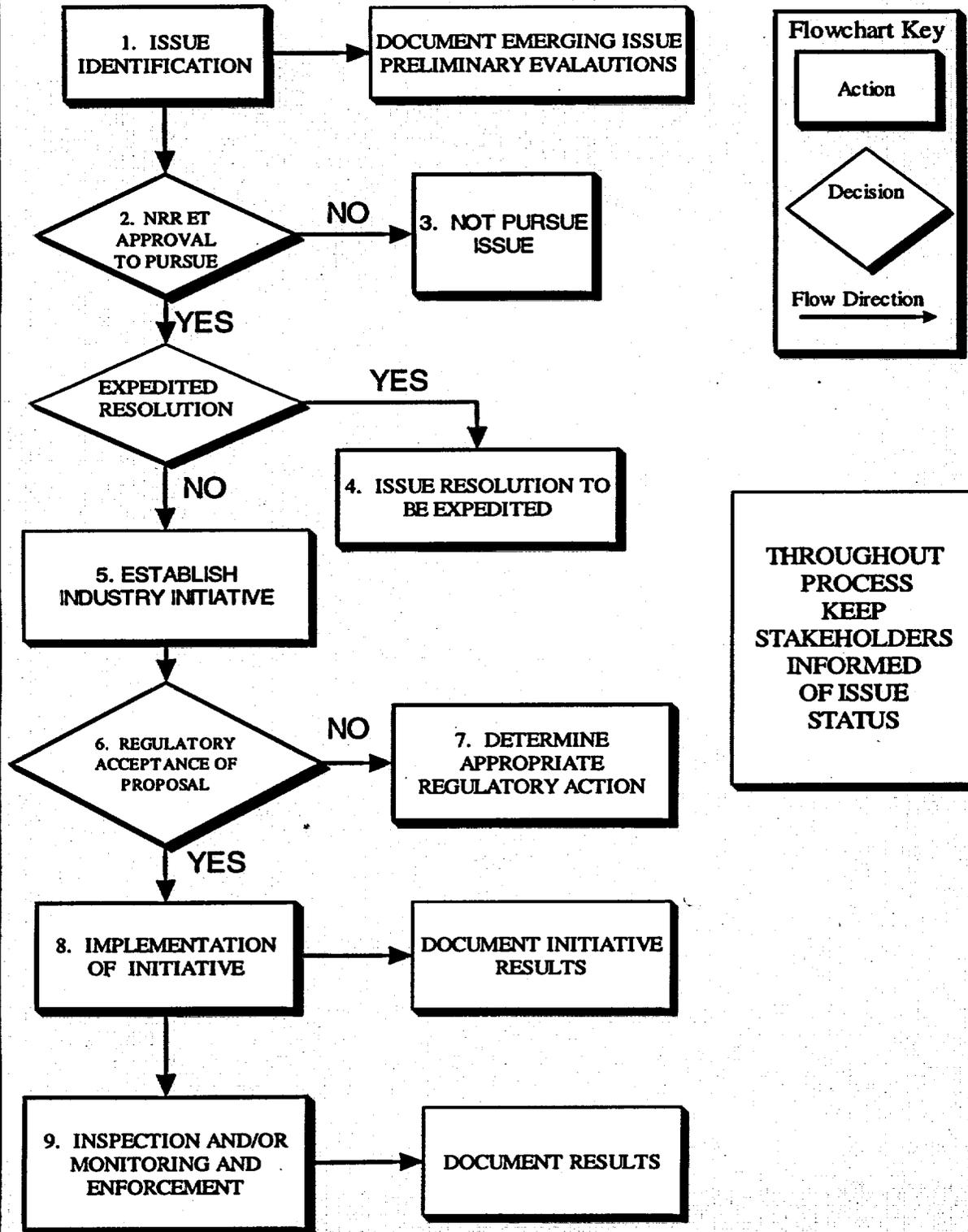
○ Definitions

→ Type 1 and Type 2 Industry Initiatives:

- ◇ Type 1: those developed by AIG(s) in response to some issue of potential regulatory concern (a) to substitute for or complement regulatory actions for issues within existing regulatory requirements, or (b) which are potential cost beneficial safety enhancement issues outside existing regulatory requirements;
- ◇ Type 2: those that are initiated and developed by AIG(s) to address issues of concern to the AIG(s) but that are outside existing regulatory requirements and are not cost beneficial safety enhancements, or that are used as an information gathering mechanism

→ Applicable Industry Group(s) (AIGs) could be the members of one or more Owners Groups, an industry organization (e.g., the Nuclear Energy Institute or the Electric Power Research Institute), or two or more licensees

INDUSTRY INITIATIVES PROCESS



PROPOSED GUIDELINES

- **Other Items**

- Project Management
- Public Participation
- Communications Plan
- Resource Planning
- Fees
- Tracking of Commitments Consistent with Existing Regulatory Processes
- Enforcement Guidelines Consistent with Reactor Oversight Process Improvements

- **Stakeholder Comments**

- NEI's Views Regarding Proposed Process

RECOMMENDATIONS AND FUTURE ACTIONS

- Staff Requesting Commission's Approval To Issue Proposed Guidelines For Public Comment
- After Considering Further Stakeholder Comments, Staff Will Communicate Final, Revised Guidelines And Implement For Future Industry Initiatives
- Expected milestones are:
 - Commission Approval to Issue Guidelines for Public Comment -- July 31, 2000
 - Guidelines Issued for 45-day Public Comment -- August 31, 2000
 - Comments Resolved and Final Guidelines Issued -- January 5, 2001

CONCLUSIONS

- Proposed Guidelines For Including Industry Initiatives In The Regulatory Process Provide Flexibility In The Form That Initiatives Might Take While Making Optimal Use Of Existing Regulatory Processes To Provide A Framework For The Efficient And Effective Use Of Initiatives To Resolve Issues And Maintain Safety
- Guidelines Provide For Public Participation In Process And For Making Information Related To Industry Initiatives Readily Available To All Stakeholders

Safety Culture

**Presentation to the
Advisory Committee on Reactor Safeguards**

June 8, 2000

J. N. Sorensen

Safety Culture

What is it?

- **IAEA/INSAG view**

Why is it important?

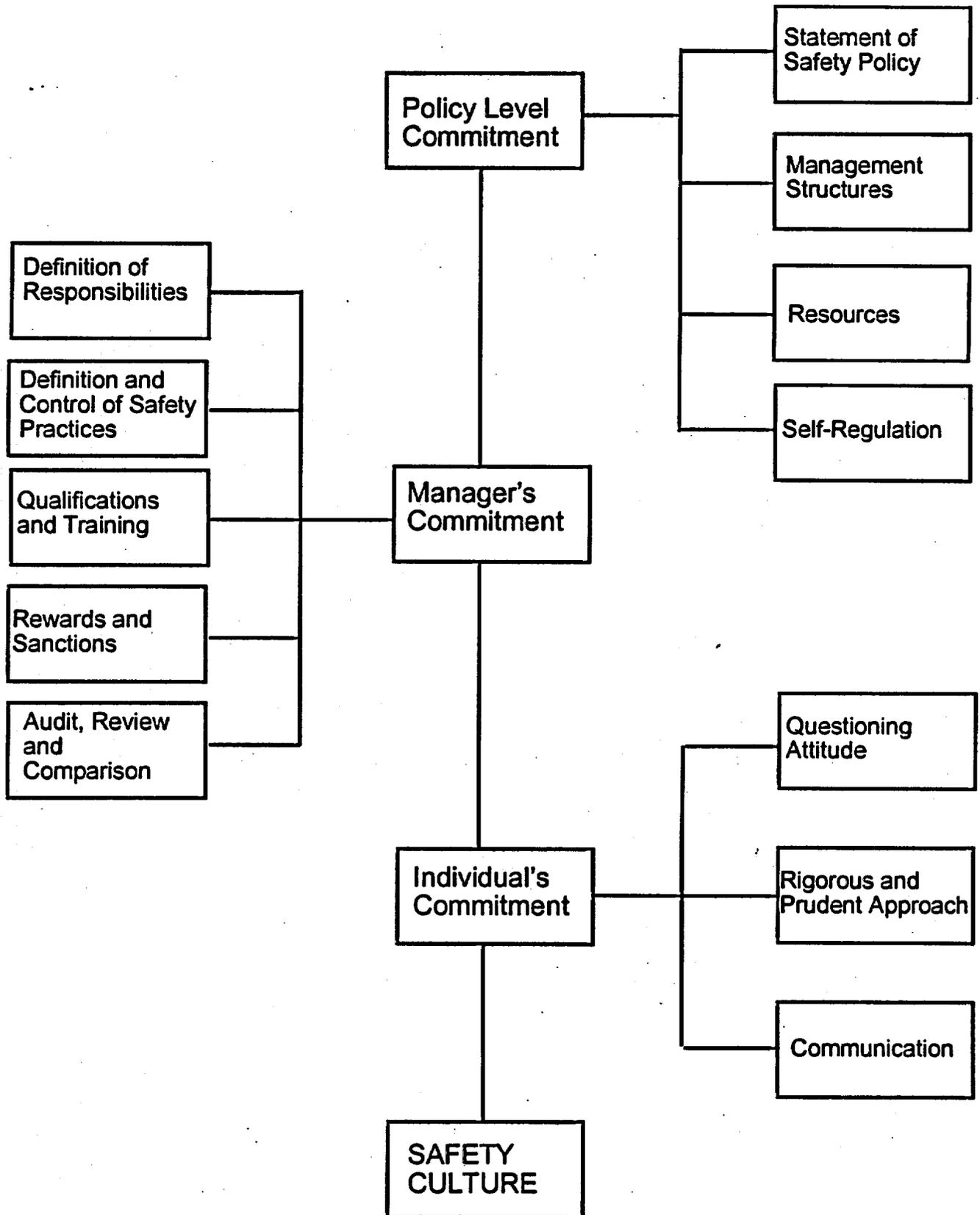
- **Human performance improvement**
- **Latent errors**
- **ATHEANA needs**

What can NRC do about it?

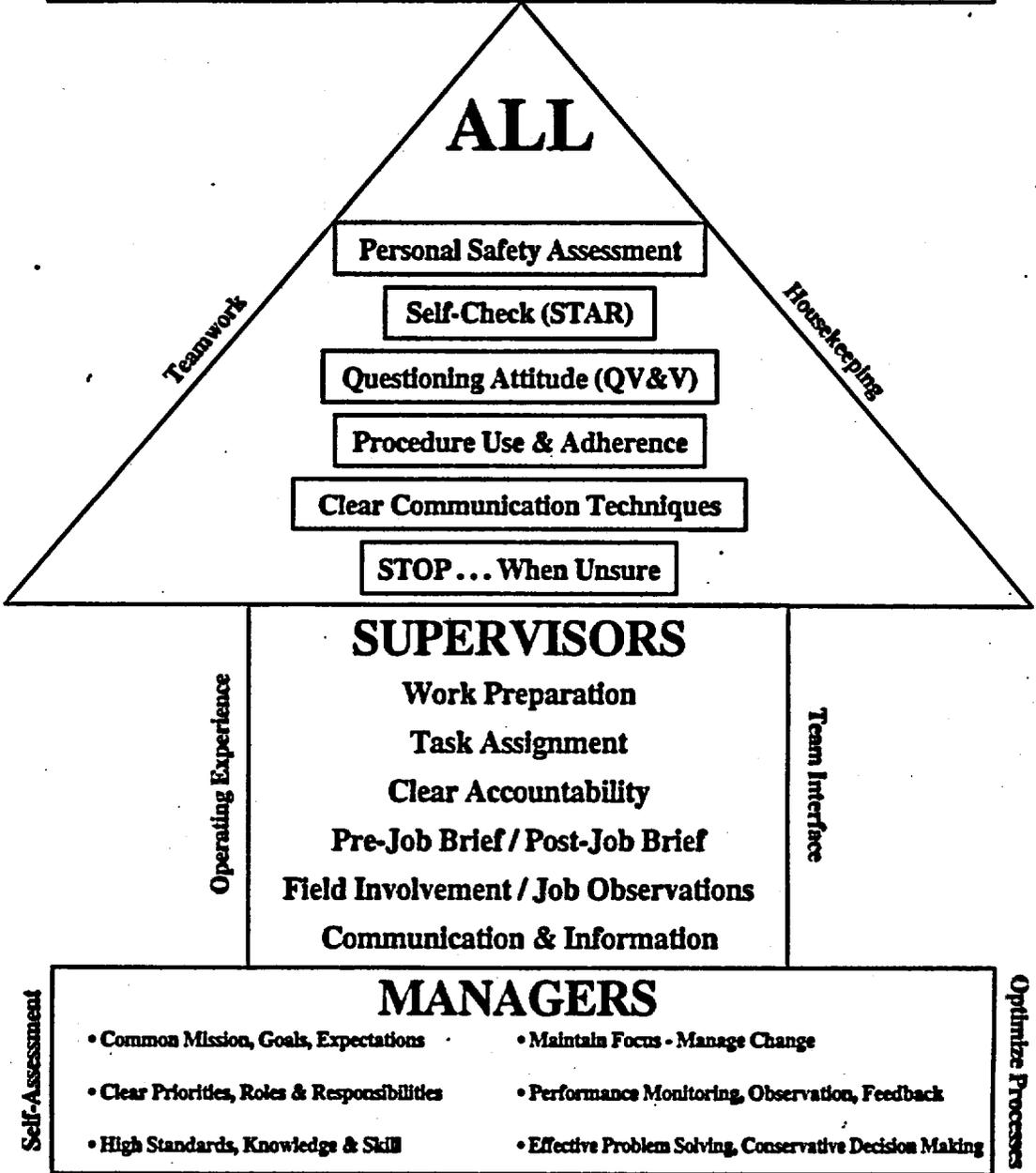
- **Identify performance indicators**
- **Expand root cause analysis**

ILLUSTRATION OF THE PRESENTATION OF SAFETY CULTURE

Figure 1 from INSAG-4, Safety Culture



EVENT FREE HUMAN PERFORMANCE



Human Performance Model. This graphic is worn by workers at all three Duke Power-operated nuclear stations. The concepts identified on the perimeter of the arrow are intended to support the tools inside that section of the arrow. QV&V™ is a registered trademark of Performance Improvement International (PII). (Source: Duke Power)

Source: "The Human Performance Improvement Program at Duke Power Nuclear Stations," by Tom Shiel, Nuclear News, May 2000, American Nuclear Society

Duke Power

Human Performance Improvement Program

“If you analyze an entire event, . . . you’ll find it wasn’t just one mistake - - it was five, six or seven mistakes that occurred and there weren’t enough contingencies or barriers built in to prevent the event from happening.”

“This common cause assessment identified the need for focused human error reduction training for technicians and supervisors.”

Quantitative Analysis of Risk Associated with Human Performance

- Study performed by Idaho National Engineering and Environmental Laboratory
- One objective was to identify the influence of human performance in significant operating events
- Analyzed 35 operating events, 20 using PRA methods
- Event importance ranged from $1.0E-6$ to $5.2E-3$ (Wolf Creek drain-down event)

INEEL Analysis and Findings

**Most identified errors were latent - no immediate observable impact.
Ratio of latent to active errors was 4:1**

Latent Errors

- **Failure to correct problems**
Known deficiencies,
failure to respond to
notices
- **Engineering problems**
Design, design change
testing, engineering evalua-
tions were sources of
failure
- **Maintenance problems**
Maintenance practices,
post-maintenance testing,
work package QA & use.

Active Errors

- **Failures in command and control**
Wrong actions, right people
not present, loss of phone
communications, actions
independent of control room
- **Incorrect operator actions**
Incorrect line-ups, failure to
take actions when automa-
tics fail, actions without
procedural guidance, delay
in performing cooldown

Important Management & Organization Factors

(Weil & Apostolakis, 1999)

- **Communications**
- **Formalization**
- **Goal Prioritization**
- **Problem Identification**
- **Roles & Responsibilities**
- **Technical Knowledge**

Work Process Analysis **(Weil & Apostolakis)**

“The potential for organizational factors to lead to common cause failures is strongly suspected”

Poor work prioritization, for example, can lead to the failure of dissimilar components.

Important Safety Culture Indicators **ASCOT Guidelines**

IAEA, through INSAG-4 and ASCOT guidelines, attempts to identify important aspects of safety culture and a process for finding tangible evidence of good safety culture.

INSAG-4 suggests ~150 questions regarding government, operating organization, and support organizations such as design & research. ASCOT adds ~ 300 guide questions

SKI STUDY

Used Expert Opinion to Identify Five Performance Indicators:

- **Safety-significant Error Rate**
- **Maintenance Problem Rate**
- **Ratio of Corrective to Preventive Maintenance**
- **Rate of Problems with Repeated Root Cause**
- **Rate of Plant Changes Not Documented**

Wolf Creek Drain-Down

Selected elements from ATHEANA analysis

- **Incompatible work activities**
- **Compressed outage schedule**
- **Poor mental model of system valves**
- **Heavy reliance on control room crew to identify potential problems**
- **Inadequate review of procedures prior to use**

**New Reactor Oversight Program:
Technical Framework for Licensee
Performance Assessment**

Cross Cutting Issues

Human Performance

Safety Conscious Work Environment

Problem Identification & Corrective Action

“Risk-informed, performance-based regulation will ... involve a shift in the NRC role from improving human reliability to one of monitoring human reliability.”

RECOMMENDATIONS

- **Identify essential attributes of safety culture**
- **Identify associated performance indicators**
- **Ensure an effective root cause analysis process**