

ORIGINAL ACRS-3117

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

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

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**Work Order No.: ASB-300-1330**

**LOCATION: Rockville, MD**

**DATE: Thursday, June 8, 2000**

**PAGES: 240 - 380**

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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

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

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

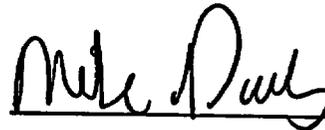
This is to certify that the attached proceedings before the United States Nuclear Regulatory Commission in the matter of:

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.

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**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

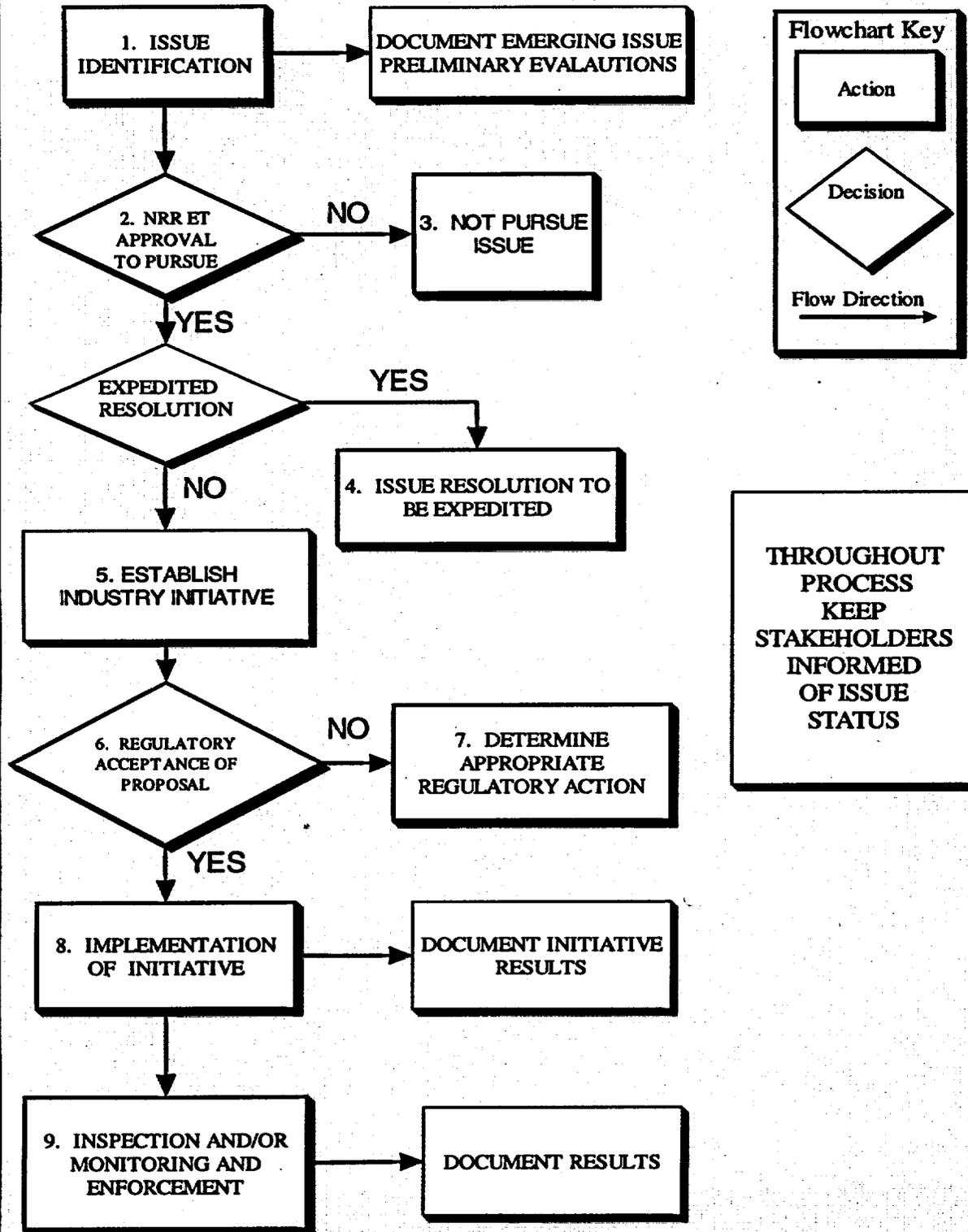
## ○ Definitions

→ 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?**

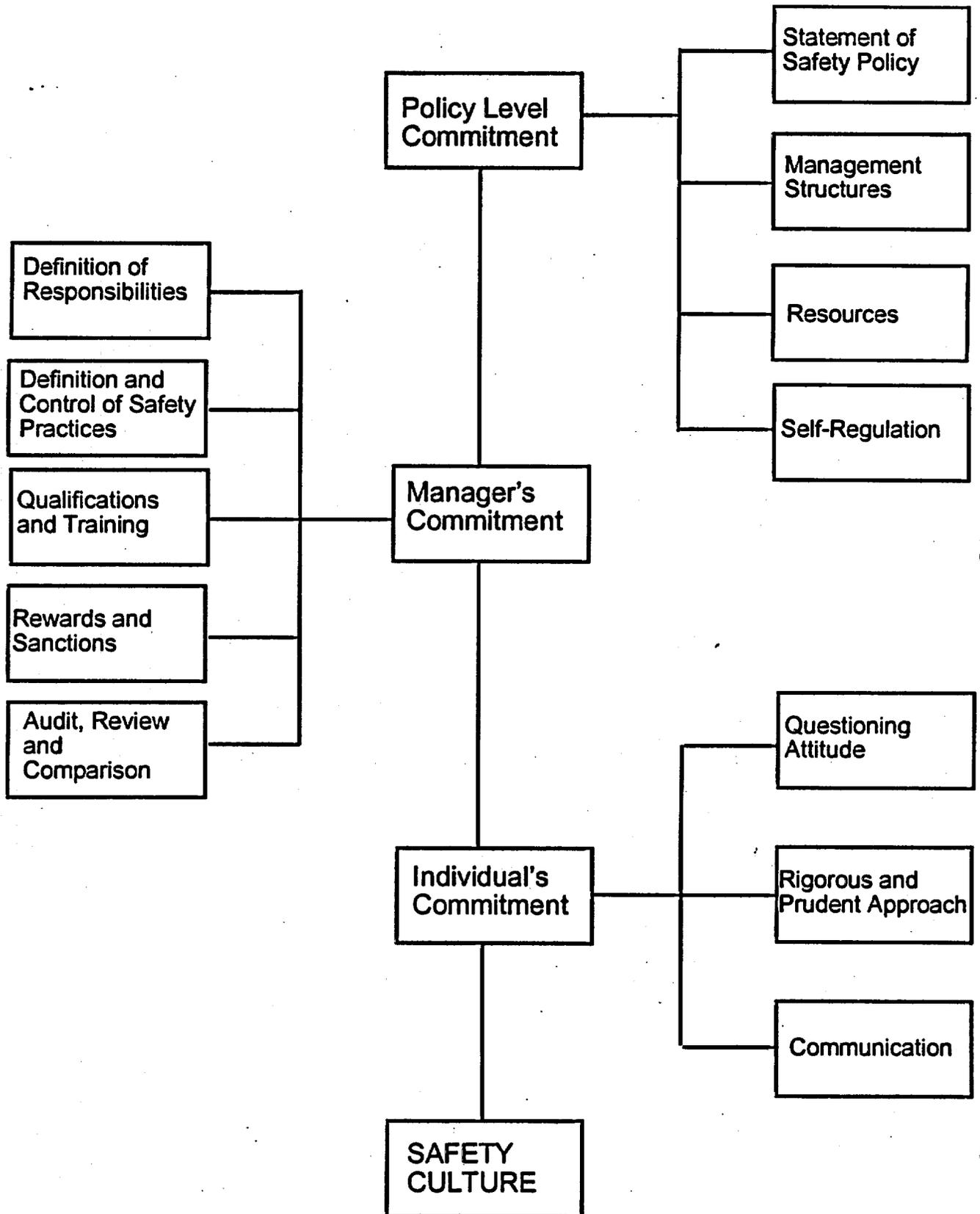
- **Human performance improvement**
- **Latent errors**
- **ATHEANA needs**

## **What can NRC do about it?**

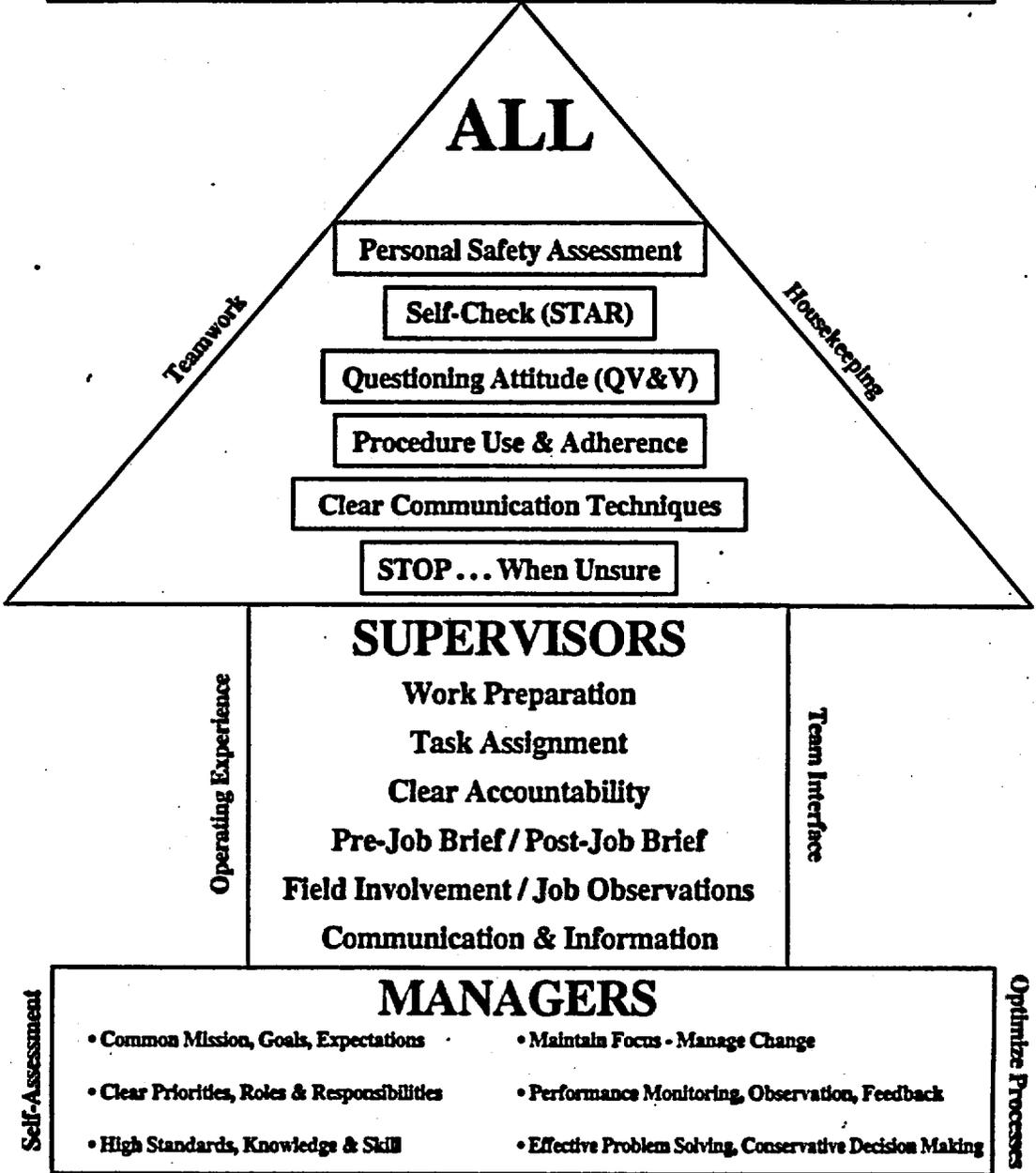
- **Identify performance indicators**
- **Expand root cause analysis**

# 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**