

UNITED STATES OF AMERICA NUCLEAR REGULATORY COMMISSION

Title: BRIEFING ON PROPOSED RULE ON RADIOLOGICAL
CRITERIA FOR DECOMMISSIONING

Location: ROCKVILLE, MARYLAND

Date: JUNE 6, 1994

Pages: 87 PAGES

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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

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BRIEFING ON PROPOSED RULE ON RADIOLOGICAL
CRITERIA FOR DECOMMISSIONING

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PUBLIC MEETING

Nuclear Regulatory Commission
One White Flint North
Rockville, Maryland

Monday, June 6, 1994

The Commission met in open session,
pursuant to notice, at 1:00 p.m., Ivan Selin,
Chairman, presiding.

COMMISSIONERS PRESENT:

IVAN SELIN, Chairman of the Commission
KENNETH C. ROGERS, Commissioner
FORREST J. REMICK, Commissioner
E. GAIL de PLANQUE, Commissioner

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STAFF SEATED AT THE COMMISSION TABLE:

WILLIAM C. PARLER, General Counsel

JOHN HOYLE, Acting Secretary

JAMES TAYLOR, Executive Director for Operations

DR. DONALD COOL, Chief, Radiation Protection and
Health Effects Branch, RES

FRANCIS CAMERON, Office of the General Counsel

FRANK CONGEL, Director, Division of Radiation Safety
and Safeguards, NRR

MICHAEL WEBER, Section Leader, Regulatory Issues
Section, NMSS

EUGENE DURMAN, Deputy Director, Office of Radiation
and Indoor Air Quality, EPA

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

1:00 p.m.

CHAIRMAN SELIN: Good afternoon, ladies and gentlemen.

This afternoon the Commission will receive a briefing from the staff with EPA participation on the proposed rule on radiological criteria for decommissioning. I'm pleased to welcome Mr. Eugene Durman from the Environmental Protection Agency who will brief the Commission on EPA's radiation site cleanup regulations so that we can see how the two activities interact.

By NRC and EPA have differing responsibilities for the protection of public health and safety and the decommissioning of radiologically contaminated sites. Each agency has a unique and an important mission in this area. So, we're pleased at what we hear have been the productive interactions between the two agencies and hope that they will continue to be this productive. We're very interested in hearing your report.

Commissioners?

Mr. Taylor?

MR. TAYLOR: Good afternoon. The proposed rule on radiological criteria for decommissioning

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1 represents the culmination of a long and unique
2 process for rulemaking development. As the Commission
3 is aware, the staff has utilized an enhanced
4 participatory rulemaking process to develop these
5 criteria. This process has encompassed public
6 workshops on rulemaking issues, scoping meetings for
7 supporting generic environmental impact statement and
8 public comment on a staff draft of the rulemaking
9 earlier this year.

10 I believe this process has been extremely
11 useful to us in the development of the proposed rule
12 you have in front of you. The comments and
13 suggestions received from members of the public have
14 suggested courses of action that might not otherwise
15 have been explored and the context developed as served
16 to facilitate a new era of open communications.

17 An important part of the process has been
18 the staff's close coordination with EPA in the
19 development of the rule. As you noted, Mr. Chairman,
20 Mr. Durman of EPA is with us today and he is available
21 to answer questions on this activity as well as to
22 provide an overview of the parallel EPA rulemaking
23 activity.

24 Today at the table I have Doctor Don Cool
25 of the Office of Research, Mike Weber of NMSS, Chip

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1 Cameron of OGC, Frank Congel of NRR and Gene Durman
2 from EPA.

3 Doctor Cool, will you begin the
4 presentation?

5 DOCTOR COOL: (Slide) If I can go ahead
6 and go directly to the second slide.

7 For the audience, we apologize on a glitch
8 on who was going to make some copies. I understand
9 that they will be here shortly.

10 What I intend to cover briefly today in
11 terms of overviewing the package that was sent to you,
12 a little bit of a background on how we got to this
13 particular location, the rulemaking concepts, the
14 avenues of public participation and our supporting
15 documents and the interactions that we have had with
16 EPA, and then allow Gene Durman to discuss the EPA
17 parallel rulemaking effort which has been going on and
18 be able to answer any of your questions.

19 (Slide) We can go ahead and go to the
20 next slide on the background.

21 As Mr. Taylor has already indicated to
22 you, we have gotten to this point through a rather
23 unique set of processes in terms of interactions with
24 the public, in terms of the development of the
25 rulemaking process. A little over a year ago, we

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1 culminated a set of seven workshops, two day
2 workshops, which were held across the United States in
3 a number of different cities where we invited a wide
4 range of participants to give us their comments and
5 viewpoints, to explore ideas and rationales without
6 having any rule text or any preconceived notion of the
7 way that the rulemaking would go on the table at that
8 point. Those were followed up by a series of scoping
9 meetings specifically aimed at the scoping for the
10 generic environmental impact statement that's been
11 prepared in support of the rulemaking, the draft of
12 which is part of the package.

13 We were very pleased to have EPA with us
14 during all those workshops. Their participation was
15 crucial in those efforts and we have had a close and
16 ongoing cooperation with them, both in terms of the
17 development of the policy and recommendations in the
18 rulemaking and in terms of work on what we'd like to
19 refer to as the technical underpinnings, the modeling,
20 the approaches for surveying and other details that
21 underlie and support demonstrations of compliance with
22 the rule.

23 We published the staff draft of the rule,
24 which was a version that the staff had put together on
25 the basis of the workshops on GEIS for public comment.

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1 It was sent out on the 28th of January -- the Federal
2 Register notice was actually dated February 3rd -- for
3 a very brief, and we recognize it was extremely brief,
4 comment period to see how closely we had represented
5 and recognized the viewpoints. Need to be very clear
6 right now. At the time we put out that draft, we did
7 not put out either a draft of the generic
8 environmental impact statement or the regulatory
9 analysis. So, a large number of the comments that
10 were received, and rightly so, said, "Gee, we can't
11 see how you have balanced things off. We cannot see
12 how in detail you might implement it in terms of what
13 would this be equal to in picocuries per gram and
14 those sorts of things." We did receive a lot of those
15 comments as well as a number of comments which
16 resulted in some changes between the staff draft that
17 was published at that time and the version which you
18 have in front of you today.

19 (Slide) We can go ahead and go to the
20 next slide, slide 4.

21 In terms of the quick overview, what have
22 we got in the rule? There are a set of general
23 provisions, the decommissioning objective, the
24 provisions for unrestricted release, provisions for
25 restricted termination and the provisions for public

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1 participation, which includes both notification and
2 the site-specific advisory board.

3 (Slide) We can go ahead and go to slide
4 5, which are the general provisions.

5 The rulemaking itself, after listing out
6 the scope and providing a section which deals with the
7 concept which lays out to capture some of the things
8 that you might actually sometimes have put in the
9 statement of considerations, laying it out in actual
10 rule text so that it would remain captured within the
11 codified version at this point, goes to a series of
12 general provisions. First of all those being the time
13 frame over which these calculations to determine dose
14 to individual and criteria groups would be held. This
15 draft is based on a time calculation period of 1,000
16 years. Peak dose any time within that particular
17 framework, be that from year 1, which in fact is the
18 year of maximum dose for the vast majority of
19 radionuclides, on out and up to 1,000 years. That is
20 the same time frame which the EPA is considering.
21 Gene will talk to you briefly --

22 COMMISSIONER REMICK: I thought that EPA
23 was 10,000.

24 MR. DURMAN: Our staff draft came out as
25 1,000.

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1 COMMISSIONER REMICK: I see. Okay.

2 Don, while you're on that, roughly what
3 type of licensees would be affected that it's greater
4 than one year?

5 DOCTOR COOL: What you'll have there are
6 some of the ones where you have uranium or thorium
7 where you might get some significant ingrowth of
8 daughters had you had some more purified ones. Those
9 will peak out farther down the line. For most all of
10 the byproduct materials, those are almost inevitably
11 a year one reaction.

12 COMMISSIONER REMICK: Approximately how
13 many would be in that first category that would build
14 in with time, the daughters would build in? Any idea?

15 DOCTOR COOL: Don't have the exact number.
16 I think it's on the order of perhaps a dozen or so.

17 MR. WEBER: I think there's actually about
18 200 source material licensees. So that would capture
19 the uranium and the thorium possessors.

20 DOCTOR COOL: I was referring to the
21 number of radionuclides.

22 COMMISSIONER REMICK: Oh.

23 DOCTOR COOL: Mike is referring to the
24 number of licensees. I'm not sure which question you
25 asked.

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1 COMMISSIONER REMICK: The one Mike
2 answered.

3 DOCTOR COOL: Okay.

4 COMMISSIONER REMICK: So, somebody who had
5 just natural uranium source as daughters are still
6 building in? It would be only after some kind of
7 processing, right?

8 MR. WEBER: That's correct.

9 COMMISSIONER REMICK: So, are
10 approximately 200 source material licensees of the
11 type that it would be building in with time or --

12 MR. WEBER: The number of licensees that
13 would be affected by the decay product ingrowth would
14 be a small subset of those. So, it's those facilities
15 that have, as you pointed out, processed the uranium
16 and the thorium such that the decay products have been
17 segregated from the parent materials.

18 COMMISSIONER REMICK: Okay. Thank you.

19 DOCTOR COOL: The next of the general
20 provisions had to do with the ALARA requirement. In
21 this case, this only refers to the general statement
22 that ALARA applies to consideration of all of the
23 risks to humans in the environment. This goes beyond
24 perhaps what is sometimes looked at where you're just
25 looking at occupational dose or you're just looking at

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1 public dose from an operation. In this case, we
2 believe that you have to look at the workers on the
3 site doing the remediation, the individuals who would
4 move onto the site after the remediation, individuals
5 who would be off the site, individuals who might be
6 affected as a result of moving materials to some other
7 site, a waste disposal facility, transportation risks,
8 all of those things which pose risks to the
9 individuals as a result of the overall action.

10 COMMISSIONER de PLANQUE: Is this just
11 risks from radiation and radioactivity or does it go
12 beyond that?

13 DOCTOR COOL: It goes beyond that.

14 COMMISSIONER de PLANQUE: So, like deaths
15 due to transportation are included?

16 DOCTOR COOL: Yes. The third one is
17 what's sometimes referred to as a good housekeeping
18 step. Irrespective of the fact that you may begin
19 with a facility which has relatively small quantities
20 of material which conceivably could meet the criteria
21 in the rule, you ought to at least go down and wipe
22 the counter once to remove what you can readily
23 remove. We didn't want to be in a position where you
24 wouldn't do the simple, reasonable things as part of
25 the process of releasing the facility.

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1 The fourth one deals with groundwater and
2 is specifically there as a result of some of our
3 actions with EPA and is that there will be a
4 reasonable expectation that the activity in any
5 underground source of drinking water would not exceed
6 the limits in 40 CFR 141, which is EPA's drinking
7 water standards.z

8 COMMISSIONER de PLANQUE: But this is well
9 below the 15 millirem that you're going to talk about.

10 DOCTOR COOL: It is, for most byproduct
11 materials, four millirem. It is for uranium right
12 down in some of those specified numbers. I should go
13 ahead and note to you right now in terms of the
14 default criteria that we have looked at in our
15 modeling, there are only maybe eight or nine
16 radionuclides for which under the default conditions
17 that groundwater provision would be more restrictive
18 than the overall dose limit for the site. Those again
19 are a couple of the uraniums, one of the thoriums and
20 there's one or two other isotopes. So, there are very
21 few cases where the drinking water pathway will be the
22 controlling pathway.

23 COMMISSIONER de PLANQUE: What about the
24 problem of differentiating between anything that may
25 be there naturally and residual from activity?

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1 DOCTOR COOL: Okay. That gets you to the
2 whole issue and we could probably spend the whole next
3 hour and a half --

4 COMMISSIONER de PLANQUE: You can handle
5 that at any time you wish, but it's coming.

6 DOCTOR COOL: -- in terms of measurement
7 and background, which was a significant issue that we
8 had to look at. So, maybe we'll proceed on and get
9 back to that in a little bit.

10 COMMISSIONER de PLANQUE: Okay.

11 DOCTOR COOL: And if I don't get there,
12 please remind me.

13 COMMISSIONER de PLANQUE: I will.

14 DOCTOR COOL: The staff draft of the rule
15 contained a goal and one of the -- that was perhaps
16 the most commented on provision. Everyone commented
17 on it. Virtually no one liked it for a variety of
18 reasons. Some of them didn't like it because they
19 didn't think it was low enough. More often, the
20 comments that we received was that they didn't
21 understand how it would function and there was a
22 misconception that it would de facto be a second limit
23 that everyone had to achieve, which was not the case
24 when we had proposed it. So, the proposed rule that
25 you have in front of you does not have a goal. That

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1 is a four letter word we have attempted to expunge, in
2 essence, from the requirements. And really looking at
3 the two functions that were part of that. The first
4 was the general statement of the objective for
5 decommissioning. So, we have written it in as that.
6 The fundamental objective of decommissioning being to
7 remove the material to levels which are
8 indistinguishable from background as the objective of
9 the process that ideally we would like to see all
10 sites have. That has no numerical criteria associated
11 with it, but stands as the fundamental premise of what
12 we would like to do.

13 The second portion had originally been
14 intended to help define for the large number of
15 licensees who may have sealed sources or short-lived
16 materials a relatively simple pathway to work their
17 way through this regulation to reach a termination
18 point. The package that you have in front of you now
19 states that that will be provided as part of the
20 guidance document.

21 The regulatory guide to be part of this
22 package we did not send up with the rest of the paper.
23 We were still in discussions with EPA about exactly
24 how that would be formatted. Our expectation is that
25 we would be able to publish that with the rest of the

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1 package. I believe we have reached agreement with EPA
2 and have a draft which is about ready to go at this
3 point. That provides a decision tree, in essence, for
4 looking at what kind of licensee you are, what kind of
5 predictions for activity levels you have at the start
6 of the process to define various kinds of pathways
7 that you might proceed, from a relatively simple
8 pathway where my predicted levels are fairly low, to
9 move directly to doing good housekeeping and doing a
10 survey, to a more complicated approach where I want to
11 do an analysis to show where I may be below the limit,
12 to situations where there may, in fact, be a
13 possibility that you would not be able to reach the
14 limit that we'll talk about in a moment, and therefore
15 trying to determine whether or not you will be in a
16 restricted use mode. That's going to be part of the
17 regulatory guide.

18 COMMISSIONER REMICK: Will we hear what
19 the EPA concern was with that guide at some point or
20 was it concern over the things you just stated?

21 DOCTOR COOL: The concern was principally
22 that the three millirem per year value, which was in
23 the staff draft as a goal, would in fact be
24 misconstrued and would be a driver that all licensees
25 would have to achieve. That was the fundamental

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1 reason we removed it from the rule. We spend some
2 extra time discussion with them the way in which we
3 used a criterion in the guide in order to try and
4 avoid that perception that the guide might be doing
5 that de facto, which we also wanted to avoid. I
6 believe we now have that well enough defined, some
7 caveats in place about its function and purpose so as
8 to avoid that particular concern. That was the
9 primary concern.

10 COMMISSIONER REMICK: I trust the
11 Commission will get a copy of the guide when it's
12 ready?

13 MR. TAYLOR: Soon, yes.

14 DOCTOR COOL: Yes.

15 COMMISSIONER REMICK: Okay.

16 DOCTOR COOL: (Slide) Provisions for
17 unrestricted termination of license is slide 7. A
18 limit for acceptability of the release of the site for
19 the critical group of 15 millirem per year and the
20 application of the ALARA concept to determine whether
21 or not other materials can be removed to reduce that
22 value below the limit.

23 COMMISSIONER REMICK: Will at some point
24 you tell us how you arrived at 15 millirem per year
25 versus other alternatives?

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1 DOCTOR COOL: There are several factors
2 which went into play there. The first, as supported
3 by the basic principles of ICRP and NCRP, we took a
4 look at the total dose limit and then looked at
5 apportioning that so that you would not have a single
6 source providing the entirety of the limit under
7 routine conditions. That gets you to some fraction of
8 100. It doesn't define specifically what that number
9 ought to be. Our analysis in our generic
10 environmental impact statement, regulatory analysis,
11 are looking at what the delta and cost would be as I
12 start to come down below 100, which indicates that for
13 the kinds of licensees that we're dealing with, it
14 really doesn't make much difference whether I say 60,
15 30 or 15. The amount of efforts that I'm going to
16 have to achieve will be approximately the same. If I
17 go in and I move scabble off the first quarter inch of
18 concrete or remove the first few inches of dirt that's
19 contaminated, I will achieve any one of those values.
20 Once I start to get below 15 or thereabouts, and it
21 does depend on specifically the kind of licensee, the
22 costs begin to escalate.

23 The third was to look at some consistency
24 with the other kinds of regulations and requirements
25 that are out there for various other types of

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1 facilities, fuel facilities, some of the waste
2 disposal facilities which contain criteria for areas
3 which are accessible, which are unrestricted. In the
4 old dosimetric approach, that was the 25 millirem, 75
5 for any other organ, 25 for thyroid. When you do a
6 dose translation to an effective dose equivalent,
7 total effective dose equivalent, and take into account
8 the change and risk factors and go through those
9 mathematics, you determine that the old standard is
10 equivalent to 15 under the newer methodology and
11 concepts. That's how we basically got to 15, through
12 a whole series of values.

13 Now, the 15 millirem per year is also
14 roughly equivalent to the order of magnitude at least
15 that we were trying to achieve in terms of a 10^{-4} . It
16 comes out if you do -- I believe it's in Mr. Durman's
17 presentation. The 15 millirem per year is a 3×10^{-4}
18 risk when you do the mathematics out as they do it
19 under the Superfund Program. So, we make no claim
20 that we have hit 1×10^{-4} , but it is in that same
21 vicinity and was established on a whole series of
22 bases, looking at both consistency with other
23 regulatory approaches, consistency with the
24 international recommendations.

25 COMMISSIONER REMICK: Of course, life time

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1 risk depends on the number of years exposure, one
2 assumes, and the fatal cancer risk coefficient, which
3 I'll have some questions about later on. We've had
4 discussions earlier about this equivalency between 15
5 total effective dose equivalent and 25 millirem in
6 Part 61, for example. Is there a specific reference
7 where those calculations have been done? In the
8 document you make statements of that equivalency, but
9 there's no reference that somebody can refer to if
10 they're interested.

11 DOCTOR COOL: I don't know that there is
12 a published paper which does the mathematics out for
13 you. The 15 is, in fact, already part of the
14 regulatory scheme. It was, in fact, published by EPA
15 in their high-level waste standard for non-Yucca
16 Mountain and they have somewhat of an explanation, not
17 the detailed mathematical conversion necessarily that
18 we have discussed previously. So, I can't say to you
19 that that is the reference that you're looking for.

20 COMMISSIONER REMICK: Well, it worries me
21 a little bit that we keep stating that's the case and
22 I believe if you tell me it is, but I sure would like
23 to have a reference that at my leisure or if anybody
24 else has an interest. Just because EPA has used it,
25 I hope they have a reference somewhere to it.

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1 I don't know if Mr. Durman can answer that
2 or not.

3 MR. DURMAN: There are some calculations.
4 I don't know whether or not it's actually been
5 published. It may be an internal working paper, but
6 I'll have to check on that for sure.

7 COMMISSIONER REMICK: All right.

8 CHAIRMAN SELIN: Why don't we just publish
9 it? What are we dancing around the table?

10 DOCTOR COOL: Well, we'll see if we can
11 find it and publish it.

12 CHAIRMAN SELIN: As you explained it to
13 me, if I remember correctly, the reason the cost goes
14 up below 15 isn't because it's more expensive to get
15 below 15, but it's more expensive to measure that
16 you're in fact at some particular level.

17 DOCTOR COOL: You have multiple
18 competitions, one being the amount of money you spend
19 to physically do the work and that goes up slowly.
20 For every layer of dirt, it costs me an incremental
21 amount. You have the cost of measuring to decide that
22 you've done what you set out to do. Those break and
23 start to escalate very rapidly, corresponding to where
24 I can no longer rely on field implementation, field
25 instrumentation and I have to start going to a

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1 protocol of sampling and taking it back to the
2 laboratory. That's where the vast majority of the
3 costs are. Then there are costs and risks associated
4 with actually starting to move large quantities of
5 materials. The cost for waste disposal would start to
6 kick in when you start to talk about larger and larger
7 volumes of material which also contribute.

8 COMMISSIONER REMICK: But what drove us,
9 the cost, which I applaud the consideration of it, but
10 is that what drove us or was it a preconceived idea of
11 total effective dose equivalent or preconceived idea
12 of lifetime risk or all of them together?

13 DOCTOR COOL: It really was all of them
14 together. I didn't start with the one and discover
15 the others necessarily. We wanted to look and see
16 where the other standards worked, because we certainly
17 did not want to be out of line with positions that had
18 already been taken either by ourselves or by EPA and
19 the risk values. So, we looked at all of that set
20 together and that all focused within a very small
21 range of values, some small double digit number. As
22 we've already talked about, 15 being the mathematical
23 translation which EPA had already placed in their high
24 level waste standard for the older 25/75.

25 COMMISSIONER REMICK: But what bearing

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1 does that have on this issue?

2 DOCTOR COOL: That is a value for an area
3 which is completely open and accessible, unrestricted
4 in an area surrounding another facility and was viewed
5 to be relevant because we are dealing in a situation
6 where a piece of property would be unrestricted,
7 accessible and wide open.

8 COMMISSIONER REMICK: I understand what
9 you say. Go ahead.

10 DOCTOR COOL: (Slide) Okay. Why don't we
11 move ahead to slide 8 then and deal briefly with --

12 COMMISSIONER de PLANQUE: Can you
13 backtrack just one minute? As I heard you when you
14 tried to figure out the fraction of the limit that's
15 recommended internationally and by NCRP, you
16 considered various numbers, 60, 30, 15, and you
17 essentially wound up at 15 because the cost of
18 decontaminating to that level was no greater than
19 going to 60.

20 DOCTOR COOL: That's one of the factors,
21 yes.

22 COMMISSIONER de PLANQUE: One of the
23 factors. But what about the cost for proving that
24 you're at that level? Where does that curve start
25 running up?

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1 DOCTOR COOL: Those curves for the most
2 part break below 15 and they will have all broken by
3 the time that you're down in the range of 1 to 3. It
4 depends on the isotopes. For things, the byproduct
5 materials, the cobalts and the cesiums, they're down
6 below that.

7 COMMISSIONER de PLANQUE: They're easy,
8 yes.

9 DOCTOR COOL: They're relatively easy.

10 COMMISSIONER de PLANQUE: Right.

11 DOCTOR COOL: The uraniums and thoriums
12 for which I have a presence of background and where
13 indistinguishable does not mean the fact that I found
14 the characteristic gamma on my scintillator multi-
15 channel analyzer, but where I am having to do a
16 statistics between a count distribution that I
17 obtained from a number of samples here and there
18 around the site or if I have data preexisting vis-a-
19 vis what I am now counting. There you're looking at
20 the overlap or the lack of overlap between two count
21 distributions. For some of those curves, they start
22 breaking very shortly or at about 15 millirem per
23 year. Once I have the two count distributions far
24 enough apart to say that I've got a sigma or two sigma
25 separation, that's about the kind of dose I'm looking

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1 at, that or a little bit more.

2 COMMISSIONER de PLANQUE: Okay.

3 DOCTOR COOL: Which I think perhaps goes
4 back and also answers your question on some of the
5 count distributions.

6 COMMISSIONER de PLANQUE: Well --

7 COMMISSIONER REMICK: I assume those
8 calculations are not so refined that one can really
9 tell the difference between 15 millirem and 20
10 millirem or anything about there?

11 DOCTOR COOL: I think that's accurate.

12 COMMISSIONER de PLANQUE: It won't totally
13 get to my question because my question then is how do
14 you determine background.

15 DOCTOR COOL: For the ALARA
16 considerations, why don't I go ahead and address that
17 now. I won't play around with it that long.

18 Background coming out of the briefing that
19 we held nearly a year ago where several of you
20 expressed a particular interest on how we were going
21 to get there, we went and asked the Environmental
22 Measurements Laboratory to do some specific looks.
23 That's one entire appendix, Appendix A of the GEIS.
24 We have also asked them, and this is work that we do
25 not have in hand. I expected the draft in most any

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1 time to look at some alternative statistics for doing
2 surveys in the vicinity of background. What you find
3 is that the typical approach of doing a survey where
4 I take three or four samples in the vicinity around
5 the site and I start the survey on the site, walking
6 across it and looking for a blip on the detector is an
7 approach which predisposes or is presupposed on a
8 statistics that I'm going to find something, that
9 there is a large enough differential that I will have
10 a peak which will exceed whatever I'm doing, five
11 counts above the nominal or whatever.

12 When you're in a very low range and you
13 have that kind of distribution, you really need to go
14 to some alternative statistical approaches for how
15 many samples you take to define your average
16 background, when and how you take those versus when
17 and how you take samples on the site.

18 I will admit to you I'm not prepared today
19 to go into a lot of the details. EML should be
20 submitting to us shortly a draft NUREG report which we
21 would hope to publish for comment simultaneous with
22 this rule which will lay out some alternative
23 statistics and approaches associated with that
24 particular approach.

25 Our objective would be that a year from

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1 now when we are considering a final rulemaking, that
2 that alternative approach would have been refined to
3 the point where we could, as a staff, as a Commission,
4 endorse it as an alternative surveying methodology
5 separate from what is currently contained in the
6 NUREGs and survey manuals for those kinds of
7 situations where I have only a natural uranium or
8 thorium in the presence of uranium or thorium, a site,
9 for example, that's located in the Reading prong of
10 Pennsylvania, and trying to take a whole look at the
11 count distributions, my methodology and my statistics
12 for defining those differences.

13 COMMISSIONER de PLANQUE: But you are
14 talking about comparing background, let's say, outside
15 of the site with what -- and assuming that on-site
16 would be the same?

17 DOCTOR COOL: Yes. Basically we are in
18 that mode of operation for the majority of sites
19 because there is not a body of evidence from 20, 30,
20 40, 50 or more years ago when these sites started to
21 enable us to go back and compare those measurements
22 versus what we would see now actually on the site.

23 COMMISSIONER de PLANQUE: Okay.

24 COMMISSIONER REMICK: And even if you had,
25 there's probably been fallout since then.

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1 DOCTOR COOL: That's true. Of course, the
2 one advantage perhaps is the fallout remaining is
3 liable to be fairly characteristic and I might be able
4 to "distinguish" around that.

5 COMMISSIONER REMICK: But if we are
6 getting down that we have to do statistical analysis,
7 doesn't that tell us a little bit about the level at
8 which we are, that we're down talking about very, very
9 low levels, that we have to do it statistically?

10 DOCTOR COOL: The reality, of course, is
11 that any time we're doing a survey, we're doing
12 something with statistics. Even the nominal surveys
13 that I do now and that Oak Ridge goes out and verifies
14 for me assumes a set of statistics. Their normal
15 protocol now is to go out and to obtain a number of
16 samples in the area around the site, then to calibrate
17 their walking survey instruments versus a pressurized
18 ion chamber for that particular day, high pressure,
19 low pressure, and then to go and survey to determine
20 if they have a set of criterion some number of counts
21 above that variation, they'll throw a flag down. So,
22 you are, even there, assuming some set of statistics.
23 You're just using a set of statistics that assumes I'm
24 going to find something.

25 COMMISSIONER REMICK: Okay.

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1 DOCTOR COOL: The ALARA considerations, as
2 I'd already mentioned, to include all significant
3 risks. Licensees under this proposed rule would be
4 required to demonstrate why further reductions are not
5 reasonably achievable. Those would have to be looked
6 at on a site specific basis, but anything less than 15
7 could be considered as ALARA. That's the whole
8 purpose of having them take a look at what is or is
9 not achievable and that will depend on the site, on
10 the kinds of radionuclides, on the distributions and
11 extent. As I indicated to you already, the regulatory
12 guide, which should be ready to come up to you
13 shortly, will contain some guidance on a decision tree
14 approach for determining where they are within this
15 framework, both above or below the limit for
16 unrestricted use and within the space below the limit
17 in terms of making ALARA determinations and how much
18 documentation and analysis might be necessary to
19 support a specific decision.

20 (Slide) Let's go ahead and proceed to the
21 restricted termination provisions.

22 One of the things that we clearly heard in
23 the workshops was that there may be situations in
24 which a licensee will not be able to get achievement
25 of the limit of 15 millirem per year simply by moving

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1 and removing materials. The site decommissioning
2 management plan and some of the facilities on that are
3 the real life cases that face us in that particular
4 case. So, we are proposing to expand the definition
5 of decommissioning to include the possibility of
6 restricted termination. In situations where it's not
7 technically achievable, where it would be
8 prohibitively expensive, where there would be net
9 public or environmental harm, where it makes very
10 little sense to go in and do a tremendous amount of
11 ripping around in a fragile ecosystem or it makes no
12 sense to do a tremendous amount of work here and then
13 proceed to create another site to generate power or to
14 do some particular industrial activity where it makes
15 a lot more sense to continue to use infrastructures or
16 areas that are already there in a restricted mode of
17 operation.

18 The underlying basis of thought is that
19 you would apply restrictions such that the individual
20 who would be exposed would be exposed to no more than
21 the risk they would have if they had been in an
22 unrestricted circumstance, except in this case you no
23 longer have to assume that that individual moves in
24 and can do anything, including live there, grow some
25 food there, drink the water there. Perhaps now it's

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1 an individual who moves in and works there for eight
2 hours a day in an industrial type of setting and goes
3 home. So, I can start to cut off possible pathways of
4 exposure which effectively allows you to have a larger
5 quantity of material present on the site contributing
6 to whomever that individual is, that amount of risk
7 that corresponds to 15 millirem per year.

8 There is a safety net imposed because of
9 the lack of confidence that the staff certainly has
10 with whether or not you can count on these
11 restrictions to go on forever and ever. There are,
12 unfortunately, situations where deed restrictions,
13 zoning restrictions and various things will break down
14 over the course of time perhaps.

15 So, we have a provision in the rule that
16 even if all of the restrictions were for some reason
17 to disappear and no longer be effective, that the dose
18 to an individual moving on in an unrestricted mode
19 would be less than the public dose limit. The value
20 placed in there is the public dose limit of 100
21 millirem per year. The statement of considerations
22 specifically solicits comments on that approach,
23 whether the entire dose limit or some fraction is the
24 most appropriate value because that remains an issue
25 that I think needs to be looked at and for which we

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1 did not have really any particular comment to look at
2 from this point. EPA is also looking at the same
3 issue with respect to their rulemaking.

4 COMMISSIONER ROGERS: But they have a
5 different number, 175.

6 DOCTOR COOL: The way that they have
7 talked about it is -- Gene, I'm sorry.

8 MR. DURMAN: We'll get to this later on in
9 my presentation, but you can get the view now. I
10 guess our perspective is that the overall principle is
11 that no one source should necessarily provide you the
12 entire dose. So, while we would recognize that the
13 difference between 175 may be not a large amount in
14 the overall scheme of things. To us it was important
15 to maintain the principle that no one source could
16 provide the entire dose. So we were contemplating the
17 possibility that there could be another source in the
18 vicinity that could provide a component and then given
19 the very long time frame that we're looking at it
20 would be important that the public not exceed the 100
21 millirem.

22 DOCTOR COOL: I should note that the
23 statement of considerations for our rule which you
24 have in front of you specifically mentions the value
25 of 75 in soliciting comments. So, we have looked for

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1 some parallelism between the EPA proposal and our
2 proposal and the solicitation of comment looking at
3 the impacts associated with it, whether or not there's
4 any real difference perhaps in the number of sites
5 that might be caught under some of those provisions in
6 an effort to try and gain some more information during
7 this comment period. Hopefully it will help us define
8 the direction to go coming out of the comment.

9 COMMISSIONER REMICK: Certainly failure
10 presumably would be extenuating circumstances. You
11 wouldn't expect it to happen too often. Nothing
12 really magical about 100 millirem per year other than
13 the fact it's recommendations we try to follow. But
14 it can be exceeded that provisions are provided by
15 ICRP to exceed.

16 DOCTOR COOL: That's correct and you do,
17 in fact, then get into situations where if I start to
18 look at regulatory consistency with intruder scenarios
19 for waste disposal sites, you find other values, say
20 500 millirem.

21 COMMISSIONER REMICK: Yes.

22 DOCTOR COOL: There is usually the
23 perception that you've got some sort of governmental
24 types of overviews and here we were not seeing those
25 sorts of things and we didn't really think it was

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1 appropriate to go and assume the same level of --
2 security perhaps is not the right word, for the kinds
3 of restrictions that you might apply in this case
4 versus those where you might have some sort of ongoing
5 government ownership and some difference in value.

6 COMMISSIONER REMICK: Yes. I understand.

7 Don, in the case where one is concerned
8 that institutional controls might fail at some future
9 time, since the largest number of licensees, their
10 activity will be decaying not building up, will they
11 be permitted to, if they know what the isotopic
12 composition is of the activity that's residual that
13 they can utilize decay? So, saying after 50 years,
14 even if the institutional controls go, it will not
15 exceed 100 millirem? In other words, can they take
16 advantage of knowledge like that?

17 DOCTOR COOL: Yes, they certainly could.

18 COMMISSIONER REMICK: So, they don't have
19 to protect institutional controls necessarily out to
20 1,000 years?

21 DOCTOR COOL: They would need to propose
22 institutional controls to deal with their situation,
23 but these would be looked at on a site-specific basis
24 and certainly if they know that it's going to have
25 decayed away in 50 years, I would certainly expect

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1 them to take that into account in preparing their
2 proposal.

3 MR. WEBER: That's especially significant
4 for licensees that have cobalt-60, for example, where
5 after 50 years much of the activity will have decayed.

6 COMMISSIONER ROGERS: Suppose that a
7 licensee wanted to use the site for a different
8 purpose but under the restrictions that you would
9 require in here, but they were willing to abide by
10 those restrictions but use it for a different purpose.
11 It might even be a non-nuclear purpose. Is that
12 possible?

13 DOCTOR COOL: Yes.

14 COMMISSIONER ROGERS: That would be
15 possible?

16 DOCTOR COOL: Yes. Perhaps even likely.

17 COMMISSIONER ROGERS: And then
18 decommissioning would come at a later date.

19 DOCTOR COOL: In that sense, they would
20 have decommissioned because the site would have been
21 released. We would not have an ongoing license. For
22 example, a situation in which they were generating
23 electricity and had small amounts of material left and
24 they wanted to fire the turbine and use the electrical
25 grid over again, you could really be in two modes.

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1 You could be in a mode where they could have gone
2 ahead and received a restricted termination and one of
3 those restrictions was that it must be used for the
4 following kinds of purposes. Their other possibility,
5 although I'm not sure necessarily why they might want
6 to do that, but they could maintain a portion of the
7 old turbine if it had some material left in it or
8 whatever under license and have the rest of it
9 released in an unrestricted manner, keeping this one
10 area perhaps even under license and fire that turbine
11 with gas or whatever.

12 So, there are a couple of modes of
13 operation where they could proceed. In one case they
14 would be decommissioned in the sense of the definition
15 that we're proposing here. In another sense they
16 would still be under license perhaps in materials
17 possession of the license for residual radioactivity
18 in the following specific locations with the rest of
19 the site released in an unrestricted manner.

20 The last provision associated with the
21 restricted terminations is for some financial
22 assurance to provide for whatever kinds of oversight.
23 Perhaps you want someone to go in and look at the
24 fences every year or something. That once again would
25 be site specific and would have to be part of the

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1 proposal. In this mode of operation you would no
2 longer have a licensee to go to, so you would be
3 looking for some sort of established assurance so that
4 whoever needed to go in and do those activities would
5 have the resources to do so.

6 COMMISSIONER de PLANQUE: What kind of
7 time frames are you considering here?

8 DOCTOR COOL: The same sorts of time
9 frames we're considering for the rest of rule.

10 COMMISSIONER de PLANQUE: A thousand
11 years?

12 DOCTOR COOL: It could conceivably be
13 1,000 years, although I would sort of be rather
14 surprised at that.

15 CHAIRMAN SELIN: I'd be surprised if
16 you --

17 COMMISSIONER de PLANQUE: They don't do
18 that at cemeteries.

19 DOCTOR COOL: But we haven't placed a
20 specific boundary. I haven't said that, "Anything
21 over 100 year, no, you can't consider this mode of
22 operation." So, I haven't restricted it to a certain
23 time frame. That has to be part of your site-specific
24 proposal, getting to Commissioner Remick's question
25 about considering what the radionuclides are, what the

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1 half lives are, what are the cases of this particular
2 one, what are the kinds of restrictions that you're
3 applying to it.

4 COMMISSIONER de PLANQUE: What kind of
5 cost uncertainty does that pose for licensees though?
6 If it's a case by case basis, they have no way of
7 anticipating what kind of --

8 DOCTOR COOL: There could potentially be
9 a fair amount of uncertainty there. They will
10 obviously be able to predict with some economic model,
11 but yes, obviously there are uncertainties associated
12 with extrapolating that. The farther you fire that
13 out into the future, the larger the certainty band
14 becomes. That's certainly true.

15 CHAIRMAN SELIN: But I don't think you
16 should leave the impression that it's an
17 arbitrariness. The case by case depends on what
18 combination of isotopes is --

19 DOCTOR COOL: It depends on the
20 combination of isotopes. It depends on the kind of
21 restrictions that you're talking about. It depends on
22 the community involvement and the public participation
23 because one of the things, and it's on one of the next
24 slides, the restricted termination has associated with
25 it that the licensee has to obtain advice from a site-

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1 specific advisory board, to include local groups,
2 public citizens, local government, the zoning board,
3 whoever needs to be involved in the process of
4 deciding what kinds of restrictions will function in
5 that particular environment and make recommendations
6 that the licensee then has to address as part of their
7 plan. So, there's a provision also here in the rule
8 for them to be obtaining a broader input from those
9 people who will still be there when it gets done in
10 terms of the way in which this is put together.

11 (Slide) We can proceed onto slide 10.
12 I'll try and quickly move through the rest of this.

13 Public participation comes in two modes,
14 the first being a notice and opportunity for comment
15 under several circumstances which would be in forums
16 that people read, which means something besides the
17 Federal Register, because we recognize that most
18 people in areas around facilities do not have
19 subscriptions to the Federal Register and read them
20 diligently.

21 (Slide) The second mode of operation
22 being, as I just mentioned -- we can go ahead and go
23 to slide 11 -- the establishment of a site-specific
24 advisory board in those circumstances where the
25 licensee is looking towards a restricted termination.

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1 Now, that certainly wouldn't preclude a licensee from
2 having a site-specific advisory board even if they
3 were going for an unrestricted termination. But we
4 felt it was more than necessary to demand that level
5 of participation, that level of expense and
6 complication for every single kind of facility
7 irrespective of where they were going to decommission.
8 So, we crafted the proposal to require it only in
9 those circumstances where there would be a restricted
10 termination contemplated.

11 The site-specific advisory board to
12 provide advice to the licensee on the restricted
13 release. Those recommendations would have to be
14 addressed as part of the decommissioning plan which
15 would be submitted to the Commission for its review.
16 Site-specific advisory board would not be an advisory
17 group to the Commission. It would be constituted by
18 the licensee. Support would have to be provided by
19 the licensee. It would be open and on the record, all
20 the materials considered being part of the docket,
21 participation reflecting a broad range of interests
22 and the rule text indicates environmental groups,
23 local citizens groups, environmental justice groups,
24 local governmental organization, tribal or other
25 organizations to provide the broad range of advice we

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1 believe that the licensee would need to have and then
2 address to us.

3 We have tried to construct the rule such
4 that the site-specific advisory board would not, in
5 fact, be a block to moving forward should you come up
6 with a group that cannot come up with a set of
7 recommendations necessarily. The licensee would have
8 to address what the site specific advisory board had
9 provided to them, but the SSAB under this proposal
10 would not have any veto authority necessarily over
11 that proposal coming to the Commission.

12 COMMISSIONER ROGERS: And you see this as
13 something that just relates to the licensee and not in
14 any way directly connected with local government such
15 as local planning boards and zoning boards and so on
16 and so forth? It's just advisory to the licensee in
17 dealing with whatever issues they have to deal with?
18 Is that the concept?

19 DOCTOR COOL: In terms of what we have set
20 up as advisory to the licensee. We would envision
21 that local zoning boards, local governments would be
22 part of this in providing advice. That certainly
23 would not limit the group from providing advice to the
24 local government in terms of the way to proceed in a
25 synergistic process in that community in terms of the

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1 requirements that we've placed in the rule. We have
2 constrained that at this point to their functions with
3 respect to the licensee.

4 MR. CAMERON: And, of course, the SSAB's
5 recommendations would not tie the local government's
6 hands in any way, but would in fact, depending on the
7 type of institutional control that would be
8 recommended, that recommendation would be dependent on
9 the local government acting to implement that.

10 COMMISSIONER ROGERS: Well, it's
11 conceivable that a local planning board would choose
12 not to participate because they would feel somehow
13 that they would be somewhat coopted in some way or
14 some of their independent authority somewhat reduced
15 if they participated in one of these boards. If we
16 required them to participate, then that might pose a
17 dilemma there.

18 DOCTOR COOL: There is not a requirement
19 that any particular group participate and I believe
20 you will also find that there's language indicating in
21 the statement that this site-specific advisory board
22 is not for the purpose of usurping or otherwise
23 reducing the responsibilities that those local
24 governmental organizations have vis-a-vis land,
25 property and activities in that community because that

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1 was a concern raised.

2 COMMISSIONER REMICK: Don, let's take the
3 case that you were talking about earlier I think with
4 Commissioner Rogers where you have a nuclear plant
5 that they may wish to continue to use the site for
6 some other purpose, gas-fired or whatever, and in
7 doing that they go the restricted decommissioning
8 route. Would you see such an advisory board being
9 involved in that case also?

10 DOCTOR COOL: Yes.

11 COMMISSIONER REMICK: What would be their
12 function in that case where they're going to continue
13 to generate electricity with a power plant on the site
14 and so forth. What type of advice would an advisory
15 board be providing to the utility in that particular
16 case? Let's say they have a large land holding, a lot
17 of other equipment or facilities there.

18 DOCTOR COOL: They would still be
19 providing advice of the local government, local
20 citizens groups perspective on the use of that
21 property, the continued use. They might particularly
22 be interested in whether the restriction simply
23 remains corporate ownership versus the application of
24 a particular zoning or deed restriction in order to
25 assure that in another ten or 15 or 30 years when that

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1 particular fuel source needs to be turned over again,
2 that whatever restrictions they might wish to have
3 there might continue past that particular set of
4 corporate memories. So, I would envision them still
5 being able to provide some very useful advice on the
6 exact method to reach that particular goal even if
7 everyone was in agreement from the very beginning.
8 We've already got this land committed. We've already
9 got all of the right of ways, all of this kind of
10 equipment. People might, in fact, all be agreed at
11 the very beginning that that was an appropriate thing
12 to do, but the details of how to do that would still
13 be subject. Of course it's equally possible that
14 there will be folks who might disagree with that
15 approach and this would be a forum for getting that
16 out on the table, which the licensee would then have
17 to address.

18 COMMISSIONER REMICK: Yes. I applaud it
19 from a communications standpoint. I can see some
20 difficulties with perhaps in the case of utilities, or
21 let's take another example. A very large university
22 has a research reactor in the middle of its multi-
23 thousand acre campus, privately owned, and they plan
24 to decommission that. I'm not quite sure whether an
25 advisory board in that case -- in fact, there probably

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1 would be some reluctance in some cases because
2 universities tend to be doing all kinds of things with
3 buildings and facilities, non-nuclear, all the time.
4 Rightfully or wrongfully, they'll necessarily have the
5 local planning boards and so forth directly involved
6 in those things. These facilities might have existed
7 for hundreds of years. Are we imposing something here
8 that we're not quite sure what we're imposing?

9 DOCTOR COOL: I don't believe so. The
10 site-specific advisory board, as we had laid it out,
11 was to involve those interests that would be affected.
12 In the particular case that you're talking about where
13 you had a large university, one of the key interests
14 is the university and their ability to have
15 flexibility and multiple uses and that would, I would
16 hope, be one of the particular views that would have
17 to be reflected. If in that particular case the local
18 town planning council as a general practice doesn't
19 involve themselves with the details, they might choose
20 not to participate as not feeling it was necessary.
21 This would not drive them one direction or the other.

22 COMMISSIONER REMICK: I would suggest
23 you're getting into some touchy legal areas because
24 there are some big differences sometimes between large
25 institutions like that with large land holdings that

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1 have existed for many, many years and are constantly
2 building buildings or tearing down buildings or
3 building research facilities and so forth and don't
4 necessarily, as I say rightfully or wrongfully,
5 involve local government and local planners and so
6 forth and very strong views on some of those issues.

7 MR. CAMERON: Every situation is going to
8 have to be treated differently. You may not have to
9 depend on local government controls in some cases.
10 The idea is to get advice to the licensee on what
11 controls might be reasonable and appropriate and
12 enforceable, even private controls in terms of deed
13 restrictions or some other type of contractual
14 arrangement. So, it has to be tailored to the
15 particular situation.

16 COMMISSIONER REMICK: But it is a
17 requirement to have the board. I mean with no
18 exceptions, as I read it. What I'm getting at, some
19 of these are state institutions and so forth and we
20 have to be very careful, I think, what we're imposing
21 in some cases. I just wonder how adequately we've
22 thought that out.

23 MR. TAYLOR: We might emphasize that for
24 comment. It is meant to be fairly flexible.

25 COMMISSIONER REMICK: And I'm not against

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1 the concept. I could just see some potential
2 difficulties under certain circumstances where there
3 are already legal battles on the taxable status of
4 institutions and things like that, which have been
5 ongoing for years. So, there's very carefully on what
6 rights one gives up.

7 MR. CAMERON: It is an advisory board to
8 the licensee and the recommendations that are made,
9 the advice that is given, one of the requirements that
10 those will have to be judged by is the very legality
11 of being able to impose that type of restriction. So,
12 that's going to have to be looked at in each
13 particular case.

14 COMMISSIONER REMICK: I guess I don't
15 quite understand that because it's going to be a
16 requirement, right? It's going to be part of our
17 rule. But they have --

18 DOCTOR COOL: It would be a requirement
19 for a group to provide advice. If part of the advice
20 was an exploration and decision on whether or not
21 certain things could legally be applied or not, that
22 would still, I think in our view, have been advice and
23 we had intended to be flexible enough that the group,
24 the board would address whatever issues had to be
25 present in that particular circumstance without

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1 directing them to any particular conclusion or even
2 necessarily, I guess, any particular defined or
3 predefined composition.

4 MR. CAMERON: That's right.

5 MR. WEBER: One other thing I might
6 mention and that is the staff has been contemplating
7 holding some sort of workshop during the comment
8 period on a variety of topics, one of which is the
9 site-specific advisory board. It might be just this
10 kind of issue that would come out in that kind of
11 forum and would be discussed.

12 COMMISSIONER REMICK: Yes. I'd suggest
13 that we request comments on it specifically.

14 DOCTOR COOL: That's certainly something
15 that can be added.

16 (Slide) Just to finish up very quickly my
17 part of the briefing, slide 12 simply indicated the
18 supporting documents which are a part of the package
19 or will shortly be part of the package in terms of the
20 draft generic environmental impact statement and the
21 regulatory analysis, the regulatory guide which should
22 be put together in a form that can be sent up to your
23 shortly.

24 (Slide) To conclude, to hand off the
25 baton, we have worked very closely with EPA, which is

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1 slide 13. We received formal comments from them and
2 worked very hard at attempting to resolve those
3 comments with them over the last few weeks so that the
4 package that you have in front of you is something
5 which is responsive to EPA comments. Those have been
6 addressed and I will let Gene Durman of EPA walk you
7 through what the EPA rule is. I believe that will
8 illustrate to you that in terms of concepts our
9 proposal in front of you and their proposal they're
10 currently considering are very close.

11 Gene?

12 COMMISSIONER REMICK: Can we separate out
13 the two presentations?

14 CHAIRMAN SELIN: Well, if we have
15 questions that really are not illuminated by the
16 comparison between the NRC and EPA rule, this would
17 probably be a good time to ask them.

18 COMMISSIONER REMICK: All right. Do you
19 have any, Ken? I have a couple.

20 Don, in Part 61 where we're using the 25
21 millirem per year, if we were to calculate the risk,
22 what risk coefficient would be use? The NRC now.

23 DOCTOR COOL: Today? 5×10^{-4} per rem.

24 COMMISSIONER REMICK: Okay. Now, with the
25 proposed 15 total effective dose equivalent that we're

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1 talking about here, what cancer risk coefficient would
2 we use with that?

3 DOCTOR COOL: That was using the 5×10^{-4} .

4 COMMISSIONER REMICK: And how can 15 be
5 different than 25? Both come up with the same risk.

6 DOCTOR COOL: Because when I answered your
7 first question you asked me if I were to calculate the
8 risk of that 25 today and I gave you the answer with
9 the number I would use today. At the time that was
10 put in place, 2×10^{-4} was used.

11 COMMISSIONER REMICK: But I mean if we
12 were now or tomorrow or when this Part 20 is revised
13 in using the 15 and the 25 in the two parts of our
14 regulations, wouldn't we use 5×10^{-4} in NRC in both
15 cases, in estimating the cancer risk?

16 DOCTOR COOL: Yes.

17 COMMISSIONER REMICK: But 15 millirem
18 whole body and -- excuse me, 15 millirem total
19 effective dose equivalent and 25 millirem whole body
20 end up with the same risk to the individual -- excuse
21 me, they don't end up with the same. Excuse me. I'm
22 sorry. They don't end up with the same risk. How can
23 they be the same? That's what I'm trying to say.

24 DOCTOR COOL: What I was trying to imply
25 was that under the old coefficient that was in place

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1 at the time the 25/75 standard was used, and using
2 that coefficient with that standard and using the 15
3 with the new standard you end up with an equivalency
4 of risk. Now, if I were today to go back and say,
5 "What does 25 mean today?" and use today's
6 coefficient, yes I would end up with a different
7 number. What you see really in essence is the changes
8 we begin to look at regulations and whether or not we
9 need/want to move to the total effective dose
10 equivalent system for consistency with where we have
11 gone with the revision of Part 20.

12 COMMISSIONER REMICK: But all of our doses
13 back at that time used a different risk coefficient
14 than we use today.

15 DOCTOR COOL: That's correct.

16 COMMISSIONER REMICK: We haven't changed
17 other things because of that. We didn't change 500 to
18 100 because of the risk coefficient change
19 necessarily.

20 DOCTOR COOL: Not as a sole reason. But
21 on the other hand, I will argue that it is responsive
22 to that same change in direction.

23 COMMISSIONER REMICK: No, I agree there's
24 a relationship. I just have difficulty putting much
25 faith in the argument the reason that we picked 15,

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1 it's the same as the risk from 25 millirem. I
2 understand what you're saying, but it's the first
3 we've used that argument for setting a dose.

4 DOCTOR COOL: Yes, perhaps it is. This is
5 also the first time in quite awhile where we have gone
6 out and defined a limitation value, a fractionated
7 limitation value for a particular source. This is the
8 first one that we've got since the revision of Part 20
9 and the move to total effective dose equivalent. So,
10 I guess I might argue back this is the first shot
11 we've had at one.

12 COMMISSIONER REMICK: Yes, but today we
13 would use 5×10^{-4} on either Part 61 or this revision in
14 Part 20. They end up with different risks. Yet we're
15 using that argument for setting 15 because it's the
16 same as the risk was in Part 61 back some time ago
17 before the risk coefficient was changed.

18 MR. WEBER: If I could interject.

19 COMMISSIONER REMICK: Yes, please.

20 DOCTOR COOL: Go ahead.

21 MR. WEBER: One of the complexities we're
22 dealing with here is that the bases for regulations
23 change through time. Part 61 was not a risk-based
24 regulation at the time. It took into account things
25 like background radiation. It took into account then

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1 existing 40 CFR 190, a variety of considerations,
2 technology available for safe waste disposal and
3 certainly the comparison of the dose to what's
4 naturally out there. So, it's not in a similar way as
5 we have today in the decommissioning criteria
6 structured in the same way. Therefore, if you look at
7 today the general performance objective in 61.41 and
8 you calculate a risk, you would certainly have to
9 consider what would the ramifications be if that
10 number were changed to reflect today's risk
11 coefficients prior to making that decision. We're
12 well aware the Commission historically has expressed
13 concern about the potential impact on disposal
14 operations, the development of new disposal facilities
15 driven by changes in Part 61.

16 DOCTOR COOL: What we've attempted to do
17 was maintain the level of risk implied by the
18 regulations, updated for the science available today.
19 The other thing that perhaps I should mention,
20 something which has been ongoing and which, in fact,
21 a Commission paper should be up to you shortly
22 describing its status, is at Commission direction
23 we're going back and looking at all the exemptions in
24 general, the licenses that are present regulations,
25 again looking for consistency with this updated

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1 methodology. So, we're in the process of looking at
2 a number of other ones.

3 COMMISSIONER REMICK: Are we looking at
4 61?

5 DOCTOR COOL: I don't have the entire list
6 in front of me. I can't answer that question.

7 COMMISSIONER REMICK: Okay. You make a
8 statement that the 15 millirem per year is equivalent
9 to a lifetime risk of 3×10^{-4} . What fatal cancer
10 coefficient did you use and what lifetime did you
11 assume in coming to that conclusion?

12 DOCTOR COOL: 5×10^{-4} and 30 years
13 consistent with the EPA calculation in Superfund.

14 COMMISSIONER REMICK: And everything I see
15 in the GEIS is 70 years.

16 DOCTOR COOL: And if you do it for 70
17 years you end up with something on the order of 4 or
18 $4 \frac{1}{2} \times 10^{-4}$ lifetime risk.

19 COMMISSIONER REMICK: So, you did use 30
20 years? You did use --

21 DOCTOR COOL: We looked at both numbers.
22 You can do about four or five different calculations
23 if you do the multi-variate on the parameters. In
24 fact, that's one of the reasons perhaps that you would
25 argue that you don't start with a particular risk

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1 number and then try to drive yourself in a methodical
2 straight line fashion back to a particular dose. I
3 used the 30 year calculation number today for
4 consistency with the way in which EPA has put together
5 their package. But, yes, I can do it 30 years, 70
6 years, and run the little calculator through and
7 generate you a whole list of possibilities, depending
8 on what you're going to assume about how long people
9 are around, where they are, are they living their
10 entire lives there.

11 COMMISSIONER REMICK: Yes. I come close
12 to agreeing with your figure. I get 2.3×10^{-4} using
13 the numbers you indicated. I had great trouble using
14 70 years and even using the EPA 3.92×10^{-4} risk
15 coefficient. I did not know you were using 30 years
16 which I think is more appropriate. That gets me into
17 the GEIS which I haven't had an opportunity to fully
18 absorb, but I see we're assuming people working 70
19 years at a site, people living at a decommissioned
20 site for 70 years and I think that's inconsistent with
21 the average member of the critical group. I see some
22 problems with the GEIS from that standpoint, but I
23 don't want to get into the GEIS. I'll just point that
24 out.

25 One other thing for the staff. Your scope

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1 talks rightfully about decommissioning, but one of
2 your proposals is that applicants for a new license
3 address how they're going to minimize contaminated
4 material. The scope anywhere that I could find does
5 not mention that and I think for consistency there
6 probably ought to be some words in there because the
7 scope of this rule is broader than apparently was
8 initially written.

9 DOCTOR COOL: We could certainly take a
10 look at that.

11 COMMISSIONER REMICK: Yes. I could not
12 find anything under scope that mentioned it, within
13 the scope that mentioned that.

14 COMMISSIONER de PLANQUE: I have one
15 question. I'm still bothered by the financial
16 assurance question. Maybe I'm bothered by it because
17 I don't understand it. Can you give me an example of
18 what you might consider typical?

19 DOCTOR COOL: For example, a site where
20 the restrictions include putting a fence around it so
21 that people can't gain access and live on it and start
22 farming and what not. You therefore want to know
23 every so often, every year or so, you want someone to
24 go up and check the integrity of the fence to make
25 sure that nobody has hopped the fence and is squatting

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1 on the land. Our friends in the State of Tennessee,
2 in fact, had such a case, which is why I mention it.
3 So, you want to have enough of an escrow that once a
4 year somebody can drive out there, drive around, check
5 the integrity and see what's going on, perhaps do a
6 little bit more than that. So, you can figure out the
7 cost of a man day or a couple of man days worth of
8 time to go out and examine, make sure that everything
9 is still in place, see that the signs are still there,
10 haven't been faded and that sort of thing. You could
11 project that out fairly easily in terms of how big an
12 account I've got to have in the bank to pay his salary
13 to go out and drive around once.

14 COMMISSIONER de PLANQUE: In this kind of
15 example, how many years would you envision?

16 DOCTOR COOL: Quite a long time, for as
17 long as the restriction was going to be in place. If
18 this is a cobalt site, that might be 50 years. If
19 this is a cesium site, you might want to be able to
20 have that for a couple of hundred years.

21 But when you start doing the financial and
22 you start looking at discount rates, the difference in
23 the amount of money I would set aside to do it over
24 the next 15 or 20 years, and it may be 50 years,
25 versus the amount of money that I would set aside to

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1 cover a longer period of time, there really isn't any
2 because of the discounted worth of money. Once I have
3 set that initial value aside and I'm starting to work
4 on the interest, I've set it aside and it's there. I
5 don't think we would get into the relative
6 probabilities of the banks all closing down and things
7 like that.

8 So, the discount of money fairly rapidly,
9 I think, takes care of long time frame considerations
10 because basically anything over 50 to 100 years or so
11 in the future, your discount rate will have wiped that
12 out.

13 COMMISSIONER de PLANQUE: Okay. Thanks.

14 CHAIRMAN SELIN: I just have one question
15 for you and then I'd like to hear the EPA
16 presentation. What portion of the sites would you
17 expect to be restricted in decommissioning?

18 DOCTOR COOL: I would expect it to be a
19 very small proportion of the site and I would expect
20 a number of those such as utilities to be situations
21 where the net public and environmental harm argues
22 that they reuse the site for continued industrial use,
23 power generation use rather than strictly being driven
24 by whether or not I could remove all of the material.
25 The GEIS basically indicates that that would be

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1 possible.

2 CHAIRMAN SELIN: You mean the reason it
3 would be restricted would be that somebody wanted to
4 use the site for an industrial site anyway?

5 DOCTOR COOL: Yes, where your criteria
6 would be net environmental harm where you'd be doing
7 more harm to completely clean this one up and then go
8 generate a whole brand new one. Probably some tens of
9 sites probably not all that different perhaps from the
10 list you've already got on SDMP. Maybe no more than
11 a 100 or so, but I don't have a specific hard number
12 for you.

13 CHAIRMAN SELIN: But it's quite a small
14 percentage?

15 DOCTOR COOL: Quite a small percentage.
16 We would envision the vast majority of them,
17 recognizing that the vast majority of the licensees
18 when I start counting up licenses on one for one with
19 all my sealed sources, my radiography, well logging,
20 short-lived half lives and medicals --

21 CHAIRMAN SELIN: The point I'm trying to
22 get at is that a case by case approach isn't really
23 that hard to imagine when you --

24 DOCTOR COOL: No. I believe it would be
25 relatively easy to handle in terms of the effort.

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1 CHAIRMAN SELIN: Okay.

2 DOCTOR COOL: And that's one of the
3 reasons of trying to provide a relatively simplified
4 pathway demonstration is that so sealed sources,
5 medicals have a straightforward pathway to closure so
6 that they do not impose a burden either on the
7 licensee in trying to put together a demonstration
8 that's not necessary or upon us in the process of
9 reviewing and approving it.

10 MR. WEBER: I think we should point out
11 too that there's also a smaller subset of the
12 population that may not really fit under this rule.
13 Those will be the sites where they're set aside for
14 waste disposal purposes. The type of considerations
15 that would be applicable there are different than I
16 think we've used in the development of the draft
17 criteria.

18 CHAIRMAN SELIN: Mr. Durman?

19 MR. DURMAN: I'm sorry, I missed the
20 transition. I'm sorry.

21 DOCTOR COOL: We did the handoff.

22 MR. DURMAN: Okay. I thought you were
23 raising a question about the EPA. I'm sorry.
24 Actually what I was thinking was I wanted to just
25 alert you to the fact that the document that you got

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1 several days ago is slightly different in format but
2 not really at all in content from the one that I
3 brought today. I apologize for that slight
4 difference.

5 You've heard Don's discussion of the
6 background of the rule. I won't spend a great deal of
7 time on that. I would like to reiterate that it has
8 been, I think, a unique process of cooperation between
9 the two agencies. It is certainly the case that we
10 haven't been able to work as well on every issue as we
11 have on this one and I think this has been a very good
12 example for the staffs of both groups.

13 In addition to the process that Don has
14 described, EPA did empower a group under its NACEPT,
15 that's the National Advisory Committee on
16 Environmental Policy and Technology, to look
17 specifically at our rule and its various
18 manifestations. We have had three meetings, one by
19 conference call, with this group. They represent
20 industry, academia, states, localities, the attorneys
21 general and it has been a very important source of
22 additional input to our rulemaking.

23 But let me summarize, and I think Don has
24 conveyed the big picture, that these staff drafts are
25 quite similar in terms of the issues they address, the

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1 issues that they're concerned about and, in fact, on
2 the specific decisions that have been made with regard
3 to these issues. We have a public participation
4 process yet to go through, but at this point the
5 drafts are quite similar both in form and in content.

6 (Slide) The goals, slide 1, of our
7 rulemaking were first of all to expedite cleanup of
8 contaminated sites. It had long been recognized that
9 there were many issues to bicker about at these
10 localities and at least one was that there was no
11 target to shoot at for a radiological cleanup. It was
12 felt that if there were some national target, at least
13 this one issue wouldn't have to be as contentious.
14 Thus, trying also to achieve some national consistency
15 and finally allowing the sites to be released for
16 beneficial public use.

17 In terms of the applicability of the
18 standard, it will apply -- is the mike working? I
19 can't quite tell.

20 CHAIRMAN SELIN: Yes.

21 MR. DURMAN: The rule will apply to U.S.
22 federal facilities, DOE and DOD. It will apply to NRC
23 licensees except as you know if we find that the rule
24 that you've proposed is sufficiently protective, in
25 which case we would propose to suspend the

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1 applicability of that rule. The proposed rule would
2 also be used, and this is an important goal, at
3 Superfund sites, not all of which are necessarily DOE.

4 COMMISSIONER ROGERS: Would that include
5 any sites which NRC had already been involved with the
6 radioactivity cleanup?

7 MR. DURMAN: I think that's dealt with on
8 my next page with exemptions. If the site has a
9 signed record of decision, or ROD, before the
10 enactment of our rule, it is not our intent to have it
11 apply to that decision. The rule then would not apply
12 to what amounts to high level disposal of waste. It
13 would not apply to uranium mill tailings. It would
14 not apply to previously cleaned up Superfund sites.

15 COMMISSIONER de PLANQUE: What about low
16 level waste?

17 MR. DURMAN: It's our intent to have low
18 level waste standards pertain specifically to those
19 locations so that they would -- I guess we're trying
20 to exclude the material rather than the site. This
21 rule does not pertain to high level material, but it
22 may pertain -- and what we're looking for is the issue
23 of -- in the case of the low level waste site a
24 situation in which our low level waste rule would
25 apply, but the site itself on which the material had

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1 been removed would be subject to this rule. So,
2 there's be separate -- you have low level waste
3 standards that pertain to the disposal locations. Our
4 rule would pertain basically to where the material was
5 removed from.

6 COMMISSIONER de PLANQUE: Not the disposal
7 site itself?

8 MR. DURMAN: Right.

9 COMMISSIONER de PLANQUE: Okay.

10 MR. DURMAN: In terms of the overall
11 standards, we are proposing a dose limit of 15
12 millirem per year based on 30 years exposure and
13 further proposing that the site not exceed the MCLs
14 proposed under EPA's actions under the Safe Drinking
15 Water Act. Now, we do allow for residential use. As
16 I get into this, there are also other use scenarios
17 that we contemplate.

18 As has been discussed, using our
19 arithmetic 15 millirem pertains to a cancer risk of
20 3×10^{-4} .

21 COMMISSIONER REMICK: Excuse me. Could I
22 ask a question? What risk coefficient and what
23 lifetime was assumed in that calculation?

24 MR. DURMAN: I'm less up to speed on some
25 of the technical details than Don is, but it is the 30

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1 years and EPA's most recent version of the risk
2 coefficient. I can give you the --

3 COMMISSIONER REMICK: Was that 4×10^{-4} or
4 3.92?

5 MR. DURMAN: Yes, I think those are the
6 numbers. I can show you the details of the
7 calculation, if you're interested.

8 COMMISSIONER REMICK: Yes.

9 MR. DURMAN: Some of these things are
10 rounding, so it depends on exactly how people have
11 rounded to come up with the 3×10^{-4} .

12 We will also include as part of the rule
13 guidance to indicate that structures should meet the
14 guidelines of the EPA radon program. We also
15 anticipate providing guidance on work practices that
16 may facilitate cleanups to below this 15 millirem per
17 year standard. Again, this would be as guidance.

18 COMMISSIONER de PLANQUE: Can you go back
19 to the radon guidelines? Is that something that EPA
20 requires because of some other rule or legislation?
21 Why is that one being applied here?

22 MR. DURMAN: First of all, it's not a
23 requirement. It will be issued as guidance. You
24 know, guidance is intended to guide and it's certainly
25 our hope that it would be implied.. I guess the

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1 reason simply is that we believe that the radon
2 pathway should be considered. We also recognize that
3 if you consider it and you have the naturally
4 occurring materials which are found at some of these
5 sites, you may get buildup substantially in excess of
6 15 millirem over relatively short periods of time and
7 we felt it was necessary to provide some guidance to
8 the public and to the people responsible for the
9 cleanup as to how that situation should be dealt with.

10 COMMISSIONER de PLANQUE: Okay. Could yo
11 also just explain your term "work practices?" Is that
12 similar to our ALARA? What exactly is that? I'm not
13 familiar with the terminology.

14 MR. DURMAN: It's a term actually we have
15 introduced for the purposes of this rulemaking. It
16 would probably be fairly close to your good
17 housekeeping practices in concept. It's a series of
18 things that could be done and could be done reasonably
19 which may allow a particular site in particular
20 circumstances to go below 15 millirem, and the classic
21 example is that of sealed sources. You shouldn't bury
22 a sealed source. You shouldn't crush a sealed source.
23 You simply remove a sealed source and presumably,
24 then, if the seal is intact, there should be zero risk
25 associated with that removal. I think there are a

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1 number of practices like that that would achieve
2 something below 15 millirem and we wanted to ensure
3 that where that was possible that it be done.

4 We rely fairly heavily on implementation
5 guidance as part of the rule. We are trying to
6 develop a guidance package to accompany the rule based
7 on, wherever possible, guidance that's already
8 underway within EPA or looking in some cases to the
9 NRC for the work that you've done on structures.
10 Again, we're hoping that the guidance will provide the
11 link between the regulation and how a particular
12 clean-up should be conducted. What you have listed
13 are a number of examples of the sources that we'll be
14 looking to for guidance.

15 I'd note that the site investigation
16 manual that we have underway is a joint effort between
17 ourselves, NRC and DOE, and we think this is one
18 example of an attempt to develop a common technical
19 framework for proceeding in all sites and we think
20 that that would be a very useful effort. As I've
21 noted, we would want to look very closely at the work
22 that the NRC has already put in place with regard to
23 structures. It would be a useful model.

24 We do anticipate three land uses in the
25 rule, and again this reflects to a significant extent

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1 the participation in the NRC's enhanced participatory
2 process. We do of course have as our primary goal
3 release without the necessity to resort to active
4 control measures. We also contemplate that there will
5 be circumstances in which a site would be released
6 with active control measures and we recognize that
7 this is not a clean break between commercial and
8 residential. For instance, if you have an area of
9 high radon or a form of contamination of drinking
10 water, you may have to have some restrictions on the
11 kind and nature of wells that are dug or you may have
12 to have a deed restriction that says that if you're
13 building a new structure you need to provide for some
14 radon mitigation technology as part of that structure.
15 So those would be residential uses that would have
16 some degree of active control measures.

17 We also recognize, and this most clearly
18 arises from the participation with NRC, that there
19 will be instances in which on-site disposal is a very
20 viable option particularly at the complex sites that
21 will be the primary focus of our rule assuming that
22 the NRC rule pertains to its licensees. Hanford, for
23 example, it's unlikely that they will ever do anything
24 to remove everything that's there in some of their
25 storage vessels.

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1 The overall principle with regard to these
2 land use restrictions is that, while the exposure to
3 the site may vary, people would basically face overall
4 the same risk. As I've indicated, our first priority
5 is that sites would be released without active control
6 measures. For example, in the case of the university
7 that Commissioner Remick brought up earlier, we would
8 expect they would be strongly motivated simply to do
9 the extra cleanup so that active control measures
10 would not be necessary, in which case from our point
11 of view I think your rule works similarly. There
12 would be no need for any further participation, even
13 though the site itself was used for commercial or in
14 this case academic purposes. In our view, if you can
15 clean up the site so that you don't have to rely on
16 restricted access to get your 15 millirem, that's to
17 be preferred as an outcome.

18 COMMISSIONER REMICK: I agree, but costs
19 many times can enter in. There might be other
20 academic uses that you can live with higher than 15
21 millirem per year, academic research uses, and cost
22 might be prohibitively high and therefore they might
23 in some cases, I'm thinking particularly in some
24 research reactor applications, there might be
25 difficulties and great costs.

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1 MR. DURMAN: Yes, you're right, and that's
2 why I'm saying it's, for us -- we've worded the
3 distinction as situations with and without active
4 controls to imply that there can be some academic
5 situations that operate without controls, without
6 active controls. There can be some residential
7 situations that operate with them.

8 Obviously, to operate with active controls
9 a site cannot be cleaned up for residential use.
10 You'd be required to implement some active measures,
11 institutional controls, engineered barriers, et
12 cetera, to allow the site to be used. Again, if you
13 cannot or choose not to meet the standard without the
14 use of active controls, you are required to meet a cap
15 should those controls fail, and that is 75 millirem
16 per year and we've had a brief discussion of the logic
17 about how we came to that. We also would have some
18 assurance requirements that the standard is being met
19 on a periodic basis.

20 Now this does not mean necessarily that
21 the original licensee has to come back every X years.
22 It may mean, for example, that they would provide the
23 resources to allow someone else to come back, the new
24 licensee or the local government, to review the site
25 to ensure that the measures taken to restrict the

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1 exposure are in fact in place. Clearly, again, as
2 we've discussed, it could depend on the particular
3 radionuclides, the particular circumstances in terms
4 of the duration of any such effort.

5 With regard to on-site disposal, we view
6 that as primarily a situation of literally creating a
7 low-level waste site. We would assume that low-level
8 waste requirements would apply. The only exception
9 would be, and the reason that we've phrased it then in
10 terms of our waste management rule, is that clearly
11 these sites generally were not intended as disposal
12 facilities when they were created. They were created
13 for some other purpose, proximity to a water supply or
14 some other reason, so that it may be that the
15 requirements that apply to these low-level waste or
16 these on-site disposal locations would have to reflect
17 the fact that you didn't necessarily pick that site
18 from the beginning and you'd have to perhaps consider
19 some trade-offs associated with trucking all the stuff
20 somewhere else to a consciously chosen site as opposed
21 to leaving it there. There may be a risk balancing
22 that results from that that may provide some
23 flexibility with regard to the on-site disposal.
24 Again, it is an issue about which we have not made
25 final decisions and would hope to in the context of

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1 this waste management rule. We see fundamentally it
2 would be a low-level waste facility, disposal
3 facility, and have to meet those kinds of requirements
4 with the possible exception that I've noted.

5 COMMISSIONER de PLANQUE: Just for
6 clarification, the waste management rule that you're
7 referring to is what?

8 MR. DURMAN: As a companion to our clean-
9 up rule, EPA is undertaking with a time lag an effort
10 in the waste management area. I've used a variety of
11 metaphors to describe what we're trying to do, and the
12 one that I've occasionally used and my staff always
13 grimaces when I do is the hot dog. The low-level
14 waste rule is basically the frankfurter and we're
15 providing in the waste management rule the bun that
16 completes the package, which means we're trying to
17 fill in a number of issues that are left unresolved
18 when you look at the low-level waste rule and the
19 clean-up rule. We've been urged to do this from the
20 very beginning.

21 In fact, one of the things we've been
22 criticized for is not doing both of them
23 simultaneously. A lot of people have said that you
24 can't set up a rule that generates these millions of
25 cubic meters of waste that we would anticipate

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1 particularly from the DOE sites unless you know
2 clearly where it's going to go. We recognize that
3 that is a legitimate comment. We're not able to
4 pursue both efforts at once, but we are trying to keep
5 them closely enough linked in time that ultimately
6 there will be pretty clear guidance as to how to deal
7 not only with the sites themselves but the material
8 that comes from the sites.

9 We have been quite concerned with public
10 participation. We have a number of specific instances
11 in which notice to the public and interaction with the
12 public is required and a number of requirements that
13 have been imposed or would be proposed for the clean-
14 up of these sites. You can see the list here. It
15 does include the fact that EPA must be informed, the
16 local governments, and that includes the tribes,
17 public notice in the newspaper, what amounts to a
18 site-specific docket, and the requirement obviously to
19 respond to comments that arise from this set of
20 circumstances.

21 We in particular are concerned that our
22 public participation requirements be consistent with
23 but not add to the burden of those associated with our
24 CERCLA reauthorization process, but we also recognize
25 under the Atomic Energy Act that EPA has some

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1 limitations in how much it can require in detail at a
2 particular site. Therefore, the preamble to the rule
3 strongly encourages the use of community groups or
4 similar mechanisms to promote early direct and
5 meaningful public participation. We are trying to
6 structure the guidance so that these groups don't
7 duplicate or supersede broader public involvement such
8 as the community relations under Superfund. And
9 again, following from that, they should only be
10 established where they're really needed and where they
11 add something to the overall process.

12 So we're trying to ensure that community
13 participation occur, but not to add another -- the
14 worst result, from our point of view, would be to have
15 one group of persons empowered under our clean-up rule
16 and another group empowered under CERCLA with
17 overlapping but not completely consistent membership,
18 slightly different requirements, slightly different
19 agenda. That would clearly tie the process in knots
20 rather than facilitate movement in this area, so that
21 is something that we're trying to prevent.

22 We do recognize that there are a number of
23 instances in which public notice and comment should be
24 required. We've summarized a number of those
25 circumstances here. This does articulate more fully

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1 than in other EPA rulemaking where we believe some
2 interaction is necessary: initial determination of
3 intention to remediate, a determination of a preferred
4 land use, any revision of that, intention to finally
5 release the site, any failure of the active control
6 methods, and then the results of the ongoing review
7 process.

8 COMMISSIONER REMICK: Excuse me, Mr.
9 Durman. Are these in a case where there would be
10 restricted use or in all cases?

11 MR. DURMAN: Well, certainly in initial
12 intention to remediate, determination of preferred
13 land use and intention to release they would pertain
14 in all sites.

15 COMMISSIONER REMICK: Even if I just had
16 a sealed source and I wanted to terminate my license?

17 MR. DURMAN: It may simply be a matter of
18 just sending a letter saying, you know, I've removed
19 the sealed source from the site. The short answer is,
20 yes, we do believe that some notice would be desired
21 by the local community.

22 COMMISSIONER REMICK: The local community
23 might not know that I have that license. We're
24 talking about thousands and thousands of licensees
25 here.

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1 CHAIRMAN SELIN: Before we get off on a
2 related part of that, these notice parts are part of
3 the EPA rule. The EPA rule would not apply to the NRC
4 sites.

5 MR. DURMAN: Yes. Assuming that we find -

6 -

7 CHAIRMAN SELIN: Assuming the NRC rule
8 went through as it stood and the EPA rule went through
9 as it stood, then you would find that the NRC rule is
10 effective from a health and safety point of view and
11 therefore not only would the difference between 75 and
12 100 millirem not apply but the notice provisions
13 wouldn't apply either. They would follow the NRC
14 notice provisions.

15 MR. DURMAN: That's correct.

16 COMMISSIONER REMICK: That's if EPA finds
17 NRC rule acceptable, right?

18 MR. DURMAN: Yes. Apropos that, I'd like
19 to summarize the status of EPA/NRC cooperation. I
20 think, as has been indicated, we have developed a
21 close working relationship. I think there's been a
22 lot of work together on the technical bases. There's
23 been, I think, a genuine effort on both sides to
24 understand both the constraints that the two agencies
25 are operating under and the histories that may go to

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1 shape those constraints and the philosophies that
2 underlie a particular approach to the issues.

3 As I've noted, the draft rules are quite
4 similar in approach and protectiveness. I do have to
5 acknowledge that, while we have done a fair amount of
6 initial analysis, the DOE sites are very complicated
7 and we do have a fuller analysis that is being done.
8 Both NRC and EPA are going through their public
9 comment process and it's really as a result of that
10 public comment process that we would be able to make
11 a proposal on the equivalency of the NRC rule.

12 I think that it's important that the
13 agencies continue to work together. I see no reason,
14 based on how well we've worked thus far, that that
15 should not be the case. I think it's going to be
16 important, particularly as we do begin to get the
17 public comment, that we keep each other sort of
18 actively and in real time informed as to if there are
19 any shifts or developments in thinking. It will be
20 essential that there not be a surprise in terms of how
21 that unfolds.

22 Finally, because DOE does not have all of
23 the data on all these sites immediately available in
24 books, it has taken us some time. Also, our SAB is
25 interested in the rule. We anticipate there may be

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1 some delay in our final publishing of the rule. We're
2 looking at something perhaps instead of in the fall
3 probably late in the year or January of the next year,
4 so it will be probably three or four months that it
5 will take us to deal with the additional issues so
6 that we're comfortable with where we stand.

7 Now I'll be glad to answer any questions.

8 CHAIRMAN SELIN: I have two
9 recommendations or two suggestions or two imprecations
10 or two things I really would like you to do, in other
11 words.

12 The first is, rather than refer to a
13 memorandum of understanding, I would hope that the EPA
14 rule would say that so long as the NRC's rule
15 continues to meet -- so long as the NRC rule-- I
16 forget the exact language of the memorandum of
17 understanding, but, so long as the NRC rule provides
18 adequate health and safety, the EPA rule would not
19 apply. In other words, don't refer to the memorandum
20 of understanding, but use the same language in the EPA
21 rule because the memorandum of understanding could be
22 terminated by either party after a while so you don't
23 want a rule which is essentially permanent to be built
24 on a foundation which is not necessarily permanent.
25 So just take the language out of the memorandum of

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1 understanding and put it explicitly in the EPA rule
2 rather than referring to the memorandum of
3 understanding.

4 And the second similar principle on a
5 different case is to make sure your Superfund part is
6 separable, because, if the reauthorization of
7 Superfund changes the standards for Superfund sites,
8 you wouldn't want everything else changed or the whole
9 rule thrown up to question. The way you've written
10 it, it would apply to Superfund sites, but you might
11 be superseded by some explicit standard written into
12 the Superfund authorization and then you wouldn't want
13 those standards to automatically go back -- I wouldn't
14 think you'd want them to go back automatically to the
15 DOE sites or what-have-you.

16 MR. DURMAN: The Superfund is something of
17 a dilemma for us. We don't know where they're going
18 to come out, but obviously most of the sites that are
19 being cleaned up, with the exception of some of the
20 DOD sites, are Superfund and it would ultimately be
21 important not to have one set of things applying to
22 CERCLA and something else applying for rad clean-ups
23 that are non-CERCLA. It's just a dilemma we have.
24 But I hear your concern. It's an issue we've been
25 thinking about.

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1 CHAIRMAN SELIN: Commissioner Rogers?

2 COMMISSIONER ROGERS: I just wanted to say
3 that I think the staff working with EPA together has
4 done an excellent job. I'm really very pleased with
5 the way things have evolved, but I wonder if -- it's
6 not a "but" -- and I wonder if you could give me some
7 assessment of how you think this participatory
8 rulemaking has worked, particularly with the up-front
9 aspects of it, and any examples of specific results
10 that have come out of it you think that might not have
11 occurred had we not proceeded in this way.

12 MR. DURMAN: Are you addressing the
13 question to me or to Don?

14 COMMISSIONER ROGERS: Actually both
15 groups, yes.

16 MR. DURMAN: I think Don has a fairly
17 extended list.

18 I guess as a participant in some of those
19 sessions I believe that the thinking of both agencies
20 was shaped somewhat fundamentally by the interest
21 expressed by a lot of the environmental groups in not
22 simply stripping these sites bare and moving all the
23 stuff somewhere else. Frankly, it had been certainly
24 my expectation and I think NRC also that the public
25 wanted basically everything removed and certainly we

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1 did hear a lot of back to background as a goal, but
2 there was this strong undercurrent of recognition that
3 we didn't really want to create a new dump site by
4 removing the material entirely from the existing site.
5 There were differing motivations as to why that was
6 desired both by industry and by the environmentalists,
7 but it certainly led us to consider unrestricted use
8 for -- I'm sorry, for use with active controls in a
9 way that we hadn't considered before and the
10 possibility of these on-site disposal facilities.
11 Frankly, I don't think either agency has contemplated
12 looking at what amounts to restricted use with active
13 control measures for anything like 1,000 years in the
14 past, so it's somewhat of a leap forward or leap in
15 some direction for both agencies.

16 COMMISSIONER ROGERS: Don?

17 DOCTOR COOL: I think Gene has already hit
18 on a number of the technical things. Really, there
19 were benefits both in the technical detail of how we
20 put together the rule, certainly in terms of the
21 paradigm we went into. We went in with the paradigm
22 of the 1988 decommissioning rule that said
23 unrestricted release, in fine, done, period, and came
24 out of the workshops with an entirely different view
25 of perhaps how the world should operate on a number of

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1 issues. We spent a lot of time going through them
2 where we went in with one particular set of ideas,
3 perhaps from previous experiences, and came out with
4 an altered set, an expanded set.

5 Also from the standpoint of just the
6 benefits that we received from interacting with
7 people, our knowledge and understanding of where they
8 were coming from and why, and the why was maybe more
9 important than exactly the what in some of these
10 cases, has enabled us to actually look at and consider
11 what we were putting down and the rationale behind
12 that, which was extremely important to us in trying to
13 craft something that made sense.

14 In the end a lot of it, when you stand
15 back and look at it retrospectively, makes perfect
16 sense. But it was much more difficult to see it from
17 before. I can't honestly say that we would have seen
18 it from before, but it became illuminated in that
19 process. The contacts and interactions that we had
20 really benefitted us a great deal in terms of being
21 able to bounce ideas, bounce concepts and work those
22 around. The whole two day interactive process was
23 crucial to each one of those workshops.

24 None of you made it to Boston where we
25 succeeded in getting ourselves snowed in a little over

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1 a year ago where we were only able to run one day. It
2 just made an incredible difference in the way the
3 whole workshop went. It was really illustrative of
4 the way that -- the importance of the process and the
5 interactions both at the table and off-table, if you
6 will, the other interactions and viewpoints. I think
7 it was extremely beneficial to us, not that you would
8 necessarily want to use it for every single rule, but
9 I really believe that in total perspective it helped
10 us a great deal in shaping what this package looks
11 like.

12 MR. CAMERON: And one of the things that
13 most of the commenters on the staff draft agreed on
14 was that the enhanced participatory process was a very
15 positive process and should be continued. Although
16 people disagreed with various substantive aspects of
17 the rule, that's one thing where there was a lot of
18 agreement.

19 MR. WEBER: If I could add, one of the
20 things that was brought up a number of times is the
21 sense of cooperation that came through by having both
22 EPA and NRC participate in the workshops. I think
23 both agencies benefitted to some extent because it
24 showed a cooperative effort on the part of the federal
25 government to address this very complex issue.

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1 One other thing is it allowed the agencies
2 to discuss in the open forum the merits of different
3 approaches, for example the Superfund approach.
4 People didn't hold anything back in sharing with us
5 their criticisms and yet it was done in a way that
6 there could be a full exposition of the pros and cons
7 of the different approaches comparing Superfund with
8 the conventional approach we use under the Atomic
9 Energy Act in radiation protection.

10 COMMISSIONER ROGERS: Thank you again.

11 COMMISSIONER REMICK: I agree it's been
12 overall a very, very successful process and I agree
13 there was a difference in the one meeting I went to
14 between the first and second day where some obvious
15 posturing the first day and then second day really
16 interaction amongst people and trying to understand
17 one another.

18 And, like Commissioner Rogers, I really
19 commend both staffs, EPA and NRC, for the job you've
20 done. It's a very difficult one. All one has to do
21 is look at the pile of paper associated with this,
22 which I haven't completely mastered yet, but very
23 difficult task and generally a very good job.

24 I think it's obvious that I still have
25 some concerns of how we arrived at 15 millirem per

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1 year. I must admit I think it's somewhat arbitrary,
2 but these things sometimes are arbitrary. I might
3 just point out that if I take the EPA numbers, as I
4 understand, assuming they use 4×10^{-4} , 15 millirem and
5 30 years, I get something that I round out to about
6 2×10^{-4} lifetime. If I take NRC numbers, I get
7 something that also rounds down to 2.

8 Now, if I wanted to start with something
9 that both of you claim you're doing, a lifetime risk
10 of 3×10^{-4} , and realize I have an old HP calculator but
11 I think it still gives me pretty good numbers, I come
12 up using 5×10^{-4} risk factor or risk coefficient, 30
13 years, 15 millirems, I come up with an annual
14 individual risk of 10^{-5} per year, a nice round number,
15 and a lifetime risk of 3×10^{-4} , a nice round number
16 again, exactly 3.0.

17 Going back to what I asked you before
18 about are your calculations such that the breakpoints
19 are that they point to 15, I think they're broad
20 enough they could very easily point to 20. And I
21 divide 100 millirem by 20, I get five sites. If I
22 divide 100 millirem by 15, I get 6.66 sites of equally
23 15, so somehow it appeals to me a little bit more,
24 round numbers, even numbers and all of that. But I
25 realize there is always some amount of arbitrariness

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1 in determining these numbers, but I think it could
2 have just as well been 20 or 25 or any other. And so,
3 I'm a little uneasy yet about how our justification
4 for arriving at 15.

5 I do also really think it was significant,
6 the two agencies working together. I also greatly
7 appreciate the fact that the staff has hurried to get
8 this proposed rule out before June 30th and I'm very
9 pleased to see that EPA has a draft of their rule
10 back. Six months or so ago when we were talking about
11 this, we weren't quite sure if all of these things
12 could kind of come out at the same time. But I
13 appreciate the effort that has gone into a major
14 project, some very good effort, although, as I say, I
15 have a little bit of uneasiness here and there, but
16 that's perhaps not unexpected.

17 I thank you very much.

18 CHAIRMAN SELIN: Commissioner de Planque?

19 COMMISSIONER de PLANQUE: I probably share
20 some of Commissioner Remick's uneasiness about some
21 detail, and so I'm looking forward to plowing through
22 all of this and seeing the rest of the material that's
23 coming up and maybe that will ease my concern.

24 But I also want to congratulate you on an
25 excellent process that you've gone through and

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1 especially the cooperation with the EPA and the
2 workshops. I think it's been an excellent job.

3 I'd like to thank Mr. Durman for coming
4 today too. It's been very helpful to hear your point
5 of view, so I thank you.

6 CHAIRMAN SELIN: First of all, I'm not
7 that uneasy about the detail. You're in the right
8 ball park. We have to set some numbers. I'm sure it
9 will be a set that the Commission and the staff and
10 the EPA will be comfortable with. I realize that by
11 having three approaches, anybody criticizes one you
12 can always say the other two led us irrevocably to 15.
13 I mean, I don't think that's so central.

14 To me the most important point was the
15 remark Mr. Durman made, which is that if the NRC rule
16 goes through more or less the way it stands and the
17 EPA rule goes through more or less as it stands EPA
18 would find that the NRC rule provides protection to
19 public health and safety that would not be
20 significantly improved through the EPA rule. Then we
21 wouldn't be faced with what we have been worried about
22 for a number of years, which is in a site
23 decommissioning management plan that people would be
24 decommissioned and then somebody would come back five
25 years later and say, no, the standard wasn't tough

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1 enough. To me, that's the most important
2 characteristic, that we don't end up -- finality is
3 almost more important than the standard that we set.
4 That approach to finality is really essential.

5 I think you all have done a terrific job,
6 including getting the material up in the month of June
7 as Commissioner Remick and the Commission had asked
8 earlier. So, thank you very much.

9 (Whereupon, at 3:00 p.m., the above-
10 entitled matter was adjourned.)
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DATE OF MEETING: JUNE 6, 1994

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*United States
Nuclear Regulatory Commission*

**RADIOLOGICAL CRITERIA FOR
DECOMMISSIONING:
PROPOSED RULE**

Briefing of the Commission

June 6, 1994

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United States Nuclear Regulatory Commission

Overview

- **Background**
- **Rulemaking concepts**
- **Public Participation**
- **Supporting Documents**
- **EPA Interactions**
- **Future Milestones**



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Background

- **Enhanced opportunities for public involvement**
- **7 Workshops with invited participants representing a wide range of interests**
- **8 Scoping meetings on preparation of Generic Environmental Impact Statement**
- **Cooperation with Environmental Protection Agency**
- **Staff draft criteria released for comment January 28, 1994**
- **94 Comment letters received on staff draft**



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Rulemaking Concepts Overview

- **General Provisions**
- **Decommissioning Objective**
- **Unrestricted Release Provisions**
 - ✓ ***Unrestricted Release Limit***
 - ✓ ***ALARA***
- **Restricted Termination of License Provisions**
- **Public Participation**



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General Provisions

- **Total Effective Dose Equivalent based on maximum within first 1,000 years after decommissioning**
- **ALARA shall include consideration of all significant risks to humans and the environment**
- **Reasonable steps taken to remove all readily removable residual radioactivity**
- **Reasonable expectation that residual radioactivity in any underground source of drinking water will not exceed limits specified in 40 CFR 141**



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Decommissioning Objective

- **The objective of decommissioning is to reduce residual radioactivity in structures, materials, soils, groundwater, and other media to levels which are indistinguishable from background**



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Unrestricted Termination of License

- **A site will be considered acceptable for release for unrestricted use if**
 - ✓ ***The Total Effective Dose Equivalent to the Critical Group does not exceed 15 mrem/year***
 - ✓ ***Residual radioactivity is as low as is reasonably achievable below the limit***



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ALARA

- **ALARA considerations are to include all significant risks to humans and the environment resulting from the decommissioning process**
- **Licensees are to demonstrate why further reductions below the limit are not reasonably achievable**
- **Depending on the site-specific ALARA analysis, any dose level less than or equal to 15 mrem/yr may be considered ALARA**
- **Guidance to be provided to licensees on the level of documentation necessary to demonstrate compliance.**



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Restricted Termination of License

- **Restricted termination acceptable if further reductions in residual radioactivity are not technically achievable, would be prohibitively expensive, or would result in net public or environmental harm**
- **Residual radioactivity at the site must have been reduced, and institutional controls imposed, so that the Total Effective Dose Equivalent to the Critical Group is less than 15 mrem/year.**
- **The Total Effective Dose Equivalent to the Critical Group, if the institutional controls failed, shall be ALARA and shall not exceed 100 mrem/year**
- **The Licensee shall provide sufficient financial assurance to support any necessary continuing oversight activities after license termination**



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Public Participation

- **The Commission will publish a notice and opportunity for comment:**
 - ✓ ***Upon the receipt of a decommissioning plan from the licensee***
 - ✓ ***Upon a proposal by the licensee for restricted release***
 - ✓ ***When deemed by the Commission to be in the public interest***
- **Notice would be published in a forum, such as local newspapers, which is readily accessible to individuals in the vicinity of the site**
- **The licensee shall establish a Site Specific Advisory Board to provide advice for decommissioning if the objective is other than unrestricted release of the facility**



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Site Specific Advisory Board

- **SSAB to provide advice to licensee on issues associated with restricted release**
- **SSAB recommendations to be addressed in licensee's decommissioning plan**
- **SSAB membership to reflect full range of interests in affected community and region and consist of approximately 10 members**
- **Licensee responsible for establishing the SSAB and the administrative support**
- **SSAB meetings open to the public, with all records generated becoming part of the docket**



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Supporting Documents

- **Draft Generic Environmental Impact Statement**
- **Draft Regulatory Analysis**
- **Staff Draft Regulatory Guide (NUREG-1500)**



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EPA Interactions

- **Extensively discussed rulemaking concepts, rule text, and supporting technical assessments with EPA**
- **Formal written comments received from EPA are addressed in proposed rule**
- **EPA supportive of rulemaking approach**
- **EPA draft rule similar in concepts to NRC proposed rule**

EPA Radiation Site Cleanup Regulation



**Presentation to the
Nuclear Regulatory Commission
June 6, 1994**

Goals

- **Goals of the Proposed Radiation Site Cleanup Rule:**

- 1. Expedite cleanup of contaminated sites**
- 2. Clean up sites using a consistent standard**
- 3. Allow sites to be released for beneficial public use**

Applicability of Draft Proposed Rule

The rule will apply to:

- **U.S. Federal Facilities (i.e., DOE, DOD)**
- **Proposed rule would also be used at Superfund sites**

Applicability of Draft Proposed Rule (cont'd)

- **Nuclear Regulatory Commission (NRC) licensees**
 - **Memorandum of Understanding governs the development of proposed rules that may affect NRC licensees**

Exemptions

The draft proposed rule will not apply to:

- **U.S. facilities used for the management and disposal of spent nuclear fuel, high-level and transuranic wastes**
- **Uranium mill tailings piles**
- **Previously cleaned up Superfund sites**

Overall Site Risk Standards

- **Dose limit of 15 mrem/year above natural background levels over 30 years of exposure and ground water not to exceed the Maximum Contaminants Levels (MCLs) specified under the Safe Drinking Water Act**
- **15 mrem/year corresponds to a lifetime excess cancer risk level of 3×10^{-4}**

Overall Site Risk Standards (cont'd)

- **Guidance will be developed stipulating that all existing and future structures meet the guidelines of the EPA Radon Program (i.e., 4 pCi/L)**
- **Existing and future guidance will indicate "work practices" that will facilitate cleanups on a consistent basis lower than 15 mrem/year**

Implementation Guidance

- **Preamble references existing and future guidance documents that are currently under development.**
- **The guidances will facilitate site cleanups on a consistent basis that are even more protective than those mandated by the rule.**

Land Use

- **Three anticipated land uses:**

- 1. Released without active control measures**

- 2. Released with active control measures**

- 3. On Site Disposal (covered in Waste Management Rule)**

Land Use (cont'd)

- **Radionuclide concentrations may vary from site to site but the risk to people living and working near the site will not, since the dose limit will be the same.**

Land Use (cont'd)

1. Released without Active Control Measures

- **As a first priority, sites should be cleaned up for use without active control measures to ensure that individuals located at a released site are not exposed to radioactive materials at levels in excess of 15 mrem/year.**

Land Use (cont'd)

2. Released with Active Control Measures

- If a site cannot be cleaned up for residential use, the site owner will be required to implement active control measures (e.g., institutional controls, engineered barriers) in order to allow the site to be used.

Land Use (cont'd)

The following provisions apply if active control measures are used at sites cleaned up for residential or commercial use:

- **A dose limit of 75 mrem/year may not be exceeded in the event that all active control measures fail.**
- **Assurance requirement to reevaluate sites every X years**

Land Use (cont'd)

3. On Site Disposal

- **Requirements of the radioactive waste management rule must be met.**

Public Participation

- **Preamble to the rule strongly encourages the use of community groups or similar mechanisms to promote early, direct, and meaningful public participation.**
- **Community groups should complement not duplicate or supersede broader public involvement activities such as community relations under Superfund.**

Public Participation (cont'd)

- **Six instances when public notice and comment are required:**
 - **Initial intention to remediate**
 - **Determination of preferred land use**
 - **Revision to preferred land use**

Public Participation (cont'd)

- **Intention to release**
- **Failure of active control measures**
- **Results of X year review**

NRC-EPA Cooperation

- **Staffs have developed close working relationship**
- **Draft rules are similar in approach and protectiveness**
- **Final judgement will reflect public comment received by NRC/EPA**