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OFFICIAL TRANSCRIPT OF PROCEEDINGS

NUCLEAR REGULATORY COMMISSION

ADVISORY COMMITTEE ON NUCLEAR WASTE

**Title: MEETING: 120TH ADVISORY
COMMITTEE ON NUCLEAR WASTE
(ACNW)**

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UNITED STATES NUCLEAR REGULATORY COMMISSION'S
ADVISORY COMMITTEE ON NUCLEAR WASTE

JULY 25, 2000

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

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2 UNITED STATES OF AMERICA
3 NUCLEAR REGULATORY COMMISSION

4 ***

5 ADVISORY COMMITTEE ON NUCLEAR WASTE
6 120TH ACNW MEETING

7 ***

8
9 Nuclear Regulatory Commission
10 Room T2B3
11 Two White Flint North
12 11545 Rockville Pike
13 Rockville, Maryland

14
15 Tuesday, July 25, 2000
16

17 The Commission met in open session, pursuant to
18 notice, at 10:47 a.m., THE HONORABLE DR. B. JOHN GARRICK,
19 Chairman of the Committee, presiding.

20 MEMBERS PRESENT:

21 DR. JOHN B. GARRICK, Chairman
22 DR. GEORGE W. HORNBERGER, Vice Chairman
23 DR. RAYMOND G. WYMER
24 MR. MILTON N. LEVENSON
25

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1 ALSO PRESENT:

2

3 DR. JOHN T. LARKINS, Executive Director, ACRS/ACNW

4 MR. HOWARD J. LARSON, Acting Associate Director, ACRS/ACNW

5 MR. RICHARD K. MAJOR, ACNW Staff

6 MS. LYNN DEERING, ACNW Staff

7 MR. AMARJIT SINGH, ACNW Staff

8 DR. ANDREW C. CAMPBELL, ACNW Staff

9 MR. N. PRASSAD KADAMBI, Office of Nuclear Regulatory

10 Research, NRC

11 MR. JACK ROSENTHAL, Office of Nuclear Regulatory

12 Research, NRC

13 MR. MEDHAT EL-ZEFTAWY, ACRS Staff

14 MS. LISA GUE, Public Citizen

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P R O C E E D I N G S

[10:47 a.m.]

CHAIRMAN GARRICK: Good morning, everybody. Our meeting will now come to order. This is the first day of the 120th meeting of the Advisory Committee on Nuclear Waste. My name is John Garrick, Chairman of the ACNW. Other members of the committee include George Hornberger, Ray Wymer and Milt Levenson.

During today's meeting the committee will discuss committee activities and future agenda items. We will hear remarks concerned the revised high-level guidance for performance-based activities, and we will discussed planned ACNW reports on a number of topics, including risk-informed approaches to nuclear materials, regulatory application, comments on the low-level waste NUREG on performance assessment, highlights of the visit to the U.K. and France and comments on EDO response to ACNW action plan.

Howard Larson is the designated federal official for today's initial session. The meeting is being conducted in accordance with the provisions of the Federal Advisory Committee Act. We have received no written statements from members of the public regarding today's session, and should anyone wish to address the committee, please make your wishes known to one of the committee's staff.

It is requested that each speaker use one of the

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1 microphones, identify himself or herself and speak clearly
2 and with sufficient volume that he or she can be heard.

3 There are some current items of interest I would
4 like to mention. Number one, announcement of a new
5 associate director for technical support, Mr. James Edwards
6 Lyons of the Office of Nuclear Material -- Nuclear Reactor
7 Regulation has been selected as the associate director. He
8 has been a top candidate in the SES candidate program and
9 has served in various positions in the Office of Nuclear
10 Reactor Regulation. He has a background in Projects where
11 he served as acting project director.

12 Over the next few months, Mr. Lyons will have to
13 complete some training activities, and we anticipate him
14 joining us during the next ACRS and ACNW meetings. During
15 the three months, Howard Larson will be acting as the
16 special assistant to the associate director for technical
17 support.

18 Barbara Jordan of the support staff of the
19 ACRS/ACNW support staff has accepted a position as a travel
20 voucher examiner and will be departing our staff on August
21 4th, 2000, and we want to extend our best wishes and good
22 luck to Barbara in her new assignment.

23 On Monday, July 10th, the Southeast Compact
24 Commission for Low-Level Radioactive Waste Management filed
25 a motion and a bill of complaint in the U.S. Supreme Court

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1 against the state of Carolina. According to the Compact's
2 press release, the action was taken to enforce \$90 million
3 in sanctions against North Carolina for the state's failure
4 to comply with provisions of the Southeast Compact law and
5 to fulfill its obligation as a party state to the Compact.

6 North Carolina has 60 days from docketing of the
7 Compact's filings to file its response.

8 On July 12th, Secretary of Energy Richardson
9 suspended the release of potentially radioactive
10 contaminated scrap metals for recycling from DOE's nuclear
11 facilities. DOE is also undertaking a feasibility study on
12 the possibility of recycling steel from decommissioned
13 facilities into items such as waste containers.

14 An event of some note, a transuranic waste
15 shipment left Hanford on July 14th bound for WIPP, 1800
16 miles away. Hanford is the fourth DOE site to ship waste to
17 the Department's waste isolation pilot plant near Carlsbad,
18 New Mexico, and will send about 2,500 shipments or 80,000
19 drums of transuranic waste to WIPP during the next 30 years.

20 The seven 55 gallon drums of waste that left
21 Hanford are being transported in the NRC approved shipping
22 containers. Another 400 drums of Hanford waste is being
23 reevaluated to ensure that the waste meets the State of New
24 Mexico's requirements.

25 All right. The subject for the next little while

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1 is the revised high-level guidance for performance-based
2 activities. As you all know, for the past several years,
3 three or four years, the Commission has been moving towards
4 more risk-informed and performance-based methods of
5 regulation. There has been considerable progress,
6 especially in the area of risk-informed initiatives, perhaps
7 with a little less progress of what we mean by
8 performance-based regulation. So, hopefully, we are going
9 to get a bit of an update on that.

10 The Commission has been very anxious that these
11 guidelines are developed with input from stakeholders and
12 the program offices. And I think that as we have reviewed
13 this material, it has become sort of obvious that there is a
14 number of problem areas. One of those areas is what
15 constitutes reasonable performance measures. The thought
16 here is that we ought to be picking performance measures
17 that embrace and encompass a lot of what might be more
18 detailed measures of performance and be thinking more in
19 terms of the ultimate issues that we are trying to resolve
20 here, which is some way to measure safety to workers and to
21 the public. So, performance measures is a key part of this.

22 There are some issues that the committee is a
23 little bit concerned about in addition to performance
24 measures such as the suggestion in the Federal Register that
25 this is only going to be implemented on new initiatives.

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1 What that really means is not completely clear. The reason
2 being given that the NRC has limited resources and may not
3 be able to implement it except on new initiatives.

4 Given that we have been in the regulatory business
5 for several decades, what constitutes new initiatives
6 against that large base of experience is something we would
7 maybe want to hear more about.

8 I think there is no doubt that the idea of
9 risk-informed, performance-based regulation is introducing
10 some stress into the regulatory process because it is sort a
11 departure from a prescriptive approach to regulation, or, as
12 some people might refer to it, a speed limit kind of
13 approach to regulation whereby, if you meet the prescription
14 or the speed limit, you are judged to be okay, but if you
15 exceed it, you are judged not to be okay.

16 And we know, of course, that radiation safety,
17 nuclear safety is not that simple and that we ought to be
18 forced in each issue to be looking at the relevance of the
19 threat in terms of our safety and risk-informed,
20 performance-based strategy, if properly implemented, ought
21 to do a better job of that than an attempt to anticipate and
22 identify performance measures at a lower level and assign
23 values to them, thinking that we really understand the
24 safety margins when maybe we do not.

25 So, the whole new strategy is one of trying to

1 turn up the microscope a little bit on what really is
2 important to safety, what we really mean by risk-informed
3 and performance-based. On the surface, it would seem to be
4 a very simple concept that we establish ourselves a
5 performance requirement such as a radiation dose, and then
6 we ask ourselves what is the risk that we may not be able to
7 fulfill that requirement. That perhaps is, in its most
8 simple form, what one would expect to see or be and
9 constitute risk-informed, performance-based guidance.

10 So, we have had quite a number of activities take
11 place already. There was created a performance-based
12 regulation working group some several years ago, and I know
13 I am stealing a little bit of our colleague's presentation
14 here, but I want to set the stage for this. These
15 guidelines were developed in draft form and have been
16 published in the Federal Register. There has been
17 workshops, there has been written comments on the
18 guidelines. And the NRC has even responded to the comments
19 through the Federal Register published in May. And then
20 there has been an online workshop, and now there are the
21 ACRS/ACNW briefings.

22 So, there has been a lot of activity here. There
23 is a considerable number of issues involved, the transition
24 to a risk-informed, performance-based thought process is a
25 major redirection. I think a lot of the problems come about

1 the NRC works very hard to be responsive to everybody, and
2 it is a different way of managing safety. And if we are
3 really serious about doing it, obviously, we are going to
4 have to do certain things differently, and such concepts as
5 defense-in-depth, safety margin, subsystem requirements,
6 fitness for duty, all these concepts will have to be
7 reexamined in the context of their compatibility with this
8 approach, and whether or not force fitting those concepts
9 would compromise effective implementation of a
10 risk-informed, performance-based process is something I
11 think we have to be very alert to.

12 So, we are going to hear from Mr. Kadambi, Prassad
13 Kadambi from Research, and I hope he has some updates on
14 some of these questions.

15 You have the floor.

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

17 I would like to ask if my boss, Jack Rosenthal,
18 has anything to say on behalf of our branch?

19 MR. ROSENTHAL: Thank you. Jack Rosenthal,
20 Regulatory Effectiveness Assessment and Human Factor Branch
21 in RES. It took me a week to get the full title.

22 I just want to just put this in a little timing
23 context, and that is that we have been working on this for a
24 year or so. As Dr. Garrick said, we have had a number of
25 public meetings. We owe the Commission a SECY paper in

1 mid-August. We have met with the ACRS, we are now meeting
2 with you. The paper which will ultimately be prepared
3 describes the effort, presents the guidelines, speaks at
4 length to greater -- to public comment. And when we
5 published the Federal Register Notices, we didn't have the
6 luxury of writing at length on public comment, but to be
7 responsive to the public, I am sure that we will achieve
8 that goal here, that we have the space, and we will present
9 some examples of a trial, a proof of principle application
10 of the guidelines. So that is where it fits into the
11 broader context.

12 And with that, why don't we let Prasad get
13 started.

14 MR. KADAMBI: Thank you, Jack.

15 Good morning, I appreciate the opportunity to
16 address the Advisory Committee on Nuclear Waste. I believe
17 this is the first time -- well, for me it is the first time
18 coming to this committee, and I believe it is the first time
19 you are hearing about the staff's performance-based
20 regulation effort. I could be wrong in that.

21 We did make a presentation to the ACRS on June
22 8th. We have spoken with the ACRS before on this matter.
23 This briefing is primarily for information. We are not
24 expecting a letter but we would very much like feedback from
25 the committee, and, of course, if you would like to write a

1 letter, you know, that is certainly your prerogative.

2 The title is "High-Level Guidelines for
3 Performance-Based Activities." Based on my experience with
4 the ACRS on this, I would like to just get a couple of
5 things out of the way right upfront. First is when I speak
6 of high-level, one of the things that has happened when I
7 have tried to describe this work for people from the
8 materials area is their mind immediately goes to high-level
9 waste. That is not the connotation at all. Here what we
10 are talking about is the level of conceptualization and
11 generalization, the generality of the guidelines. Because
12 they are high-level, we believe that they can be applied to
13 reactors, materials and waste arenas.

14 The second term is with performance-based
15 activities. There was some confusion as to what activities
16 meant. At this point what we mean is primarily NRC
17 activities, and it is associated, basically, with developing
18 or modifying regulatory requirements to see if we can make
19 them meet the Commission's guidance, the directives that the
20 Commission has given on what constitutes a performance-based
21 approach.

22 This is an outline of my presentation this
23 morning. I would like to present some historical background
24 which maybe the Chairman has covered a little bit of that.
25 I would like to get into a little more detail on what the

1 Commission has asked the Staff to do.

2 We have had, as the Chairman mentioned,
3 interaction with stakeholders and I certainly am gratified
4 by the attention that some of our stakeholders have given
5 this topic and I think it is very useful to engage in a
6 discussion with all concerned.

7 We will get into the risk information and how it
8 is tied into performance-based initiatives and we can
9 discuss the guidelines themselves and I would like to
10 provide the committee with the latest thinking on what the
11 Staff expects to do from here on out.

12 If we do talk about the guidelines themselves, I
13 have copies of the guidelines in detail, which we can pass
14 around. I would rather use those than the sort of cryptic
15 bullets that I have.

16 As the Chairman mentioned, we are not as far ahead
17 in the area of performance based regulation as in some other
18 initiatives that the Staff has undertaken, primarily the
19 risk inform regulation initiatives, but we are fulfilling
20 the Commission's directives in this subject area. We are
21 making steady progress while we do this.

22 The development of the high level guidelines and
23 their limited testing represents a significant milestone.
24 The degree of progress that we have made is I think
25 commensurate with the resources that we have allocated. It

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1 is a relatively low level effort and we have made
2 incremental progress towards achieving the goals of
3 performance based regulation.

4 By that, one thing that should be made clear is
5 that it does not mean either less regulation or more
6 regulation. It is merely what I would suggest is "smart"
7 regulation and it is an effort that complements the
8 risk-informed regulatory approaches.

9 The guidelines have been tested in a limited
10 manner. I think they need to be tested over a wider range
11 of issues and to identify some challenges which may limit
12 their application. Eventually I see that this effort will
13 be integrated with the mainstream efforts ongoing in other
14 areas and right now primarily those are the risk-informed
15 efforts.

16 Now the Commission has been quite really emphatic
17 in its commitment to risk-inform performance based
18 approaches to regulation. They started essentially talking
19 to us through the direction-setting issue papers that
20 started in 1996 and they continued to this day with various
21 issuances and right now they are really an important part of
22 the Strategic Plan in which performance based approaches are
23 mentioned in each of the strategic arenas.

24 The first SRM in this was issued in January, 1997
25 and as I mentioned we have made steady progress in it, but

1 when it started it was really focused on -- this is
2 terminology I am using that was part of an early SRM --
3 issues not amenable to PRA, and you know, that is what we
4 tried to focus on early-on but I think we have gone past
5 that into what I will be talking about as how
6 risk-information is used in order to help pursue some of
7 these initiatives.

8 The most recent paper that the Staff issued was
9 99-176, and to put it rather bluntly, it was not received
10 favorably by the Commission and the way I saw it was that
11 the Commission wanted the Staff to make much more aggressive
12 progress in this and the plans that we offered did not meet
13 the Commission's expectations because it lacked specificity
14 and what we were trying to do was to gather the lessons from
15 many ongoing efforts within the Staff which are labelled as
16 performance based efforts and we wanted to learn what that
17 teaches us before we got very specific about it.

18 We did make a presentation to ACRS in June of 1999
19 and the ACRS wrote a letter which was included in the
20 Commission paper itself and basically the ACRS included this
21 topic along with some other risk-based performance
22 indicators efforts.

23 The SRM really is -- for SECY 99-176 -- the SRM is
24 quite clear in what the Commission expects of the Staff and
25 we have tried to fulfill those expectations, as I hope will

1 come through the presentation today.

2 The basic direction of the Commission in this SRM
3 was that we should develop high level guidelines to identify
4 and assess the viability of candidate performance based
5 activities. Again this was something that we had
6 anticipated in the last Commission paper, in SECY 99-176.
7 We had expected that this would be a downstream activity
8 which after we had learned the lessons from several ongoing
9 performance based activities we would be able to then
10 develop some guidelines, but the Commission essentially
11 advanced the schedule and said, you know, I think we know
12 enough to develop guidelines and please go at it.

13 But the SRM also contains some other elements.
14 The guidelines should be developed with input from
15 stakeholders and the program offices. The guidelines should
16 include a discussion of how risk information might assist in
17 the development of performance based initiatives. They
18 should be provided to the Commission for information. In
19 fact, we have already provided a copy of the first draft of
20 the guidelines to the Commission -- that was in January of
21 this year. I take some comfort that we did not hear
22 anything about it. I assume that if there were any
23 objections to it we would have heard.

24 Then the Commission also wants the Staff to
25 provide its plans and the progress in developing the

1 performance based initiatives.

2 We believe that the guidelines that we have
3 developed will provide the framework for the kind of focused
4 and integrated activity that the ACRS had suggested we
5 should do, consistent with the ACRS advice.

6 As part of working with the program offices, one
7 of the first things we did was create a working group, the
8 Performance Based Regulation Working Group. It includes
9 representatives from NRR, NMSS, the Office of Research and
10 more recently a regional representative. We have met
11 essentially as needed in order to share our views and try to
12 expedite reaching a Staff consensus on the issues at hand.

13 We have published, as the Chairman mentioned,
14 several Federal Register notices. The earliest ones, on
15 January 24th and February 17th, were directed to a workshop
16 and the workshop was held on March 1st. This was a
17 facilitated workshop with people representing various
18 stakeholder interests, a roundtable and free-wheeling
19 discussion that occurred essentially throughout the whole
20 day.

21 We had people from UCS, Public Citizen -- in fact,
22 the two different groups within Public Citizen, those who
23 follow the reactor effort and the waste effort -- we had
24 utilities, we had representatives from radiopharmaceutical
25 companies, we had NEI and some others also over there, and

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1 it was an interesting discussion.

2 We had written comments also from a wide range of
3 external and internal stakeholders.

4 We published another Federal Register on May 9th.
5 We responded, provided an initial response to the comments,
6 and we held an online workshop on June 8th, last month, and
7 that really elicited a very limited response.

8 One thing that I want to say about the stakeholder
9 comments so far is we have noted that at least one
10 significant stakeholder has expressed a feeling that their
11 concerns have not been taken seriously. I regret if we
12 omitted something in the way we responded that would convey
13 this impression, but we certainly don't want to give the
14 impression that the views of stakeholders are not
15 considered.

16 Perhaps the approach we took was a little cryptic
17 in that sometimes we take the easy way of telling people
18 what we do and why we do it by saying that, well, the
19 Commission asked us to do it and therefore we did it, but we
20 do hope to offer a better explanation for what we did and
21 why we did it.

22 In general though, I would characterize the
23 stakeholder input as not being necessarily unfavorable to a
24 performance based approach, although the guidelines
25 themselves I should say -- you know, they were not

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1 unfavorable to the guidelines themselves but one notes that
2 those who are favorable to a performance based approach were
3 more in favor of the guidelines, and those who were opposed
4 to the performance based approach had various concerns about
5 the guidelines, and this is my own characterization -- that
6 they fell into concerns expressed on implementation and
7 trust issues.

8 Implementation, what I mean is that there is a
9 concern that the Staff may not implement the guidelines
10 objectively. Because they are high level guidelines and the
11 express concepts, it does require more specificity before
12 you start applying it in particular issues.

13 The sort of concern that we heard was that if you
14 went to a performance based approach you would be waiting to
15 see broken waste containers, high level casks on the side of
16 the road before the NRC did anything about an issue. That
17 is certainly not where a performance based approach would
18 take us, I believe.

19 The other, the trust issues, what we heard was a
20 concern whether the Staff would apply these guidelines in an
21 even-handed way to increase regulatory requirements if that
22 is the appropriate thing to do, just as we might decrease
23 regulatory requirements to reduce unnecessary regulatory
24 burden.

25 These are the kinds of things that we would want

1 to demonstrate, that we will use the guidelines
2 appropriately, responsibly and equitably.

3 One of the things in the SRM that the Commission
4 wanted the staff to address was the use of risk information
5 relative to performance-based initiatives. Basically, we
6 have characterized the use of risk information in three
7 categories.

8 The first is that risk information can provide a
9 basis for a level of performance that we would demand of
10 equipment systems, components, structures level. And this
11 would arise from answering the question, what is important
12 to safety?

13 And when we know what is important to safety from
14 a risk assessment, then we would try to answer the question,
15 what is the required level of performance to provide the
16 kind of risk amelioration that you make seek, that you learn
17 through the risk analysis.

18 The third then, depending on how you aggregate the
19 performance aspects, would be, what are the appropriate
20 performance parameters and the associated performance
21 criteria?

22 Now, when we talk of performance in this manner, I
23 believe what we are talking about is operational performance
24 as well as performance under accident conditions. So, we
25 would be talking about operational risk, as well as accident

1 risk, as is appropriate. We can also take into account
2 things like normally operating systems versus standby
3 systems, versus passive features of the regulated
4 environment.

5 The appropriate performance parameters, and I
6 think this is something the Chairman recognized, is really a
7 challenge and these are the sorts of things that we want to
8 work through on specific cases.

9 The second category is where risk information can
10 be used for metrics, thresholds and/or regulatory response.
11 The sort of example that I would offer for this is the
12 reactor oversight program as it currently works. And if you
13 look at the metrics and thresholds, essentially, as we go
14 into the guidelines, you will see that these are reflective
15 of the aspects of the viability guidelines in a
16 performance-based approach.

17 Then there is the category of initiatives
18 classified as not amenable to PRA. Again, this is
19 terminology that, just for consistency, I am carrying
20 forward from an early SRM. But this includes things like
21 quality assurance or training which are not directly modeled
22 quite often in PRAs. So, these --

23 CHAIRMAN GARRICK: But, of course, that is
24 different than making the observation that it is not
25 amenable to PRA. I mean there is a big difference between

1 saying that it is not modeled and it is not amenable,
2 because I fail to see how any of this stuff is not amenable
3 to PRA, it is just a matter of scoping.

4 MR. KADAMBI: I agree, and that is the reason why
5 I am careful to put that in quotes.

6 CHAIRMAN GARRICK: Yes.

7 MR. KADAMBI: I guess what I am trying to say is
8 that when you are talking about risk information and using
9 it for performance-based initiatives right now, it is -- in
10 a sense this category is characterized by a lack of risk of
11 risk-specific information. So that is -- it is just the
12 categorization that we are proposing right now in response
13 to the Commission's question.

14 Okay. We get into the guidelines themselves. If
15 there is any discussion on the guidelines themselves, I
16 would like to use the specific language that we have
17 developed through the working group efforts because these
18 are very cryptic headline forms and sometimes may not convey
19 what we intend. But let me just quickly go through at least
20 the structure of these guidelines.

21 The first point I want to make is that these high
22 level guidelines are not meant to be used as a cookbook of
23 some sort where you can run through a formulaic process and
24 come up with any conclusions.

25 The second point is that there is a high degree of

1 context specificity that should be expected as you go
2 through these guidelines.

3 The first set of guidelines are called viability
4 guidelines and these are -- they are four in number, and
5 they are essentially exactly the same as what the
6 Commission provided in a white paper on risk-informed,
7 performance-based regulation. The white paper was part of
8 an SRM to Commission paper 98-144, so that is the way I
9 referred to the white paper, as the SRM to SECY-98-144.

10 And under performance-based approach, the
11 Commission suggested that there be four attributes. One is
12 that measurable or calculable parameters should be available
13 or can be developed.

14 The second is that one can have objective criteria
15 associated with the parameters.

16 The third is that once you have set the
17 performance parameters and the criteria, the licensee should
18 have the flexibility to design the programs and processes to
19 meet the criteria. That there should be some provision to
20 encourage improved outcomes as part of providing this
21 flexibility.

22 And the fourth attribute is that even if the
23 criterion is not met, that there be no immediate safety
24 concern. And by talking about an immediate safety concern,
25 the way we are applying it is to say that there is a

1 sufficient safety margin to alert the licensee and the
2 staff, if necessary, that a criterion has been exceeded or
3 missed, that there is time for corrective action to be
4 taken, and that the licensee is capable to detect and
5 correct the performance degradation that would be implied by
6 the criterion not being met.

7 So, these are what we call the viability criteria,
8 and I believe that, you know, when these are applied in a
9 structured and a disciplined way, you know, some of the
10 concerns that have been expressed about, you know, a
11 performance-based approach just waiting for things to go
12 wrong would be alleviated, these concerns, because
13 especially the fourth attribute really forces the analyst to
14 look very specifically at the margin of safety in a rather
15 focused way, depending on what the safety issue is that is
16 being worked on.

17 Now, one of the questions that was asked by,
18 actually, ACRS was, you know, are these all that the staff
19 came up with? I mean if the Commission offered these four
20 attributes and we thought that they were not sufficient, I
21 think we would have proposed, we could have proposed others.
22 But I feel, especially having worked through a couple of
23 simple exercises, that these really provide the kind of
24 leeway for applying high-level guidelines, you know, because
25 the selection of parameters is, you know, it can be

1 measurable or it can be calculated, which means that you can
2 use analyses. The objective criteria can be based on
3 performance history if one has enough performance data to
4 fall back on, you know, that would be certainly a basis.
5 And depending on things like uncertainty, you could use
6 deterministic analyses or risk insights.

7 So, anyway, in a nutshell, at least based on the
8 work done so far, we feel that these viability guidelines
9 are sufficient to let us know whether a candidate activity
10 is a viable candidate to make performance-based.

11 So, the first set of guidelines represented really
12 answering the question, can it be done? And the second set
13 of guidelines, the way we see it, is addressing the
14 question, is it worth doing?

15 And to begin to answer this question, you know,
16 what we -- the approach we used was to begin with what the
17 Commission's performance goals are.

18 The Commission has indicated that, you know, we
19 should strive for four performance goals: One is to
20 maintain safety; two is to increase public confidence; three
21 is to increase effectiveness, efficiency, and realism; and
22 the fourth is to reduce unnecessary burden.

23 So, these four performance goals, we believe can
24 be addressed in an integrated manner to try to see whether a
25 given performance-based initiative would be worth pursuing.

1 And, of course, if the answer is no, then it would
2 be discarded, and whatever conventional approaches that we
3 use now would probably be applied.

4 The next guideline really has to do with, again, a
5 rather common-sensical question as to what is the net
6 benefit from doing this? This is, in a sense, a
7 cost/benefit analysis, but rather than get trapped into to
8 trying to define costs and detailed aspects of how the costs
9 are calculated, what we have tried to do is have the
10 guideline as something of a qualitative assessment on the
11 merits of pursuing a change, and to examine the benefits
12 that would accrue to NRC or the licensees, and a simplified
13 assessment, you know, something like --

4 As an example, I would say, you know, is there a
5 lower work exposure to radiation that one can see, you know,
6 which would provide a net benefit, you know, without getting
7 into a lot of costs?

8 Something that simple may be enough to say that
9 it's worth pursuing.

10 [Pause.]

21 Then continuing on the second set of guidelines,
22 there is a guideline on the regulatory framework. And what
23 we mean by the regulatory framework is the combination of
24 the regulatory features that address a given issue, a safety
25 issue, and that includes the regulation that is the Code of

1 Federal Regulation, the rule, any regulatory guidance that
2 we may have developed to provide one way for the rule to be
3 complied with.

4 There are occasions when we develop NUREG
5 documents to provide details on, you know, things that are
6 in the Regulatory Guide or in the rule itself. There are
7 times when we develop Standard Review Plans in order to help
8 the Staff conduct its review against a rule.

9 There are technical specifications which at the
10 operational level provide the requirements that licensees
11 have to meet.

12 And there is inspection guidance. This is what
13 inspectors look for and really constitute part of the
14 regulatory framework.

15 So what this is saying is that when we apply this
16 guideline, we would be looking at the framework as a whole,
17 and not individual components in isolation, and that either
18 one or more of the components can be made more
19 performance-based. That would be the question to ask.

20 And, in fact, you know, it may be that one has to
21 focus attention on some particular level in this hierarchy
22 within the regulatory framework in order to gain the
23 benefits of a performance-based approach. We have found
24 that to be the case in a couple of exercises that we have
25 gone through.

1 The next couple of guidelines are based basically
2 on the public comments we received, that really should be
3 the responsibility of whoever proposes the changes. In some
4 cases it may be the NRC; in some cases it may be an industry
5 group or somebody else.

6 The last of these guidelines is that, you know,
7 inspection and enforcement considerations should be
8 addressed early in the process, rather than as has happened
9 in the past, often it's an afterthought that comes much
10 later in the process.

11 The last of the guidelines under Section 2 is that
12 new technology should be accommodated in a performance-based
13 approach. This is if one has a set of parameters
14 sufficiently well defined, and you have acceptance criteria
15 for them, then it should really be amenable to applying the
16 latest changes in technology in such a way that, you know,
17 the safety issues are properly addressed.

18 The last set of guidelines have to do with the
19 consistency with regulatory principles. This is just sort
20 of a catch-all to make sure that we have not gone off track
21 in some significant way while we go through this process.

22 And it includes things like the principles of good
23 regulation, the PRA policy statement, Reg Guide 1.174, which
24 has to do with licensing basis requirements in reactors,
25 primarily. But the principles are applicable much more

1 widely.

2 And the strategic plan, of course, philosophical
3 issues like defense-in-depth and treatment of uncertainties
4 would also be definitely part of it.

5 [Pause.]

6 Now, what do we plan to do from here on out? Just
7 briefly, I'd like to say that we plan to build on the
8 progress we have made. The progress includes a couple of
9 simplified exercises where we have looked at initiatives
10 that, one of which is underway as part of the risk-informed
11 initiative. Option 3, it's called in our jargon.

12 It's a regulation having to do with combustible
13 gas control that's being considered for change. We selected
14 one part of it, and just went through an exercise of
15 applying the viability guidelines.

16 And although we are trying to prepare the
17 documentation on it to support a Commission paper which is
18 due very soon -- it's due to the EDO on the 15th of August
19 and we intend to meet that date -- we are trying to put this
20 altogether.

21 But basically the point I'm making is that it
22 looks like the guidelines work in terms of taking you
23 through a thought process that leads to the right kind of
24 questions to ask, to modify the regulatory framework where
25 it makes the most sense.

1 So, there's another exercise which we are planning
2 to conduct very soon, in a matter of days, and this has to
3 do with Subpart H to 10 CFR Part 20, Respiratory Protection.

4 This rule was changed just last year, in October
5 of last year, and basically the change was made to remove
6 some of the very prescriptive aspects of the earlier rule,
7 and to provide flexibility and some reduced regulatory
8 burden, while making sure that there was no decrease in
9 worker protection.

10 So, these were the sorts of things that, you know,
11 a performance-based approach would aspire to, so we are
12 trying to see how the guidelines might be useful in
13 assessing the kind of improvement that was instituted there.

14 But as we try to apply these guidelines and make
15 more progress in it, we hope that we can institutionalize
16 the use of the guidelines, and have it become part of the
17 planning, budgeting, and performance measurement process,
18 and eventually it would become part of what the Staff does
19 during the normal course of operating plans and budget
20 resources, et cetera.

21 Right now, we are suggesting a one-year trial
22 period in our Commission paper, and we would apply it to
23 suitable rulemaking and regulatory changes. Eventually we
24 would have to have procedures for the Staff to use it within
25 each of the Offices, and in a way that would be helpful for

1 the particular issues that each Office deals with, or even
2 portions of the Office that they address.

3 And going further out, I would think that if the
4 guidelines are found to be useful, they could be, you know,
5 made available to Agreement States and to industry
6 organizations, including standards committees, because there
7 are a lot of people who would like the standards-developing
8 process, the standards-developing organizations, to become
9 more of what they call performance-based. So it would be
10 good to have a consistent set of guidelines to inform that
11 effort.

12 And we would report to the Commission on the
13 results of this trial period about a year from this paper.

14 In conclusion, I believe that the Staff has
15 responded to the elements of the SRM, as directed by the
16 Commission. We will reflect whatever Advisory Committee
17 inputs we receive in the paper that we will send up to the
18 Commission by August 21st.

19 By the way, copies of the basic information that
20 was provided to you was also provided to ACMUI, the Medical
21 Advisory Committee.

22 Generally, I believe the guidelines themselves
23 were favorably received. Maybe I don't characterize all of
24 the views, but, generally, I think, you know, people didn't
25 point to any major problems with specific guidelines.

1 And the Advisory Committees will be kept informed.
2 We will provide whatever we come up to all the Committees.
3 That concludes my presentation. Thank you, Mr. Chairman.

4 CHAIRMAN GARRICK: Thank you. I suspect that the
5 members have a few questions. Milt, we'll start with you.
6 Do you have any questions? You better pull your microphone
7 down.

8 MR. LEVENSON: Well, I have a question which
9 borders a little on the philosophic, but in most fields of
0 engineering, we do our best effort to calculate something,
1 and then premeditatedly add a safety margin, whether it's a
2 factor of two, a factor of five, or a factor of ten.

3 When you use deterministic things, as we've been
4 doing in regulation, you really have no idea what the safety
5 margin is. We have the potential in performance-based
6 activities to, in fact, separate safety margin and apply
7 specific safety margins.

8 Has any thought been given to what is required in
9 order to do that, in a way? Is it the guidelines for doing
0 the performance assessment that have to be consistent and
1 uniform? You can't arbitrarily assign bounding calculations
2 one place ten times what's normal and in other place, 20
3 times what's normal?

4 That there is something inherent in
5 performance-based is really to do the best analysis you know

1 how, and then get concurrence on how big a safety margin you
2 add. Has this potential aspect of performance-based been
3 considered at all in what you're doing?

4 MR. KADAMBI: I believe the answer to your
5 question is yes, because it's really embedded in the
6 guidelines themselves. I think it occurs in a couple of
7 different places.

8 It occurs within the viability guidelines
9 themselves, and also it is part of the guidelines that deal
0 with effectiveness and deficiency, where, you know, you have
1 to make sure that there is a sufficient safety margin, but
2 if it is a safety margin that is, you know, not based on
3 robust information, if it uses deterministic analysis, you
4 know, which may not reflect the actual circumstances that
5 the performance demands, then I think the guidelines force
6 you to make those kinds of inquiries. That's my own view.

7 MR. LEVENSON: Well, from what little we've seen
8 or heard here, it isn't obvious to me, where they are. I
9 would expect there to be a separate guideline as to how one
0 determines what is an appropriate safety margin to use in
1 any case.

2 The size of the safety margin should be a function
3 of how bad are the consequences. And if it's embedded,
4 generically, I don't know how you do a good job of
5 identifying that.

1 MR. KADAMBI: Well, I guess I'm not sure that I
2 can give you an answer that would fit all cases, because I
3 think the guidelines are meant to be sort of things that you
4 apply in specific areas.

5 I mean, for example, if you're dealing with
6 transportation, it would be one set of approaches in terms
7 of what kind of safety margins you deal with, as opposed to,
8 you know, waste disposal facility or even in reactors,
9 whether you're talking about the reactor coolant system or
0 the containment system.

1 So, I mean, I'm reluctant to offer much by way of
2 a definitive answer, but I believe the language of the
3 guidelines is that a sufficient safety margin exists.
4 That's what it says in the Attribute D of the Viability
5 Guidelines.

6 And I think what we mean by that is that it should
7 be definitely enough to make sure that even if the
8 performance parameter is exceeded or is not -- the criterion
9 is not met, that you don't face an immediate safety concern.

0 MR. LEVENSON: Yes, but that's a different issue.
1 In fact, you're not setting specific safety margins as you
2 normally do in engineering. I don't expect an answer. This
3 is a work-in-progress, and you were asking for feedback.

4 MR. KADAMBI: Yes.

5 MR. LEVENSON: And I'm just saying that from my

1 personal standpoint, one of the potential advantages of
2 going this way is that you can separate out and say we've
3 done the best analysis with the best data we have, and now
4 we're going to add another safety factor of ten or two or
5 five, depending on consequences.

6 And that doesn't seem to me to be inherent in the
7 guidance you have so far. And maybe it is; maybe it isn't.
8 That's just personal feedback.

9 MR. KADAMBI: Okay, well, thank you for the
0 feedback.

1 CHAIRMAN GARRICK: Ray?

2 DR. WYMER: I don't have a question. I have a
3 comment. Like so often when I hear these general high level
4 type criteria, goals, things that are not specific, I have a
5 hard time understanding them. I have a hard time wrapping
6 my mind around that. At best, I really only understand them
7 when I see them applied to specific fairly large, complex
8 cases, because then I have a lot better grasp of what they
9 really mean and what they are trying to do.

0 That's sort of what Milt was getting at a little
1 bit, I think, too, and so I guess what I would say is I look
2 forward to and would expect to, sometime in the not terribly
3 distant future, to hear a discussion of the application of
4 these things to a real live, large, and fairly complex
5 situation so that all the facets of these guidelines are

1 brought out, so that at least I can understand them.

2 That is all I have to say.

3 MR. KADAMBI: We will try to do that.

4 CHAIRMAN GARRICK: George?

5 DR. HORNBERGER: I basically had a similar
6 reaction to Ray's. I was going to make essentially the same
7 point.

8 I am curious along those lines. To a certain
9 extent your high level guidelines obviously make sense. You
10 know, you find a parameter directly related to safety that
11 you can measure easily and monitor in real time and et
12 cetera, et cetera.

13 My question is you must have given some thought as
14 to how they might apply to a somewhat more complex case.
15 You mentioned you were doing a simple case, or a relatively
16 simple case with combustible gases, and I don't know much
17 about this, and I am not looking for a tutorial on
18 combustible gases, but I could at least postulate a
19 situation where you might be looking at a gaseous emissions
20 parameter and basically say fine, you want the activity
21 level to be less than "x" and you are going to regulate that
22 way, and then you let it up to the licensee to determine
23 whether it is satisfied by precipitation or filters or
24 whatever. That sort of makes sense in the performance based
25 language.

1 On the other hand, then I think about it a little
2 more deeply. That radioactivity doesn't just go away. It
3 goes perhaps into the fly ash, and then the question comes
4 in an overall systems framework have you improved things by
5 having rewarding the licensee for putting the radioactivity
6 into the fly ash, which then has to be disposed, and is
7 there some other performance measure that should somehow get
8 weighed in there.

9 It is a hypothetical, but have you gone through
0 the thinking as to how you would deal with fairly
1 complicated situations?

2 MR. KADAMBI: I have done some thinking on my own
3 on this. It is not -- at this stage of development, you
4 know, in the Staff's work we are not really at a stage where
5 we can try to answer some of these questions, but I think
6 there is no doubt that there are different levels of
7 aggregation within a hierarchy that you can put these things
8 together.

9 You can bring systems together into providing a
0 functionality and then you can start putting things together
1 in different ways, sort of, you know, the opposite of the
2 reductionist approach, and you can apply the same principles
3 though at whatever level one chooses to apply it, as long as
4 you define the boundary conditions and say that whatever
5 conclusions are drawn apply within those boundary

1 conditions, so I believe that the benefit of the guidelines
2 is that it sort of forces you into answering some of these
3 questions as to draw the boundary lines around the issue and
4 also points to the limits of whatever conclusions that you
5 can draw from it.

6 CHAIRMAN GARRICK: I just want to leave a couple
7 of comments with you.

8 One is on this issue of performance measures.
9 When I hear people talk about components and safety trains
0 and systems and release and what have you as candidates for
1 performance measures, I get a little nervous. If we are
2 really genuine about risk informed performance based
3 regulation, and if we are really genuine about relieving
4 licensee and licensing burden, I think in the guidance we
5 want to be very careful to be offering guidance on measures
6 that integrate the effect of what all of these measurements
7 of all of these subunits might constitute, and this is why
8 the NRC is in a bit of a dilemma in their reactor side right
9 now is because the principal measure is core damage
0 frequency and in a sense you can argue that that is not
1 really a major risk in the spirit of the Atomic Energy Act,
2 which is to protect the health and safety of the public.

3 Now to be sure, it is a precursor and a pretty
4 darned important one, but the point is if you are really
5 genuine about performance based issues the performance of

1 core damage in one plant has a different impact on safety
2 risk than that same core damage frequency in another plant,
3 so I think that one of the things you would be very
4 well-advised to do is to be thinking in terms of performance
5 measures that carry out as much of the integration, of the
6 impact of other measures as possible.

7 The ultimate integrator, of course, is health and
8 safety to workers and the public.

9 The other thing I want to mention is that in your
0 guidance I think you also need to be very careful about
1 putting constraints on what is meant by risk assessment
2 itself. To do a risk assessment and not be sensitive to
3 crew performance for example, or operator performance for
4 example, or fitness for duty for example, is not doing a
5 risk assessment, and yet there is the indication in the
6 guidance that these are outside or the implication that this
7 is outside the scope of PRA.

8 As I said earlier, it may be outside the scope of
9 a specific PRA because the analyst chose to do it that way,
0 but the thought process is not constrained in any way, and
1 we all know that the evolution of risk assessments of
2 nuclear power plants has been extensive with respect to
3 increasing the amount of time we spend in addressing
4 operator performance, for example, which with that kind of
5 thinking one might say is outside of a PRA.

1 So we should not confuse what has been done or
2 maybe what the practice is as to what could be done, and we
3 all know that there is some very interesting work going on
4 in the human factors arena, human factors research, in
5 organizational performance research in terms of being able
6 to embrace those kinds of impacts into our models, so that
7 is just a couple thoughts that I would like to leave you
8 with.

9 Okay. Are there any questions or comments from
10 the Staff?

1 DR. HORNBERGER: Could I ask you a question?

2 CHAIRMAN GARRICK: Yes.

3 DR. HORNBERGER: I don't think that I quite
4 understand your statement that one could go directly to
5 something like human health as a performance measure.

6 It seems to me that that really would go to the
7 problem that some people have pointed out, that if you ever
8 measured human health effect you would say it is too late
9 and it would violate I forget which of the -- IV in the
10 guidelines.

1 It seems to me that you have to have some
2 surrogate performance measure well before human health.

3 Did I miss something?

4 CHAIRMAN GARRICK: Well, partly and partly you
5 didn't. My philosophy on this is that clearly you do

1 calculate what these precursor events are in terms of their
2 likelihood of occurrence.

3 As a matter of fact, if you do the right kind of
4 job of calculating something like a health effect you should
5 have embodied in that analysis a very transparent indication
6 of what these precursor contributors are to that health
7 effect risk, but what I am saying is that I can envision
8 scenarios that would improve the performance of a nuclear
9 power plant, for example, in terms of core damage frequency
0 that would actually increase the risk to the health and
1 safety to the public.

2 That is the thing that we have got to be very much
3 on the alert for is that ultimately we are committed here to
4 protect the people and the environment, and it just seems
5 that if we are talking about high level guidance and we are
6 not starting with the people and the environment, and we are
7 worrying about components and trips and what have you, we
8 are on the wrong track because that is plant-specific, it is
9 facility-specific, and general guidance on that in most
0 cases won't have much meaning in a specific application.

1 So, no, I don't think that you get into a
2 situation where you don't understand very clearly what the
3 role is of a subsystem or what have you with respect to an
4 overall and overarching performance measure, but I am
5 suggesting that we ought to be addressing measures that

1 really address explicitly what it is we are concerned about
2 and what it is we are concerned about and obligated to is
3 protect the health and safety of the public, and if we don't
4 focus on that then we are missing the boat.

5 I think that we have got quite a bit of work to do
6 in some of these areas in that arena.

7 Okay, yes, Milt?

8 MR. LEVENSON: I have a question. I am a little
9 confused. I made the mistake of going back and reading your
0 viewgraphs, and one of them says that the Commission
1 directed Staff to develop high level guidelines to identify
2 and assess the viability of candidate performance based
3 activities. I guess it isn't very clear to me how the
4 guidelines that you have discussed could be used to identify
5 and assess viability of performance based activities. I am
6 not sure what those words mean.

7 MR. KADAMBI: Well, the way I have interpreted the
8 words is to say that the guidelines become attributes which
9 would characterize a performance based activity. In other
0 words, if there is a candidate activity and you want to
1 determine is it performance based right now, you would use
2 the guidelines as attributes to compare its existing
3 attributes with what are the attributes of a performance
4 based activity.

5 If there is a difference between the two, you

1 would say well, it may be worthwhile making this activity
2 performance based by changing the attributes in some defined
3 way.

4 MR. LEVENSON: Okay. John, just as a follow-up to
5 your comment about core damage, you know we need to remember
6 there have been 12 reactors that have had core meltdowns and
7 Chernobyl is the only one with any significant health safety
8 impact, so core damage per se doesn't automatically mean
9 that.

0 CHAIRMAN GARRICK: That is part of the point.

1 Okay. We have a request for somebody to make a
2 comment from the Public Citizen group. I think we ought to
3 accommodate that right now, and would you announce your name
4 and affiliation, et cetera?

5 MS. GUE: Yes, thank you. My name is Lisa Gue. I
6 am a Policy Analyst with Public Citizen's Critical Mass
7 Energy & Environment Program.

8 Public Citizen has previously given comment on
9 this issue both through the workshop process and also in a
0 statement to ACRS committee as well, but I do appreciate the
1 opportunity to briefly just outline our main concerns with
2 this process to your committee as well.

3 I think Mr. Kadambi has accurately categorized our
4 concerns into those relating both to confidence and then
5 also implementation, and in terms of confidence I guess

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1 fundamentally we are concerned with a process that orients
2 itself with the objective to reduce regulatory burden to
3 licensees.

4 The regulatory structure should emphasize safety
5 at its core, as you mentioned, Mr. Chairman, and if this is
6 too much of a burden on industry, then the industry itself
7 is not viable.

8 Secondly, relating to our confidence concerns, I
9 guess, is that we are skeptical of the benefits of the
0 flexibility, of providing flexibility to licensees in terms
1 of how they meet these performance objectives.

2 We find it hard to believe that this is actually
3 going to result in industry clamoring to be more creative,
4 to be more stringent in how they protect public safety.
5 Certainly from a public interest perspective, historically
6 we don't really have any reason to be confident that this
7 would be the result and certainly from an economics
8 perspective it would seem that the more likely scenario
9 would be for a race to spend as little money as possible,
0 resulting in cost-cutting to meet the lowest possible
1 standards.

2 Relating more to the implementation concerns,
3 clearly the risk information to determine, using risk
4 information to determine performance indicators would be key
5 to the process, as the presentation indicated, and yet

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1 thinking of the Yucca Mountain proposal right now for a
2 repository and also an unprecedented transportation program
3 of high level waste and spent fuel, I guess our concern
4 would be that our ability to accurately assess the risk is
5 really limited by a relatively short history of experience
6 in this area, and I mean that relative both to the scale of
7 the transportation program, of the specific transportation
8 program that is being considered for the Yucca Mountain
9 repository and also in terms of the license period for that
0 repository.

1 Secondly, that same ability to accurately assess
2 the risk is limited by simply the limits of our own human
3 imagination to conceive of the possible risks, given the
4 shortcomings of experience in that regard.

5 I guess related to that then is this underlying
6 concern that has sort of been alluded to already, that a
7 performance based structure really can only respond to
8 failure and a viable regulatory structure needs rather to be
9 conservative enough to ensure public safety.

0 I think that some of viability criteria that seek
1 to integrate some of the comments that have been raised
2 previously actually do address some of these concerns, and
3 yet I am left wondering if they could actually then be
4 usefully applied to any waste scenario, particularly with
5 respect to high level waste and spent fuel, and if not, if

1 all of the waste scenarios would basically be ruled out,
2 according to these viability standards then I am wondering
3 in what sense and why are these guidelines being proposed as
4 high level.

5 Thank you.

6 CHAIRMAN GARRICK: Thank you. Are there any other
7 comments?

8 [No response.]

9 CHAIRMAN GARRICK: All right. Well, thank you
0 very much.

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

2 DR. HORNBERGER: Amazing time management by the
3 Chairman.

4 CHAIRMAN GARRICK: I think this brings us to a
5 point in our agenda where we adjourn for lunch.

6 [Whereupon, at 12:16 p.m., the hearing was
7 recessed, to reconvene at 8:30 a.m., Wednesday, July 26,
8 2000.]

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: 120TH ADVISORY COMMITTEE
ON NUCLEAR WASTE

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.



Mark Mahoney

Official Reporter

Ann Riley & Associates, Ltd.



UNITED STATES
NUCLEAR REGULATORY COMMISSION
ADVISORY COMMITTEE ON NUCLEAR WASTE
WASHINGTON, D.C. 20555-0001

Revised: JULY 18, 2000

SCHEDULE AND OUTLINE FOR DISCUSSION
120TH ACNW MEETING
JULY 25-27, 2000

TUESDAY, JULY 25, 2000, CONFERENCE ROOM T2B3, TWO WHITE FLINT NORTH,
ROCKVILLE, MARYLAND

- 1) 8:30 - 8:40 A.M. Opening Statement (Open) (BJG/HJL)
The Chairman will open the meeting with brief opening remarks, outline the topics to be discussed, and indicate several items of interest.

- 2) 8:40 - 10:30 A.M. ACNW Planning and Procedures (Open) (BJG/HJL)
The Committee will review items under consideration at this meeting and:
 - 2.1) Review issues/topics for the 120th meeting
 - 2.2) Review issues that will be brought before the Committee during the September and October 2000 meetings
 - 2.3) Discuss Working Group meetings and use of Consultants
 - 2.4) Meetings with the NRC staff on YMRP and YMRP Task Action Plan (RKM)
 - 2.5) Update Site Suitability and License Application Action Plan (LGD)
 - 2.6) Committee/staff projected travel plans

- 10:30-10:45 A.M. *****BREAK*****

- 3) 10:45 - 12:15 P.M. Revised High-Level Guidance for Performance-Based Activities (Open) (BJG/RKM)
 - 3.1) Remarks by lead member
 - 3.2) Briefing by and discussions with representatives of the NRC staff regarding a draft Commission Paper associated with performance-based regulatory initiatives and related matters.

- 12:15 - 1:15 P.M. *****LUNCH*****

- 4) 1:15 - 5:30 P.M. Preparation of ACNW Reports (Open)
The Committee will discuss planned reports on the following topics:
- 4.1) Risk-Informed Approaches to Nuclear Materials Regulatory Application (BJG/JNS/MTM)
 - 4.2) Comments on the LLW NUREG on Performance Assessment (GMH/ACC)
 - 4.3) Highlights of the visit to the U.K. and France (ML/ACC)
 - 4.4) Comments on EDO response to ACNW 2000 Action Plan (BJG/RKM)

5:30 P.M.

*****RECESS*****

WEDNESDAY, JULY 26, 2000, CONFERENCE ROOM T2B3, TWO WHITE FLINT NORTH, ROCKVILLE, MARYLAND

- 5) 8:30 - 8:35 A.M. Opening Statement by Chairman (Open)
- 6) 8:35 - 10:30 A.M. DOE's Performance Confirmation Program for the Proposed Repository at Yucca Mountain, NV (Open) (ML/RPS-JTL)
- 6.1) Introduction by lead ACNW Member
 - 6.2) DOE presentation of Performance Confirmation Program

10:30 - 10:45 A.M. *BREAK*****

- 7) 10:45 - 12:15 P.M. Summary of the NRC Staff's Yucca Mountain Key Technical Issues Resolution Strategy (Open) (GMH/LGD)
The NRC staff will present an update on their KTI resolution strategy, results of recent interaction with DOE, and significant unresolved issues.

12:15 - 1:15 P.M. *LUNCH*****

- 8) 1:15 - 2:15 P.M. Prepare for the next public meeting with the Commission (Open) (BJG/HJL)
The ACNW will begin to prepare for the next public meeting with the Commission, currently scheduled for October 17, 2000.
Possible topic include:
- 8.1) YMRP and Part 63 (BJG/RKM)
 - 8.2) European Visit (ML/ACC)
 - 8.3) Risk-Informed Regulation in NMSS (RGW/JNS)
 - 8.4) Site Sufficiency Review (GMH/LGD)

2:15 - 2:30 P.M. *BREAK*****

- 9) 2:30 - 3:30 P.M. Meeting with the Deputy Director of the Office of Nuclear Materials Safety and Safeguards (Open) (BJG/RKM)
The Committee will meet with the Deputy Director to discuss items of mutual interest.
- 10) 3:30 - 5:30 P.M. Continue Preparation of ACNW Reports (Open)
Complete preparation of ACNW reports noted under item 4.
- 5:30 P.M. ***RECESS*****

THURSDAY, JULY 27, 2000, CONFERENCE ROOM T2B3, TWO WHITE FLINT NORTH, ROCKVILLE, MARYLAND

- 11) 8:30 - 8:35 A.M. Opening Statement by Chairman (Open)
- 12) 8:35 - 10:30 A.M. Status of the NRC's Decommissioning Program (Open) (RGW/HJL)
The Committee will hear an overview from the NRC staff on decommissioning activities, including the decommissioning of Site Decommissioning Management Plan sites, other complex sites, and commercial reactor decommissioning.
- 10:30 - 10:45 A.M. ***BREAK*****
- 13) 10:45 - 12:30 P.M. Hydrology Research (Open) (GMH/ACC)
The ACNW will review a project by NRC's Office of Nuclear Regulatory Research on hydrogeologic model development and parameter uncertainty.
- 12:30 - 1:30 P.M. ***LUNCH*****
- 14) 1:30 - 3:15 P.M. Complete ACNW Reports (Open)
Complete preparation of ACNW reports noted in item 4.
- 15) 3:15 - 4:00 P.M. Miscellaneous (Open)
Discussion of matters related to the conduct of Committee activities and matters and specific issues that were not completed during previous meetings, as time and availability of information permit.

NOTE:

- Presentation time should not exceed 50 percent of the total time allocated for a specific item. The remaining 50 percent of the time is reserved for discussion.

- Number of copies of the presentation materials to be provided to the ACNW - 35.
- ACNW meeting schedules are subject to change. Presentations are frequently canceled or rescheduled to another day. If such a change would result in significant inconvenience or hardship, be sure to verify the schedule with Mr. Howard Larson at (301) 415-6805 between 8:00 a.m. and 4:00 p.m., several days prior to the meeting.

Staff only had
copy of the

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.

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

PRESENTATION TO ACNW FULL COMMITTEE

JULY 25, 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
- DISCUSSION OF HIGH-LEVEL GUIDELINES
- USE OF RISK INFORMATION FOR PERFORMANCE-BASED INITIATIVES
- 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 HIGH-LEVEL GUIDELINES AND THEIR LIMITED TESTING REPRESENT A SIGNIFICANT MILESTONE IN PROGRESS TOWARD ACHIEVING THE GOALS OF THE PERFORMANCE-BASED REGULATION INITIATIVE.
- THE GUIDELINES WILL BE 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 LETTER SUGGESTED.

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 CAN PROVIDE A BASIS FOR LEVEL OF PERFORMANCE
 - WHAT IS IMPORTANT TO SAFETY?
 - WHAT IS THE REQUIRED LEVEL OF PERFORMANCE?
 - WHAT IS THE APPROPRIATE PERFORMANCE PARAMETER AND THE ASSOCIATED PERFORMANCE CRITERIA?

- RISK INFORMATION CAN BE USED FOR METRICS, THRESHOLDS AND/OR REGULATORY RESPONSE

- INITIATIVES MAY BE CLASSIFIED AS “NOT AMENABLE TO PRA”, BUT COULD 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 (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

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

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.
- ESTABLISH ONE YEAR TRIAL PERIOD FOR APPLICATION TO NEW RULEMAKINGS AND SELECTED REGULATORY CHANGES.
- SUBSEQUENTLY, DEVELOP GUIDANCE TO STAFF FOR APPLICATION.
- PROMOTE WIDER ACCEPTANCE BY INVOLVING AGREEMENT STATES, INDUSTRY AND STANDARDS COMMITTEES.
- REPORT TO THE COMMISSION ON RESULTS OF THE TRIAL PERIOD ACTIVITIES.

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