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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

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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

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

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

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

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

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

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

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

Doctor Cool, will you begin the presentation?

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

COMMISSIONER REMICK: I see. Okay.

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

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

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

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

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

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

COMMISSIONER REMICK: Oh.

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

COMMISSIONER REMICK: The one Mike answered.

DOCTOR COOL: Okay.

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

MR. WEBER: That's correct.

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

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

COMMISSIONER REMICK: Okay. Thank you.

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

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

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

DOCTOR COOL: It goes beyond that.

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

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

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

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

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

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

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

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

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

COMMISSIONER de PLANQUE: Okay.

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

COMMISSIONER de PLANQUE: I will.

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

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

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

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

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

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

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

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

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

MR. TAYLOR: Soon, yes.

DOCTOR COOL: Yes.

COMMISSIONER REMICK: Okay.

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

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

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

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

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

Now, the 15 millirem per year is also roughly equivalent to the order of magnitude at least that we were trying to achieve in terms of a 10^{-4}. It comes out if you do -- I believe it's in Mr. Durman's presentation. The 15 millirem per year is a $3x10^{-4}$ risk when you do the mathematics out as they do it under the Superfund Program. So, we make no claim that we have hit $1x10^{-4}$, but it is in that same vicinity and was established on a whole series of bases, looking at both consistency with other regulatory approaches, consistency with the international recommendations.

COMMISSIONER REMICK: Of course, life time

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

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

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

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

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

COMMISSIONER REMICK: All right.

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

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

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

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

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

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

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

COMMISSIONER REMICK: But what bearing

does that have on this issue?

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

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

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

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

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

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

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

COMMISSIONER de PLANQUE: They're easy, yes.

DOCTOR COOL: They're relatively easy.

COMMISSIONER de PLANQUE: Right.

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

at, that or a little bit more.

COMMISSIONER de PLANQUE: Okay.

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

COMMISSIONER de PLANQUE: Well --

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

DOCTOR COOL: I think that's accurate.

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

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

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

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

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

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

Our objective would be that a year from

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

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

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

COMMISSIONER de PLANQUE: Okay.

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

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

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

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

COMMISSIONER REMICK: Okay.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

COMMISSIONER REMICK: Yes.

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

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

COMMISSIONER REMICK: Yes. I understand.

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

DOCTOR COOL: Yes, they certainly could.

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

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

them to take that into account in preparing their proposal.

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

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

DOCTOR COOL: Yes.

COMMISSIONER ROGERS: That would be possible?

DOCTOR COOL: Yes. Perhaps even likely.

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

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

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

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

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

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

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

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

COMMISSIONER de PLANQUE: A thousand years?

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

was a concern raised.

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

DOCTOR COOL: Yes.

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

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

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

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

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

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

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

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

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

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

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

COMMISSIONER REMICK: And I'm not against

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

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

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

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

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

MR. CAMERON: That's right.

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

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

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

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

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

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

Gene?

COMMISSIONER REMICK: Can we separate out the two presentations?

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

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

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

DOCTOR COOL: Today? $5x10^{-4}$ per rem.

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

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

DOCTOR COOL: That was using the $5x10^{-4}$.

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

DOCTOR COOL: Because when I answered your first question you asked me if I were to calculate the risk of that 25 today and I gave you the answer with the number I would use today. At the time that was put in place, $2x10^{-4}$ was used.

COMMISSIONER REMICK: But I mean if we were now or tomorrow or when this Part 20 is revised in using the 15 and the 25 in the two parts of our regulations, wouldn't we use $5x10^{-4}$ in NRC in both cases, in estimating the cancer risk?

DOCTOR COOL: Yes.

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

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

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

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

DOCTOR COOL: That's correct.

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

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

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

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

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

COMMISSIONER REMICK: Yes, but today we would use $5x10^{-4}$ on either Part 61 or this revision in Part 20. They end up with different risks. Yet we're using that argument for setting 15 because it's the same as the risk was in Part 61 back some time ago before the risk coefficient was changed.

MR. WEBER: If I could interject.

COMMISSIONER REMICK: Yes, please.

DOCTOR COOL: Go ahead.

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

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

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

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

COMMISSIONER REMICK: Are we looking at 61?

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

COMMISSIONER REMICK: Okay. You make a statement that the 15 millirem per year is equivalent to a lifetime risk of $3x10^{-4}$. What fatal cancer coefficient did you use and what lifetime did you assume in coming to that conclusion?

DOCTOR COOL: $5x10^{-4}$ and 30 years consistent with the EPA calculation in Superfund.

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

DOCTOR COOL: And if you do it for 70 years you end up with something on the order of 4 or 4 $1/2x10^{-4}$ lifetime risk.

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

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

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

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

One other thing for the staff. Your scope

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

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

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

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

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

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

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

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

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

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

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

COMMISSIONER de PLANQUE: Okay. Thanks.

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

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

possible.

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

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

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

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

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

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

CHAIRMAN SELIN: Okay.

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

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

CHAIRMAN SELIN: Mr. Durman?

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

DOCTOR COOL: We did the handoff.

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

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

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

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

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

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

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

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

CHAIRMAN SELIN: Yes.

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

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

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

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

COMMISSIONER de PLANQUE: What about low level waste?

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

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

COMMISSIONER de PLANQUE: Not the disposal site itself?

MR. DURMAN: Right.

COMMISSIONER de PLANQUE: Okay.

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

As has been discussed, using our arithmetic 15 millirem pertains to a cancer risk of $3x10^{-4}$.

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

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

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

COMMISSIONER REMICK: Was that $4x10^{-4}$ or 3.92?

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

COMMISSIONER REMICK: Yes.

MR. DURMAN: Some of these things are rounding, so it depends on exactly how people have rounded to come up with the $3x10^{-4}$.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

MR. DURMAN: That's correct.

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

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

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

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

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

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

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

Now I'll be glad to answer any questions.

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

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

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

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

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

CHAIRMAN SELIN: Commissioner Rogers?

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

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

COMMISSIONER ROGERS: Actually both groups, yes.

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

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

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

COMMISSIONER ROGERS: Don?

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

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

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

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

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

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

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

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

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

COMMISSIONER ROGERS: Thank you again.

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

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

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

year. I must admit I think it's somewhat arbitrary, but these things sometimes are arbitrary. I might just point out that if I take the EPA numbers, as I understand, assuming they use $4x10^{-4}$, 15 millirem and 30 years, I get something that I round out to about $2x10^{-4}$ lifetime. If I take NRC numbers, I get something that also rounds down to 2.

Now, if I wanted to start with something that both of you claim you're doing, a lifetime risk of $3x10^{-4}$, and realize I have an old HP calculator but I think it still gives me pretty good numbers, I come up using $5x10^{-4}$ risk factor or risk coefficient, 30 years, 15 millirems, I come up with an annual individual risk of 10^{-5} per year, a nice round number, and a lifetime risk of $3x10^{-4}$, a nice round number again, exactly 3.0.

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

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

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

I thank you very much.

CHAIRMAN SELIN: Commissioner de Planque?

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

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

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

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

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

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

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

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

(Whereupon, at 3:00 p.m., the above-entitled matter was adjourned.)

CERTIFICATE OF TRANSCRIBER

This is to certify that the attached events of a meeting of the United States Nuclear Regulatory Commission entitled:

TITLE OF MEETING: BRIEFING ON PROPOSED RULE ON RADIOLOGICAL CRITERIA FOR DECOMMISSIONING

PLACE OF MEETING: ROCKVILLE, MARYLAND

DATE OF MEETING: JUNE 6, 1994

were transcribed by me. I further certify that said transcription is accurate and complete, to the best of my ability, and that the transcript is a true and accurate record of the foregoing events.

Carol Lynch

Reporter's name: Peter Lynch

United States
Nuclear Regulatory Commission

RADIOLOGICAL CRITERIA FOR DECOMMISSIONING:
PROPOSED RULE

Briefing of the Commission

June 6, 1994

Dr. Donald A. Cool
Radiation Protection and Health Effects Branch
Office of Nuclear Regulatory Research

Overview

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

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

Rulemaking Concepts Overview

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

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

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

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*

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.

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

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

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

Supporting Documents

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

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

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:**

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  2. Released with active control measures

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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)

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