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BRIEFING BY ADVISORY COMMITTEE
ON NUCLEAR WASTE

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PUBLIC MEETING

Nuclear Regulatory Commission
One White Flint North
Rockville, Maryland

Wednesday, February 21, 1990

The Commission met in open session, pursuant to notice, at 2:00 p.m., Kenneth M. Carr, Chairman, presiding.

COMMISSIONERS PRESENT:

KENNETH M. CARR, Chairman of the Commission
THOMAS M. ROBERTS, Commissioner
KENNETH C. ROGERS, Commissioner
JAMES R. CURTISS, Commissioner

STAFF AND PRESENTERS SEATED AT THE COMMISSION TABLE:

SAMUEL J. CHILK, Secretary

WILLIAM C. PARLER, General Counsel

DADE W. MOELLER, Chairman, ACNW

MARTIN J. STEINDLER, ACNW

WILLIAM J. HINZE, ACNW

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

2:00 p.m.

CHAIRMAN CARR: Good afternoon, ladies and gentlemen.

The purpose of today's meeting is to hear from members of the Advisory Committee on Nuclear Waste on their activities since we last met in April and July of '89.

Since that time, Doctor Moeller has reported to me on 14 activities undertaken by the Committee. Today's discussion will focus on the implementation of the Environmental Protection Agency's high-level radioactive waste standards, NRC's low-level waste programs and activities, the Commission's policy statement on exemptions from regulatory control, and reports of the Committee's trips to the Department of Energy's West Valley Demonstration Project and the NRC's Center for Nuclear Waste Regulatory Analysis.

Copies of recent ACNW letters related to these topics are available at the entrance to the meeting room.

I'm sure I am joined by my colleagues in expressing regret at the recent resignation of Doctor Clifford Smith from the ACNW. I understand that because of other commitments, Doctor Smith feels he

will no longer be able to devote sufficient time to serve as a member of the Committee. The Commission thanks him for his valuable contributions during the time he served.

Do my fellow Commissioners have any opening comments?

COMMISSIONER ROBERTS: If I can make a suggestion, would it be appropriate for you to memorialize that last statement in writing?

CHAIRMAN CARR: Certainly, I'd be happy to do that.

COMMISSIONER ROBERTS: I would encourage you to do that.

CHAIRMAN CARR: All right. Any other comments?

If there are not, Doctor Moeller, please proceed.

DOCTOR MOELLER: Thank you, Mr. Chairman. With your concurrence, we would like to report on the two trips as our initial two items and then we'll move ahead --

CHAIRMAN CARR: All right.

DOCTOR MOELLER: -- into the others.

The first of our trips was made to West Valley and this was on October the 26th, 1989. As a

result of that meeting, we have gone back and reviewed the letter that we prepared and wrote to you on January the 26th and we believe that the theme or the two major points that were expressed in that letter still apply today.

And that is, the first point was that acceptance criteria for the vitrified high-level waste, including the enumeration or specification of testing procedures to indicate conformance with these criteria, need to be defined by DOE. And I might, in the way of additional words, simply say yes, they are moving ahead with that. These need to be identified by DOE for the waste producers and, in turn, once the criteria are identified, they need to be reviewed by the NRC staff to determine if they're acceptable. As I say, we understand that DOE is moving ahead with the specification of the criteria and we believe that's a good sign and it should move forward.

Then our second conclusion as a result of that meeting was that public health and safety criteria for the cleaned up facility or the decommissioned facility need to be specified. And indeed, you, of course, are moving forward with the staff to develop such criteria.

So, those two items, as I say, still stand

and we believe that they are appropriate.

In terms of the visit itself, we saw several things that we would like to share with you and we learned several things. First of all, as you know, they are passing the supernatant through ion exchange columns and cleaning it up and then they are going to convert the supernatant into a concrete and that will go to a low-level waste burial facility. And then the ion exchange resins in the sludge at the bottom of the tanks will be vitrified and will become high-level waste.

In terms of the removal of the radionuclides from the supernatant, they're doing a very good job on cesium. However, they told us while we were there that the removal of plutonium, which fortunately is in very low concentrations, but at least the resins do not remove the plutonium and they are attempting to improve that portion of the treatment process. They also do not remove the iodine which would be principally iodine 129. So, those -- that was something we learned.

We also learned that the low-level waste disposal facilities there do include more than low-level waste. For example, there are three fuel assemblies buried there. There are two snap devices

with plutonium 238 in them. There are something like five kilograms of plutonium 239 and then there are the solvents which initially, I understand, were buried in containers but have since leaked out. Some of them have leaked out. And, of course, you've been aware of the fact that they're now digging trenches around a site to try to collect the solvent and prevent it running off.

The other item which we noted was that the vitrified waste will still need to be shipped off-site for disposal. And, of course, there is the matter of certification of some type of a shipping cask for those wastes.

I believe other than that, that in a summary would be the highlights of our visit.

If there are no questions, then we'll go to the next item, which is our visit to the Center for Nuclear Waste Regulatory Analyses and Bill Hinze will be covering that.

DOCTOR HINZE: Well, I will attempt to be brief. We have been monitoring the progress of the Center for some time through documents as well as through staff presentations and also the DC representatives of the Center. It was very important for us to go down and to have a direct interface with

the group and to talk to the management down there.

Basically, our visit was divided into three segments. One, listening to the management, both of the Southwest Research Institute and the Center, and listening to researchers discuss several of their current research projects and what they're gearing up to do. And finally, we looked at the laboratory facilities.

In some general overviews of this, it becomes apparent, very apparent that the management, the senior management of the Southwest Research Institute is very much dedicated to serving NRC and to developing a center of excellence in nuclear waste. And they are doing that in terms of not only their managerial skills, but they're putting the infrastructure and apparently the resources of the Southwest Research Institute behind them.

It is also apparent that they're very much in a start-up mode. You know that. They are coming on speed in terms of staff and consultants and that's been of concern to us, the quality of both the staff and the consultants. That's proceeding, sometimes from our viewpoint agonizingly slowly, but nonetheless we are impressed with the quality and I think that's the major point to get across is that they are really

collecting a fine cadre of core people as well as consultants.

As a result of this start-up mode, they are, from our viewpoint, from my viewpoint, looking at it, they are largely involved in developing plans and in the research presentations that were made, except with a few exceptions, they were largely discussions of plans rather than substantive conclusions from those from the research.

I think there are a couple of reasons for that. First of all, I think, in my view, the NRC has identified several of the research areas and also I think it's much easier to get started with research rather than to get involved in the technical assistance which is becoming an important element. I think that they are very keen to become involved in the technical assistance and from talking to the NRC staff, that linkage is developing.

I really think that I speak for the Committee in stating that they've achieved a great deal. Progress is needed and is coming forth. The thrust from the questioning that we had with them and the discussion that we had, the thrust has to become ever more important in terms of the technical assistance. They have a fine history in terms of

material science, performance assessment. They have not had an infrastructure in terms of the geosciences and many of the areas where the technical assistance is needed is in the geoscience area. But that's moving along.

My recommendation is that certainly they be encouraged, they be monitored and particularly as they develop their own research projects, because up to this point they've been really been carrying on research projects that have come out of the NRC research staff. They need to -- we need to monitor them as they get into their own research projects, as they prepare reports in a timely fashion, as they interface with the scientific community and as they perform the various technical assistance.

I guess that would be my quick summary of it.

CHAIRMAN CARR: Any questions?

COMMISSIONER ROGERS: Do you think that they'll be able to maintain the expertise which they're building now into the future so that it will be available to support the necessary activities in light of DOE's current schedule?

DOCTOR HINZE: Well, that's an excellent question and it's something that we had on our mind

when we went down there. What attracts and keeps good scientists and engineers? The senior management, I believe, has the correct attitude in this in that what they're interested in doing is having their people communicate with the rest of the scientific community. In other words, publish papers. This is a very important thing, especially to a younger group. And by and large, their new people are young people and they're really being encouraged to present publications, to publish journal articles. They have excellent laboratory facilities that are coming along, slowly but they're coming along.

I think that that's the kind of thing that will help to retain these people because it's very important, this linkage. I think it's very important, this linkage between the research that's being performed and the technical assistance. There has to be this interfacing back and forth. And so there has to be some stability to that research group so that when the time comes for technical assistance, that it will be there and be sharpened to not only the standards in terms of the CFRs and so forth, but also in terms of the science.

COMMISSIONER ROGERS: Well, it seems to me one of the very difficult challenges that management

there and our management have to deal with in that situation is to be able to define how far the Center can go on new ideas that they generate that come out of the work that they're doing for a very mission-directed project of some sort, that it's important that there be some freedom to explore some of these things and build on the expertise and the new ground that they're breaking just to get the professional benefits that come from having done that. And yet, we know that we can't just let that thing float directly off into the blue either.

So, do you think that they and we have-- are coming to some way to make those determinations? They're very difficult, I think. I would see this very difficult judgment. Judgments have to be made on how far or how much scope they might have to pursue some of these, particularly younger people who want to go off on them. They get a hold of something new and they really want to pursue it to the end. And to what extent we can allow that and to what extent we have to reign it in is a tough problem to deal with in research management.

I wonder what your thoughts are as to how well that's being dealt with or maybe it's not settled yet. It's probably an ongoing, continuing kind of

problem that has to be dealt with.

DOCTOR HINZE: Well, Commissioner Rogers, in speaking to the young people coming on board privately around cups of coffee and back in the corners of the lab, I really sensed that there was high esprit de corps and an enthusiasm, a euphoria almost about getting on with this and neat kinds of projects.

In addition to that, as we are aware, and this was pointed out to us by the management, that a certain proportion of the monies coming in from NRC are put off, and I can't give you that exact number, but there are monies that are set aside for freedom of research and for people to become involved in things that may not fit into the statutes and the licensing problems. And I think that's going to be part and parcel of retaining them.

I think that came through to us, Dade, very nicely.

COMMISSIONER ROGERS: I think that's very important, but it's, again, how to place the proper bounds on it so that it doesn't get out of hand. It's difficult.

DOCTOR HINZE: My own feeling about that was that I -- as we heard the researchers discuss their projects, they always had a preamble in which they

tied this to statutes. I think that's very important for the management to be concerned about the statutes, but I think it's the scientist's job to be concerned with the science and for them to be controlled by the management. I think there's, perhaps, a little overemphasis, but that might have been an attempt to show us that they were really mission-oriented.

COMMISSIONER ROGERS: What are your thoughts on how we're developing mechanisms for coupling the research results into our necessary efforts? They'll be there, but there has to be some kind of a pathway that's maintained all the time to keep those results flowing to where they have to go and there's a receptivity and an interest in them on the part of those recipients of the research results.

DOCTOR HINZE: Well, one of the efforts along that line is for there to be sabbaticals, if you will, of NRC people to the Center. And, as I understand it, also from the Center to the staff. This is the way you can develop those kinds of linkages and that, I think, we will see more of. I think it's something that the Commission should very much encourage.

There is also the concern, and I think this has to be constantly monitored and I'm sure it is by

the NRC staff, that the research that's going on probably be mission-oriented, but that it have some chance of success in a timely fashion with regard to the problems that the NRC staff is facing. Frankly, I see that as one of the major problems in trying to look ahead and say, "All right, we've got this problem in stoichiastic processes of unsaturated flow through fractures." Okay. Now, that's something that's very germane to Yucca Mountain, and I'm not singling that out because I think there's a problem. But are we going to get answers from them in a timely enough fashion to help with the licensing problem with the study plans and those types of things? I think that the monitoring, and in my statements I use that term "monitoring," I think that's an extremely important thing for that to continue.

COMMISSIONER ROGERS: What is your general feeling about the interaction of the NRC staff headquarters with the Center, the modes of interaction, how successful they are, whether there are too many or not enough channels of communication.

DOCTOR MOELLER: Well, I can respond. My impression was that it's going along very well. There are interchanges. Of course, the Center has a representative here. We gathered that certainly

during the first year or two, the planning, the research planning itself has been a joint effort. So, we saw no problems whatsoever in that area.

And back on your question about recruiting and their power or ability to recruit, they are playing up -- those are not the right words, but for the moment they'll portray the meaning, they said they were playing up the fact that this is an NRC center of research excellence and that that has proven to be a very good recruiting tool and that there are many people out there that really see radioactive wastes as a major challenge and they want to make a contribution. So, they're happy to join a team.

DOCTOR HINZE: I would say the major problem there perhaps might be in terms of the geosciences, where there hasn't been a long-standing tradition in those areas by the Southwest Research Institute for many years. Twenty, 30 years ago, they were strong in this area, but what happens is the infrastructure disappears, the libraries disappear. As a researcher, you need those things and you don't want to do it through interlibrary alone. So, there has to be some allowances made there.

COMMISSIONER ROGERS: Just on the library, how do you feel about that? Do you feel the library

resources there are adequate?

DOCTOR HINZE: Not in the geosciences, no.

COMMISSIONER ROGERS: Not in geoscience?

DOCTOR HINZE: No.

COMMISSIONER ROGERS: No.

DOCTOR HINZE: I asked about that and I didn't see the library but I asked about it. My impression was that that's something that they have to build up on. They also pointed out that there were a number of universities in the area, et cetera. But I know from my own experience, if I have to walk a block to the library, I'm not going to get there very often.

COMMISSIONER ROGERS: Presumably, this is a lack of journals--

DOCTOR HINZE: Yes, sir.

COMMISSIONER ROGERS: -- and extending back.

DOCTOR HINZE: Right, right.

COMMISSIONER ROGERS: And a rather expensive thing to try to build because you've got to go and try to get all the back issues to maintain the strength that you need.

Thank you.

COMMISSIONER CURTISS: Let me ask a variant of the question that Commissioner Rogers raised. Did you get the sense when you were down there that even

as early as it is in the process of staffing up and getting going that the Center has a clear sense of what it is that we here at the Commission expect of them and when we expect it? Did the -- maybe I'll ask a related question. If you reflected upon what you saw down there, could you identify what you see in your capacity as overseeing the high-level waste program as maybe the three or four most important deliverables in the next three to five years? What would you identify as the critical features down there?

DOCTOR HINZE: Well, we can both take a try on that.

DOCTOR MOELLER: Sure. Go ahead.

DOCTOR HINZE: I think that they have a long tradition in terms of performance assessment. They have extreme interest in that. It's extremely important to all of us. I think they're going to do a good job there. They're doing a good deal in terms of their staffing. That's going to be a positive aspect of it. I think anything dealing with material sciences, again, is something that they're really well locked into. So that's going to be in the positive area, the containers, this type of thing.

I think the other aspect is that the senior

staff, well, everyone, really understands what it's all about. They understand what is needed. These aren't people that are just off the street. They have good experience in the regulatory process. And so, I think that's on a positive sweep.

COMMISSIONER CURTISS: Okay.

DOCTOR MOELLER: I think at the beginning, of course, they've been dealing mainly with projects where the staff has a specific need. And so, in that sense, perhaps they don't have -- or certainly initially did not have a overall mission or goal quite yet formulated. I believe though they're rapidly doing that. As I say, we came away with a good feeling, good warm feeling, as they say.

COMMISSIONER CURTISS: Okay. One final question. I noticed here from your agenda that you had a chance to talk about the transportation risk study. I don't know how much detail that you got into. I raised that question at earlier meetings and I guess I was curious to hear what your perspective is on activity in that area.

DOCTOR HINZE: Well, we had a short presentation on that and they are looking at the present models and they're trying to improve them. One of the things they pointed out to us is that they

have found an error with the model and I think that speaks week, augers well for the future. They are-- this is another area that they're well organized to start over on and have. That's the one area in which they've really made -- in my view they've made some substantive progress.

DOCTOR MOELLER: And, of course, they were doing this because they had the experience and the talents in that area and I agree with Bill, I think they have made some contributions.

COMMISSIONER CURTISS: Okay.

COMMISSIONER ROGERS: Just one other thought that occurred to me. Part of what they're doing has been to look at all the existing regulations and to look for inconsistencies and what has to be done to satisfy them and to straighten all this out so that we can develop a clear and consistent approach to evaluating a proposal or an application.

What is your opinion of how well that's going and do you think that the kind of activity could be brought to bear on some other questions of consistency of NRC regulations, if we thought about doing that, that that would be really a diversionary activity that we ought to stay -- you know, not encourage to take place. It looks like an important

kind of thing that could be generally useful for us, but if we try to bring them into or that technology that they're developing or at least the people that are developing it into other areas, it might slow down what they're doing and divert them from their necessary objectives right now.

I wonder if you could just comment a little bit about that, any thoughts that you might have on how that activity is going and whether it is establishing a technology that might be transferrable to other things that we have to --

DOCTOR MOELLER: I think indeed it is a technology that could be transferable. We are somewhat -- we do not have the background information really that we need because we have not seen the report. We have received information that it's underway and we certainly have, in a sense, concurred that it looks like a good thing to do. And certainly, looking at the regulatory -- the thoroughness or the details of the regulations to me seems and to us seems a wise move. So, that's about all I could say at the moment.

DOCTOR HINZE: On the positive side of that ledger as well is the fact that they are becoming very familiar with the whole statutes problem.

COMMISSIONER CURTISS: Probably more so than us.

DOCTOR HINZE: Yes, indeed. And I think that that will be a real positive payoff in the future and I think that -- so that kind of program is something that indeed if they come through as well as we hope they will on this, that they should be encouraged to do in other areas and transfer that technology, that kind of approach to other areas.

CHAIRMAN CARR: So I read you as saying except in the area of geosciences, their technical expertise is probably up to par?

DOCTOR HINZE: I don't want to say that and if I said that, I didn't mean to say that. What I'm saying is that they had the farthest to go and those are areas in which we are particularly interested in right now because of the Yucca Mountain problem, the SCP, the SEA, the study plans, the technical positions, the rulemaking. I didn't mean to put down their geoscientists because I think that they've got some real movers, especially in the younger group. I'm not eliminating the older group because some of us fall in that. But what I am saying is that they've got some real whip-snappers in terms of the very talented researchers in that younger group. So, let's

give them a chance. They've got to get -- their staffing needs beefing up and it's planned, it's in the program.

COMMISSIONER ROGERS: I take it then it's really a question of quantity not quality.

DOCTOR HINZE: At this time, yes.

COMMISSIONER ROGERS: Numbers of people rather than -- the individuals, you feel, are of high quality that they've added?

DOCTOR MOELLER: Yes. Yes.

COMMISSIONER ROGERS: Including the consulting?

DOCTOR HINZE: That is right.

COMMISSIONER ROGERS: But it's a question of coverage and depth.

DOCTOR HINZE: They've just been very busy and they're taking time, and you can't fault that really, in terms of putting people on board and including consultants because that's a bad trip if you make the wrong maneuver.

CHAIRMAN CARR: Well, it looks like DOE is waiting for them, so it will be all right.

COMMISSIONER ROGERS: Oh, that's what it is.

CHAIRMAN CARR: Let's proceed.

DOCTOR MOELLER: The next item is the

implementation of the EPA high-level waste standards and Martin Steindler will take the lead on that topic.

DOCTOR STEINDLER: I start this topic with some trepidation. As you know, we're supposedly a collegial group, but my election to this particular assignment was more unilateral than I would ordinarily tolerate.

COMMISSIONER ROBERTS: And you were not a participant.

DOCTOR STEINDLER: You have it precisely correct. But let me make a couple of introductory comments. This is a moderately complex topic, as you well know. From our vantage point, it's complex because the topic is fuzzy. It's fuzzy both technically and semantically. Furthermore, it is complicated because it involves essentially all aspects -- in the case of a high-level repository, all aspects of the repository program.

The discussions that we have had now for pushing seven plus years on the EPA standard has tended toward a discussion of the negative, namely can or can it not be demonstrated that you've met the criterion.

Having said all that, then let me, if you bear with me, walk you through where I think we are

and how we got there. Let me read to you briefly what we, the Committee, has said. In a letter to you of December 21st, we have said, in part, that we continue to doubt that compliance with the EPA standard can be demonstrated for a specific repository site. What we have not said is that the compliance with the standard cannot be demonstrated and there is a significant distinction that I want to continue to make.

Let me take you back to 1985. In 1985, the ACRS wrote a letter to the Chairman in October which said, in part, "In our opinion, the establishment of overly restrictive standards relieved by leniency in their implementation is not an appropriate approach. The proper approach would have been to develop reasonable standards that could have been more definitively enforced."

Those, I think, are two specific quotations that I will come back to in a few minutes. Then let me back up a little further and involve you in a little history. In 1983, the Commission commented on what was then before them as a draft version of the EPA standard and said, in part, that they would require -- the implementation of these standards would require a degree of precision unlikely to be achievable in evaluating real waste disposal systems

and they said a number of other things.

Fire that note back to EPA and EPA looked at the comments and added a qualifying paragraph in the standards, in 40 CFR 191. The paragraph effectively said something about reasonable expectations, proof is not to be had in what they called the normal sense of the word. We've gone through all this. And having then seen these revisions and responses to what the EPA perceived to be the NRC's objections, the NRC withdrew its objections. The standards were then issued.

The court subsequently remanded for another look, as you well know. It did not address the issue of standards or their implementation or the proof that they can be met. It dealt with a totally different subject, but it allowed us an opportunity, allowed all of us an opportunity to visit the subject again.

Let me add that in the course of these discussions, even internal to the EPA, their own science board has said that the standards are overly restrictive and it's not at all obvious that it can be demonstrated that you can meet them.

Let me shift the scene slightly. Let me tell you what the standards are and I realize I may be plowing ground that you have well memorized, but there

are fundamentally three subsections to 191.13. One says, in two parts, that the likelihood of meeting-- of exceeding what they call table 1, which is simply a listing of nuclides to be allowed to be released in curies over 10,000 years, the likelihood is one in ten that you exceed the table value and the likelihood is to be less than one in a thousand to exceed ten times the table value. The difference between the two is obviously non-linear and I can comment on that also.

The second section is the one that they added on behest of the Commission's initial comments and that deals fundamentally with the reasonable expectations issue of how you demonstrate compliance. But they've added a third in the draft that we have and the third, in effect, escalates the time schedule over which this whole issue to be addressed to 100,000 years. That is a new and as yet unspecified change.

Okay. Then what are, in fact, the issues that we based our commentary on? Well, the staff in SECY-89-319, which is the fundamental document against which we viewed the issue and against which we viewed the issue initially, said on their own -- in fact, let me see whether I can find the appropriate quote which I thought, at least we thought was important. In that SECY document they state that, "Therefore, a rigorous

application of the EPA standard would lead to the conclusion that the standards cannot be implemented in a licensing review." We looked at that and said that fundamentally agrees with our view and went on.

The DOE folks who came and talked to us when we discussed this issue in one of our meetings in effect said the same thing.

The EPA Science Advisory Board, much earlier, challenged the probablistic methodology and said that compliance needs to be demonstrated in order to be able to make the system work. They also pointed out, of course, that the standards -- they thought that the standards were a little too severe. And after all of that was said and done, the consultants that we had at our meetings pretty much agreed to that same general view.

That's the background. So then, what are the issues? The issues are, if we can boil them down and be a little more simplistic than necessary perhaps, that, one, the standards may be too strict and they have included in here essentially a risk avoidance issue which the Commission, and certainly through its ACRS advice, have avoided studiously.

The proof that we have heard, or at least a demonstration or the indication that the methodology

is available to demonstrate compliance with 40 CFR 191 was not evident in all the discussions that we've had. We've had a great deal of comment and talk about how this is done, but all of those discussions were at best generic and hardly specific enough to convince us that compliance can be demonstrated.

The rulemaking, which was alluded to in some of our discussions, involving perhaps as many as three separate issues, has been announced by the staff as rectifying some of the problems that we thought we saw in the issue of compliance with the standards. But we have neither information on nor any reasonable assurance, if you'll allow me that terrible pun, that the rulemaking process will result in a product which will solve the issue at hand. Namely, how do you go about certifying or qualifying that you've met the EPA standard? So, the rulemaking issue has been too fuzzy at this point for us to be able to get our hands on.

The extension to 100,000 years tends to be bypassed in most of the discussion that troubles some of us greatly because it makes the uncertainties in the data that could possibly be used for probablistic analyses even more uncertain than the 10,000 year period might.

It is a given for us, and it may not be for

others, but it seems to be a given for us that you would like to resolve the issue of the EPA standard now while they're still talking about doing something about it rather than finding out two, three years from now that your estimates of how easy it is to demonstrate compliance were wrong and now the staff would come back to the Commissioners and say, "Please, go talk to the EPA because this thing isn't going to work."

All of those together then lead us back to the original commentary that we continue to doubt that compliance with the EPA standards can be demonstrated for a specific repository site. That's my rough summary of where we are and substantially how we got to the conclusion that we lay down.

I'd be happy to --

CHAIRMAN CARR: Questions?

DOCTOR STEINDLER: I'll be willing to try to answer questions.

COMMISSIONER ROBERTS: Well, and I'm reading from the letter you keep referring to. "To resolve these issues, we recommend that the NRC be more aggressive in dealing with EPA." I would certainly agree with that.

DOCTOR STEINDLER: I recognize I extracted

out of --

COMMISSIONER ROBERTS: I understand. I understand.

That's all I have.

CHAIRMAN CARR: Commissioner Rogers?

COMMISSIONER ROGERS: Well, it does seem to me there is an issue there on that though that -- in that letter and that same paragraph. I can't quote it, but it seems to me that you had two things that you were suggesting that NRC should be more aggressive on. One had to do really with the scientific base on the standards and the other had to do with essentially their workability or utility where they could actually be used. And I'm a little troubled with your suggestion that we take a very aggressive view on the scientific basis because it seems that that is the domain of EPA and that's what they're supposed to do. If they're not workable from our point of view, that's a separate issue and I readily see us being very aggressive on that, but I'm a little concerned about your suggestion that we ought to tell them how to do the science.

I'd like some comments of others on this because it seems to me that you lump the two together in your suggestion of where we should be aggressive

and I would think that maybe we ought to separate those two aspects and look at them separately because if we can't use the standards, then that's really an issue that just has to be thrashed out, it seems to me.

On the other hand, the scientific basis is really -- while we might have some questions or doubts about it, is really their domain and their territory and I'm just wondering whether it is appropriate for us to get into that.

DOCTOR STEINDLER: Well, I would be, I hope, the last to try and point out to you what is your domain and what is not. Let me suggest to you, however, that the two that you intend to separate are not really so easily separable.

If, in fact, the technical basis for the EPA standard is either unrealistic or inconsistent and we can make some arguments on probably both of those, although now we get into the very fuzzy qualitative area, that certainly impinges on the ability of the staff to evaluate and certify that whatever the applicant brings in is some match to those standards. In that sense, the separation of doability and the actual values, if you will, I think are very difficult to separate.

I wouldn't want the Commission to make too much of our use of the word "aggressive," and perhaps that was overly aggressive. I guess what we're saying is that this is an opportunity which passed us by once and but for the voice of the court for a totally separate issue allows us at least one more look. In that context, we would say this is an excellent opportunity to do that.

COMMISSIONER ROGERS: Well, it would certainly seem it is the right time to try to have a very vigorous dialogue.

DOCTOR STEINDLER: Yes. Right. Well, I think that's in part what's required. It is difficult for us to recommend such obviously correct solutions that they become patently acceptable to everyone. If so they would have been done a long time ago. But we have heard a lot of voices for folks that have studied this issue, who kept saying to us, "There's a problem here. They're too stiff. It's not obvious how you do this."

The responses to those challenges, it seems to me, would be to address them directly. If it is obvious to somebody on how to define the meaning of the EPA criteria, then I would suggest that that may be some exercise that ought to be done. The exercises

that have been done that I've read have been sufficiently generic as to probably be useless. They're certainly a good first shot.

The argument has been that DOE will have to, in the course of their WIPP, exercise, if that's the right term, go through a similar sort of process. I think it is not at all clear -- and the Hearing Committee has pointed this out -- it is not at all clear that as it stands that is a readily doable activity.

All of those things together, it seems to me, run up sufficient flags for the Commission that we ought to really have a hard look, and now is the time to do that. That's really all we're saying.

CHAIRMAN CARR: Commissioner Curtiss?

COMMISSIONER CURTISS: Well, yes. I think you covered a lot of ground here, and I guess I'm not quite sure where to start, particularly when I expected Commissioner Rogers to have more questions. But let me pick up on the point that he's raised about the stringency of the standard, because I guess I do have a slightly -- maybe not a slightly, but a different view about our obligation, and that is that where we, in our jointly assigned responsibilities with EPA share a task of carrying out programs in various

areas, whether it's mill tailings or the Clean Air Act or the Nuclear Waste Policy Act or low-level or high-level, what have you, it does seem to me that issues like this are fair game for consideration and discussion, not just by us but by others, including DOE, which has raised the issue recently.

So I guess I like your use of the word "aggressive." It does seem to me that that characterizes the kind of sentiment that we ought to bring to bear if for some reason we think the underlying science here is inadequate, first.

Secondly, we do have a problem here that it seems to me leads us to the conclusion that we have to at least understand and agree with the EPA standard. The problem is one that I think you've touched on before, and that's the business of applying conservatism on top of conservatism, margin on top of margin. So if, in fact, the EPA standard reflects a certain degree of margin or conservatism, and I want to get back to that question in a minute, it's important for us to know what that is, so that as we go forward with the implementation of our requirements, whether it be on ground water travel time or package container performance or what have you, that we have a feeling as to how much additional

conservatism, if any, ought to be heaped onto the initial EPA standard, which in turn reflects the health and safety standard that we're charged with implementing.

Let me get back to the question of the stringency of the standard, because I've heard the discussion before and I think you've accurately characterized what folks have said to date, including the SAB and the Commission and others. But let me ask you the question. As you reached the conclusion that you think the EPA standard, focusing on the science first, is overly conservative, too stringent, I wonder if you'd expand upon your basis for reaching that conclusion. What is it that you're communicating to us, the views of others that have expressed that conclusion or your assessment that that is the case? And if so, why?

DOCTOR STEINDLER: I pause for a number of good reasons. The issue of what is a societally acceptable bottom level standard is raised in the context of not only the Commission, but every other activity that's regulated. And the answer you come to depends very much on who the commissioners are and which organization you're talking to. As a consequence, I don't see a basis for saying clearly

and numerically that a one millirem per year for 10,000 years for the most exposed individual is too high or too low.

All I think we can do is address the issue in the context of where society will accept risk, and what kind of unavoidable issues do we face every day. None of the discussion, no matter how couched, turns out to be quantitative. The background in this country is 100 millirem. If you listen to the folks who worry about radon, it's significantly higher. The EPA standard for drinking water is four millirem. I think I have the numbers right. If I don't, forgive me. I can probably find it. The operational annual doses are 25 millirem.

The EPA standard at the moment specifies 1,000 extra deaths, cancer-related deaths in 10,000 years. If you want to assume a million population at any point in time, that gets you to one millirem. We will, I assume, discuss the issue of what we used to call "below regulatory concern," which is now called something slightly different, which has values derived from the international viewpoint that vary considerably from our initial values.

All I can do is, in a sense, wave my hands at you -- and, you know, I want to admit that I'm

waving my hands at you -- and say that somebody is calling for a release of 1,000 curies over a 10,000 year time period with a dose that is not very clearly definable to an undefined population over a 10,000 year time period seems to us to be not only obviously unmeasurable, but at variance with the rest of the kind of standards that have been put together.

Does that answer the question why is it-- why do we think it's too strict? No. We can probably develop a comparative case. Of course, so could the staff, probably has already done that and laid it before you. And there may well be more apropos numerical values that one could probably dig up.

But the 10,000 year time period probably is the central focus for the concern that this is an excessively strict standard. But let me defer to Dade, who has spent more time than I have in the concern about backgrounds and standards that are applicable to the population at large.

Probably you have comments on that, Dade.

DOCTOR MOELLER: About the only comment I would have is in terms of the stringency. I keep going back to the safety goals of the NRC for nuclear power plants, and you give a qualitative goal which is a broad statement of what you want to achieve, and

then you gradually quantify that and go into more and more detail as you go to the lower levels.

Well the qualitative goal, as I recall, that EPA originally stated was that the waste in a repository would carry with it no more risk than the unmined ore. Well, if I go out to the Colorado plateau and walk around on unmined uranium, I know it's 100 millirem a year, at least, terrestrial dose rate. And because those ores are located at higher altitudes, it's a higher cosmic dose. Well then, they go from that to coming down lower and lower and they just get more and more stringent.

Now I'm not saying it should be 100 millirem a year. I don't think we want that. But I'm not sure that it should be one millirem either.

COMMISSIONER CURTISS: Let me follow-up on a couple of points. I take it you talked about the extension of the proposed rule or the draft proposed rule out to 100,000 years. I take it, in view of your assessment of the conservatism inherent in the 10,000, that that looking over the cliff, as people have described it, to see if there are events in that 90,000 year period that might be worth taking note of, in your judgement, I take it, is wholely unnecessary, given the conservatism already present.

DOCTOR STEINDLER: That's certainly correct.

COMMISSIONER CURTISS: Let me pursue this question --

DOCTOR STEINDLER: Not only -- excuse me. Not only, perhaps, unnecessary, but probably not doable.

COMMISSIONER CURTISS: Let me pursue that question of stringency from a different perspective in focusing on the margin on top of margin question that's come up. If we were faced with implementation of the EPA standard, overly conservative as it might be, and focusing on the requirements that we at the Commission in turn have established to implement that standard, if you stipulate for the sake of discussion that you've accomplished all the conservatism necessary and can afford to be realistic in the implementation of that standard, are there instances that in your judgement in the context of the way we're implementing that standard in our regulations and in particular in the application of a subsystem performance criteria that you think have contributed to the unnecessary margin on top of margin problem? Or haven't we looked at that yet?

DOCTOR STEINDLER: I'm not sure we've looked at it quite that way, but let me give you a small

sidelight which you also probably already know. If you accept that the release rate from a waste repository is one part in 10^5 starting in year 1000 and going on to year 10,000, and you address the question of how much in the way of actinides is likely to be buried in spent fuel and you apply that number, you'll find that you can generate a sufficiently large release of actinides that you can't meet the EPA criteria. So it's a question of where do these criteria actually interface. I think that arithmetic is right. If you hold me to it, I'll have to go back and do it again, but that's certainly been published in a DOE report as a concern that they need to worry about on how to handle.

I don't know whether we have enough information -- or, let me put it differently. I don't know whether I have enough information right before me to determine whether the 1,000 year travel time, the one part in 10^5, represent a conservatism above and beyond what might be necessary if there was some rigorous way to determine adherence to the EPA criteria. My suspicions are that that's probably correct, but I certainly can't demonstrate that now.

COMMISSIONER CURTISS: The one sentence in your letter on this subject that caught my eye was the

one that reads as follows:

"The NRC subsystem performance criteria have the potential for imposing even more stringent requirements on the repository."

I take it you mean by that, A, more stringent than the EPA standards would require if you just applied the EPA standards.

And B, do I read that correctly to imply a critical conclusion there, that they shouldn't result in more stringent requirements?

DOCTOR STEINDLER: Oh, I think that's correct. They should not. Whether or not they're that closely related to EPA criteria, I'm not sure that that's what we would have advised you to read into that note. For right now, I must say my mind is a blank for reasons that I will not admit to.

DOCTOR MOELLER: Rather, I think what we're saying is by specifying limits on individual subsystems you are adding to the stringency of the standards. Now in subsequent discussions, of course, with the NRC staff, we've been told that those subsystem criteria are -- you know, that the 1,000 year travel time is not an absolute. But yes, it seems to us to be adding stringency to the standards.

I think those subsystem criteria need to be

very carefully worded, and perhaps they are, to clearly specify that they are simply subsystem guides and that they're very flexible in their -- in how they can be interpreted.

COMMISSIONER CURTISS: Let me turn to one final subject and ask the question of the ability to demonstrate compliance with the EPA standard. Your initial comment, I guess, confused me, that you -- in saying that you doubt that compliance with the EPA standards can be demonstrated, you don't intend to say that you doubt that it cannot be demonstrated? I guess I'm confused by --

DOCTOR STEINDLER: That's correct. We have not said that compliance with these EPA criteria as they currently stand cannot be demonstrated. All we have said was that we have not seen any information that leads us to believe that they can be.

Now the staff has said repeatedly that, yes, they think that compliance can be demonstrated. But we are just not convinced on the basis of the staff's comments.

COMMISSIONER CURTISS: You've seen the SECY paper that discusses the subject?

DOCTOR STEINDLER: Yes.

COMMISSIONER CURTISS: You referred to it,

had an opportunity to read it. Staff proposes an approach there were they clarify that question and with the purpose of providing further amplification to the '83 language on just how you go about doing that. Would that do the job?

DOCTOR STEINDLER: We don't know. That's precisely our problem. We've looked at the commentary that we've gotten from time to time on those three potential rulemakings -- there may be more -- and they have been not substantive enough to tell us that, yes, that's going to do the job.

And then I have to add, if that is in fact left open and the EPA criteria are set in concrete, to go back and then change it, if those rulemaking operations do not meet the test of quality, I think would be very difficult for the Commission. That's a judgement which I really shouldn't make, since it's a Commission judgement.

COMMISSIONER CURTISS: Let me jump back to the discussion of the Center. Is there anything that you saw down there on performance assessment that would suggest that they've found the Holy Grail here and are on their way to defining a methodology that would ease the problem that's been identified?

DOCTOR HINZE: Well, they had almost, I

guess, the day we were there, the new chief of their performance assessment group had reported, a person they had hired, and this was a well-qualified individual from Pacific Northwest Laboratories. So they certainly have been able to recruit a very good person, so I hope they'll move ahead.

COMMISSIONER CURTISS: Well, I don't have any other questions. I guess this has been a baffling subject for me. It's not one that's just been recently raised. The ACRS has been raising it. The SAB has been raising it, the Science Advisory Board, and the Commission's talked about it for a number of years.

We now have somewhat of a hiatus in the program, because of the delays that have been announced together with the remand of the rule, that it seemed to me to provide the opportunity for us to try to get our arms around whatever uncertainties, inconsistencies, stringencies unnecessarily, and so forth might exist and try to wrestle them down if there's anything we want to do about them.

DOCTOR MOELLER: Oh, it's a key ingredient. I mean, the conduct or the -- I guess, the conduct of performance assessments can tell you a lot about where the voids are, were the uncertainties are, where you

need data, et cetera. So we, as a committee, have on numerous occasions encouraged the staff, you know, to give top priority to performance assessment.

COMMISSIONER CURTISS: That's all I have.

CHAIRMAN CARR: Well, at the risk of being a something or other --

COMMISSIONER ROGERS: Can't avoid it.

CHAIRMAN CARR: -- I think your letter hasn't been very helpful. You're telling us that you're not sure it can be and you're not sure it can't be, and technically that doesn't do me any good.

Are you trying to tell me that -- I don't mind being aggressive with EPA, if I know what to take over and lay on the table. Are you telling me I ought to go back to EPA and tell them to draw up new standards?

DOCTOR STEINDLER: Well, that would certainly be a step in the right direction, if those new standards don't multiply the problems of the old. If they're going to give you long-term highly uncertain probablistic requirements, which have -- let me go back a notch.

I understand -- and Dade could handle that better than I could -- but the use of PRAs for reactors is a class activity, not a single plant

activity. And here, these folks are saying to you not only do you look at the PRA for a reactor where experience is now substantial -- lifetimes of reactors are modest, trivial in comparison -- but here this is a single unit that's going to have to sit there and be predicted for 10,000 years. If that's what you're going to get back once you tell them to go do it again, then it's true we haven't made much progress.

CHAIRMAN CARR: Well, I'd feel more comfortable if I knew what to go back and tell them to change. Do I want to tell them to change the years? Do I want to tell them to change the numbers?

DOCTOR STEINDLER: I think the concern, the central concern --

CHAIRMAN CARR: You're my technical experts. I want you to tell me what to tell them.

DOCTOR STEINDLER: All right. Well --

COMMISSIONER CURTISS: I take it you wouldn't -- you'd tell them don't worsen the problem by going to 100,000 years.

DOCTOR STEINDLER: That's the first thing I might tell them.

COMMISSIONER CURTISS: That might be one thing that we --

CHAIRMAN CARR: Well, is it better to tell

them to go to 5,000 years?

DOCTOR STEINDLER: No, I don't think so.

CHAIRMAN CARR: I don't either.

DOCTOR STEINDLER: I think the central issue that at least I see is the probablistic aspect of the regulation -- or the standard. If we're to be deterministic, they I think the chances of you being able to demonstrate that you can meet it goes up sharply.

CHAIRMAN CARR: What standard should I have if I do that?

DOCTOR STEINDLER: Let me defer that, and perhaps the thing for us to do is to look at the subject fairly carefully and then write you a letter.

CHAIRMAN CARR: Yes. I need -- you know, I need something I can get my teeth into.

DOCTOR STEINDLER: That's fair enough.

CHAIRMAN CARR: It's not going to do EPA any good for me to go tell them, "Hey, that thing, I don't think I can work with it."

DOCTOR STEINDLER: Yes.

COMMISSIONER CURTISS: Let me suggest a concept. And I've got the same frustration that I think the Chairman has as we hear these presentations.

CHAIRMAN CARR: Did I sound frustrated?

COMMISSIONER CURTISS: A little bit, and more so than I did, but let me suggest a thought that as you look at how to proceed you might evaluate.

It does seem to me that given the division of responsibility between the two agencies where EPA promulgates the general standard on protecting the public health and safety, a generally applicable environmental standard that we in turn are charged with implementing in our regulations, we understood that division of responsibility in other contexts, in particularly mill tailings and low-level wastes and other areas where they have proposed or have established that kind of standard, to mean that if you meet the NRC regulation, if you put ten feet of cover on the mill tailings pile, you have thereby met the EPA general standard of 20 picocuries per liter. And that's a relationship that I always understood to be inherent in the division of the responsibilities between the two agencies that left us the task of implementing the standard that EPA had established.

Now at the last meeting where we talked about this issue with the staff, it wasn't clear to me that that conclusion -- in fact, it was clear to me that that conclusion could not be reached here when I asked the staff, "If you meet the NRC standard, do you

meet the EPA standard?" The answer is no, not necessarily, and vice versa.

I guess I wonder if it's not possible, as you look at this subject, to approach the issue in that context. And recognizing that the probablistic nature of the standard is probably here to stay. We hope it doesn't get worse if the standard is looking towards 100,000 years. But recognizing that it's probably inherent in what we're going to have to deal with, I've asked the staff this question and I'll pose it to you.

Is there a means or an approach where we can establish the implementing requirements, either using the subsystem performance criteria or some variant on that that when we analyze compliance with those requirements, we can, at the end of that process, conclude that the EPA standard is thereby met, as we do for mill tailings and as we do for other areas where we have standards like this.

It seems to me that if we're troubled by the probablistic nature of the standard, if the basic approach that the Commission has pursued in its Part 60.113 is deterministic, and if we can reach the conclusion that compliance with the deterministic framework is, as a matter of fact, compliance with the

EPA standard, that might solve a couple of our problems, one of which is litigating the probablistic nature of the questions that the EPA standard entails, which I think will be very difficult in a litigative context, and other technical questions before you could get to the hearing.

But I would encourage you, as you look at ways to try to come to grips with this issue, to see if that -- what I'll call, I guess, the conventional approach to the division responsibilities might not be something that fits here and, if necessary, with some adjustment of what we've got in our current regulatory framework.

DOCTOR STEINDLER: Why don't we look at that and get back to you.

CHAIRMAN CARR: Let me ask you another question. Do you think our information base is sufficiently improved now that we can achieve a consensus on a revised standard? Are we smarter now than we were when this standard was agreed to?

DOCTOR STEINDLER: I don't want to be in the position of saying we're not. The issue, I think, however, is are we smart enough. If -- and there, I think, my view is that we're not. We're not smart enough and the reason I say that is because the

documents that we've read, things that we have heard where people have tried to assess the process whereby they would try and show compliance with the standard have tended to be quite fuzzy.

Now, part of that is the problem of coming to grips with a real repository where they're not really able to dig significant holes at this point in time and therefore establish the issues.

CHAIRMAN CARR: Well, my concern is if we're no better able to write a good standard now, shouldn't we wait until we get some more data and then write the standard?

DOCTOR STEINDLER: The EPA, of course, would view that to be their responsibility and now ours.

COMMISSIONER CURTISS: Well, the standard also drives the data collection, doesn't it?

DOCTOR STEINDLER: Yes, certainly.

COMMISSIONER CURTISS: What you do in the site characterization process is dictated in part by what the standard is. So, it's a catch 22 potentially. Maybe not a catch 22. Maybe it augers in favor of addressing the problems with the standard early for that very reason, sort of the data gathering.

We were at a recent trip that Commissioner

Rogers and I took to Lawrence Livermore. The case was made that the carbon 14 issue is driving a lot of what DOE is doing right now. I don't know what that means in terms of their actual characterization, but the carbon 14 issue is driving it because that's what the standard requires. They, in turn, are going to dictate what the characterization program looks like.

CHAIRMAN CARR: Have you all considered a joint meeting with DOE's technical review board to address this problem, since I think they're going to look at it too?

DOCTOR STEINDLER: We have not as yet. We're aware of the fact that they're, I think, planning to look at it. We don't know what their schedule is.

CHAIRMAN CARR: Well, it might be worth considering.

DOCTOR HINZE: The chairman of their health physics -- I can't give you the exact title -- is a consultant to our Committee. So, there's very good relationships.

DOCTOR MOELLER: They have indicated that they would be receptive to a joint meeting on key issues. So, that's a very good suggestion. We'll pursue that also.

CHAIRMAN CARR: All right. Let's proceed. Sorry about that.

DOCTOR MOELLER: Our next to last item is our recent letter in which we commented on low-level waste programs within the Commission. Let me just-- I'm hoping this will be a short issue because we wanted to have time to address the exemptions from regulatory concern or from regulations.

The low-level waste letter was not directed to the Division of Low-Level Waste Management Decommissioning. Rather, we intended it to be a commentary on the complete Commission approach on low-level waste. And with that as background, we have about, as I recall, four different points. Our first one was simply that we felt there needed to be a closer tie between the people who are concerned about disposal of the waste, the low-level waste, and the people who are concerned about the mechanisms which generate or produce these wastes.

We know that in nuclear power plants, you know as well as we, that through dedication of tools to a hot area and keeping them within the hot area, you can reduce the amount of tools that must be discarded. By cleaning up larger areas in the plant and keeping them clean, you reduce the volumes of

waste. So, we just felt from our point of view it seemed like more of a systems approach here would be helpful.

Our second item was that the -- in looking at all of the reports that we had to review in order to prepare to interact with the Division of Low-Level Waste, we found that there were so many of them it was hard to keep it straight. So, we suggested that if it doesn't exist and we were not aware of it, that some sort of a road map be prepared to guide people such as us and particularly the agreement states to provide guidance to them in dealing with this -- with all of the regulations and NUREG documents and the DOE or the EPA or everybody's input into this subject.

Thirdly, we still continue to believe that a system which would encourage the feedback of operating experience in the low-level waste field would be extremely helpful. We're not saying exactly how to do that at this moment, but we believe it would be helpful and in that same context we offered the commentary that a review of what went wrong at Maxey Flats, Sheffield and West Valley might be helpful also in the way of learning from past experiences.

And then, lastly, this was another one of those urgings to the Commission. We didn't say that

you should be aggressive, but we did urge that because Barnwell and Beatty will be shutting down in 1992 and we didn't see the states necessarily coming along rapidly enough that whatever could be done to encourage more rapid movement among the states would be helpful.

CHAIRMAN CARR: Any questions, Commissioner Roberts?

COMMISSIONER ROBERTS: No.

COMMISSIONER ROGERS: Well, just coming back to your second point on the road map, how do you see that as a new activity. It's a little troublesome in trying to visualize how much effort might have to go into doing this. What level are you thinking of detail and accuracy and completeness for this road map that you're recommending be developed? I think there is a question of how much staff time and effort might get soaked up in this that could be very large if it's approached from too global a point of view. What are you thinking about there?

DOCTOR MOELLER: I'm not sure we discussed exactly what would be covered, but I would see it as an overview. In other words, you could list subjects and say, "If you need information on this, here are the documents." That would be helpful.

As I say, I've found -- I must have used 15 different documents to get ready for this meeting with the low-level waste people and I wasn't sure I had all the important ones and that's what we're talking about. I hear what you're saying and that is correct. And yet, I'm sure that somewhere within the NRC there's some people who have been here during the growth of the division and so forth who perhaps in a week or two could set down what would help us and help others.

COMMISSIONER ROGERS: Well, that might be a helpful way to proceed with the collection of expert opinions here on what these connections are between the different documents.

DOCTOR HINZE: Time would really be taken up with the annotation of each one of these. But if there's an abstract available, that could be put into some kind of central files and then could be pulled up on the screen, that would be very useful.

CHAIRMAN CARR: Commissioner Curtiss?

COMMISSIONER CURTISS: No questions.

CHAIRMAN CARR: Let's proceed.

DOCTOR MOELLER: The last item is exemptions from regulatory control. We wanted to offer some comments on that. Now, obviously, you had asked that

we do so.

To introduce the subject, I would say first of all that we have found it to be very complex. Further, I would point out that we have not as a Committee had an opportunity to review the latest proposed policy statement, draft policy statement in detail. Nonetheless, we do have certain comments that we would like to share with you, particularly since you invited us to do so.

As we said in our most recent letter, first of all we do like the new terminology. We realize, I guess it was in the congressional law itself that they called it "below regulatory concern." We believe that "exemptions from regulatory control" is a much more accurate name.

Now, you have asked the staff for a review of the implications of BEIR V. We will be so bold as to offer some comment on that and it would be in a complimentary sense because you have so carefully and correctly and with great foresight stated that NRC does not assume "an absence or threshold for risk, rather a baseline below which further efforts to reduce risk are unwarranted." In other words, that's what you're seeking.

Well, in a sense, BEIR V, in my opinion and

based upon what I've read of it, is not going to give you any problems at all. They do say that it looks like solid tumors follow a linear non-threshold relationship whereas BEIR III pushed for the linear quadratic relationship, but in my opinion that's not going to bother you because you have been so careful to state your premise and it's so well expressed.

Going on to a third item, I believe, in hindsight, and reading your statements much more carefully, which you should always read things carefully, that your one millirem per year has a dose rate to begin with, until more experience is gained, is probably or it is a very good approach. If we read what you've said carefully, we find that you say on a case by case basis you'll look at higher dose rates. So, I believe in hindsight we would have been wiser to have agreed with what you're doing.

Moving on, as I say, we have not reviewed the policy statement in detail, but we do find that it's giving us some problems at least at this day and at this time. Maybe again if we read it more carefully some of these problems will dissolve. But let me tell you what our basic problem is. We are totally in favor of the concept. We would promote vigorous pursuit of the establishment of the

exemptions from regulatory control. However, in the draft policy statement, the staff is attempting to address the subject in a generic manner. I believe that there is where they're getting into trouble.

Now, let me explain what we mean. If you take the policy statement and apply it to a decommissioned facility, it seems to apply very well. In other words, you say that it's all right to release this facility for public access if you have decontaminated it and brought the dose rates down to whatever level, ten millirem a year, whatever it would be. Knowing that the cleanup is an expensive process, that represents, and as the policy statement would correctly state in this case, it represents ALARA. In other words, you've cleaned it up enough. There's no reason to spend more money to go further.

However, if I now move on and try to apply that same policy statement to the other exemptions that you desire to grant, then I begin to have problems. Let me explain what those are.

Let's take the subject of low-level waste. And, of course, EPA is the one that has proposed four millirem a year and if it's at that dose rate or less through various environmental pathways, you can dispose of it in a municipal sanitary landfill, a non-

NRC licensed facility.

However, the fact that it's four millirem or less and that permits you to dispose of those wastes in this type of a facility, in my opinion, and maybe I simply don't understand it, but in my opinion that has little to do with ALARA. It's simply saying that if you are operating at a nuclear power plant or a medical facility, whatever it is, and you have carefully segregated your waste, so in that sense your exemption will promote better handling of the waste because it would encourage segregation and so forth, and if you've carefully segregated them and if perhaps in some cases you may even have to wait and let them decay for a few months to get down to below whatever the level is, then it's permissible to dispose in the sanitary landfill.

But to repeat, I do not see the connection between that and ALARA and so I think the policy statement in attempting to be generic, you must be more careful. The staff needs to be more careful.

Let's take a third example, the effluent releases from a nuclear power plant. Now, those have been covered in Appendix I, Title 10, Part 50. And again, there ALARA is appropriate. You said and after long rulemaking of ten, 15 years ago, or 20, whatever

it was, the conclusion was that if utility controlled their waste at the nuclear plant such that a hypothetical person at defense post did not receive more than five or ten or whatever it is millirem, it's a few millirem a year, then you declared that to be ALARA and there the ALARA concept is correct. The proposed policy statement would apply directly to this in contrast to, in my opinion, not apply to low-level waste.

And further in that, not only did you say that was ALARA, but you also said, however, that in terms of collective dose, that if by spending less than $1,000.00 you can reduce it by one additional person rem, you have to do it, within a radius of 50 miles of the plant. Now, that is the correct application of the ALARA concept to collective dose. That is, if by spending a certain amount of money you can reduce the collective dose by a one person rem or one person sievert or whatever it is, then you must do it. To say that if the distribution of this consumer product or the practice of this certain operation does not result in more than 1,000 person rem and therefore that represents ALARA, it does not represent ALARA.

I mean I'm coming on a little bit strong, but I really believe what I'm saying. So here are

three examples I've cited. Two out of the three, the existing policy statement comes very close to applying and you can run with it.

Now, on a third example which would be consumer products, again the existing policy statement, at least I am unable to apply it to consumer products and I'll tell you why once again. If I have a consumer product such as a smoke detector and it only yields a tenth of a millirem per year and it has the potential for tremendous savings of lives, which indeed they do, and we know that millions of people the world over can benefit, then you permit that to be generally licensed and to be available to the general public. But it's not to me necessarily ALARA.

In fact, if I had two smoke detector companies that came in and applied to the NRC for licenses to make and sell smoke detectors, and they both did the same thing and accomplished the same thing, but one produced nine-tenths of a millirem per year and the other one one-tenth of a millirem per year, I would not see you nor the staff just blanketly granting approval to both. But rather you would say to the nine-tenths millirem a year company, "What are you doing different? Why can't you get down to the

one-tenth?"

So, as I say, we see it as moving along well but unless we're wrong, we believe more work is needed. I would certainly encourage a generic approach, but massage it a little bit so that this confusion can be removed, at least what is confusion to us.

COMMISSIONER ROGERS: Now that's what you were referring to in your January letter on variability. Is that what you're talking about?

DOCTOR MOELLER: Okay. On the variability, on that we think there --

COMMISSIONER ROGERS: If it's different, you can come to that later.

DOCTOR MOELLER: There is -- the variability there is an excellent example of the application of what we have suggested and we're biased but we are sold --

CHAIRMAN CARR: Not as much as we are.

DOCTOR MOELLER: We're biased. We're pretty much sold that we're right and therefore we're going to keep shouting.

There's an excellent example of the sliding scale standard that we're proposing you consider adopting. In your proposed decommissioning initial

staff drafts on standards or regulations for decommissioning, your stating, at least if I've read it properly, that you might approve the release of a decommissioned facility for access by the public if it didn't cause more than 10 millirem a year. Well, we're happy with that because we know that not more than 100 people or so -- you know, pick a number-- could crowd into that facility or will be there on a single day and living and working around it. So, what we're saying to you is -- and so we're happy with that because the collective dose will be small.

So, we're simply saying to you that we believe it would be a wise policy that the higher the dose rate associated with the exempted practice, the lower the collective dose that you permit. That takes care of your problem of multiple sources. It automatically takes care of that because if something can be used by millions of people, it has a very extremely low associated dose rate. It's only the higher dose rate practices or exemptions can possibly -- well, the higher dose rate practices or exemptions would be restricted to those which can affect only a small number of people.

COMMISSIONER ROGERS: Well, would you see that as a relationship that could be fixed once and

for all or would you -- this have to be different for each practice that one was considering?

DOCTOR MOELLER: I would try something generically, again leaving in your caveat on a case by case basis. We'll look into it in more detail. But I believe it could be done on a generic basis.

CHAIRMAN CARR: Any more on that subject?

DOCTOR MOELLER: No, sir.

CHAIRMAN CARR: Any questions, Commissioner Roberts?

Commissioner Rogers?

COMMISSIONER ROGERS: Oh, a couple comments. I think you've said that you did support the Commission's initiatives in this direction.

DOCTOR MOELLER: Yes, sir.

COMMISSIONER ROGERS: Could you be specific as to the benefits of establishing an exemption policy that -- as you see them?

DOCTOR MOELLER: I believe in the case of the waste management it will promote much better waste management practices at the waste generators. In our letter on the waste, we have said, of course, that you should look -- we would encourage the staff to look at it with a systems approach, but using this it will encourage better waste management practices.

I believe in terms of disposing of low-level waste, it will have many advantages, in relieving some of the burden, the unnecessary burden of extremely-- only slightly contaminated waste now filling up our limited burial site capacity. I see it as having many benefits there. I would hope that it would have benefits in promoting and encouraging consumer products such as smoke detectors. I'm sure there are other things out there. Of course, your new -- the newly developed device for detecting explosives at the airports, that's very significant. And indeed, if it can be done, which you've carefully reviewed it and at very low dose rates, then let's encourage it.

COMMISSIONER ROGERS: Good. Thank you.

There's been a struggle over the name and you've alluded to that and expressed a favorable view of the name "exempt from regulatory control." Names are important because very often people can remember the name, but they can't remember any details about the statement except the name and if the name doesn't adequately convey what the notion is, then there certainly can be misinterpretations of intent and purpose that can occur. And it seems to me that both those names, "below regulatory control," and "exempt from regulatory control," suffer from the deficiency

that they convey a sense of finality to the categorization that I find inappropriate.

In thinking about that, it seemed to me that the addition of a word such as "conditionally," or "provisionally," to the name might help with that. Have you thought about that aspect of the name?

DOCTOR MOELLER: Yes. We -- not so much in the name, but certainly the concept and we commented on that in one of our earlier letters. Indeed you will continue to follow these practices. The staff will, from time to time, check to be sure these smoke detectors are being properly made and so forth. So, the word "conditionally," or something like that would be helpful.

CHAIRMAN CARR: Having been associated with a project that never lost its original name no matter how many times you changed it, called Sanguine, I'm not sanguine at all that anybody is going to forget BRC. You can call it whatever you want to and it will stay BRC.

COMMISSIONER ROGERS: Yes, it's hard to kill some of these things once they get into the lexicon.

DOCTOR STEINDLER: Well, let me just add the comment that the focus is on the final activity, namely a landfill, and at that stage of the game, the

term "conditional" lacks a certain amount of credibility if you talk about regulatory control.

COMMISSIONER ROGERS: Well, it sort of comes back to some of the issues you were touching on. The one statement doesn't really seem to serve all the purposes that we want to apply it to.

CHAIRMAN CARR: Well, I think the BRC term is really "below regulatory concern."

DOCTOR STEINDLER: Concern.

COMMISSIONER ROGERS: Yes.

CHAIRMAN CARR: And it seems to me that's reassuring to people. If you say it's something that a regulator -- so low a regulator shouldn't be concerned with it, that's perfectly plausible to me as a regulator.

COMMISSIONER ROGERS: Well, one can take quite the opposite --

CHAIRMAN CARR: That's why I want the level so high.

COMMISSIONER ROGERS: Quite the opposite point of view that there should never be any lack of regulatory attention to anything that has any kind of a health implication that somehow it might be high or low priority but never totally out of sight. So, I'm not sure that I would make that same assessment.

CHAIRMAN CARR: I only brought it up because I think we'll have a hard time getting rid of the tag.

COMMISSIONER ROGERS: Yes, that could very well be.

In your letter, you also expressed approval of the NRC staff's efforts to include in the policy statement recommendations to discourage frivolous uses of radioactive materials. What's your opinion of who should decide what is frivolous and what would you suggest to be the criteria for deciding if a proposed use is or is not frivolous?

DOCTOR MOELLER: We have discussed that in detail and let me just respond on two ways. One is in the SECY document. We thought the paragraph that was in there that was suggested as a means for covering frivolous applications, we thought that was a good paragraph. We were careful in our letter to say we have no idea how you determine what's frivolous. What's frivolous -- like in the U.K. --

COMMISSIONER ROGERS: Doesn't that really introduce a new dimension into the thing?

DOCTOR MOELLER: Yes.

COMMISSIONER ROGERS: And why do we have to worry about anything except the health and safety aspects of these sources? And if one talks about

something totally different, as to whether it's a frivolous use or not a frivolous use, it's a totally new dimension, it seems to me, in the consideration whereas what we're really concerned about is health and safety. If there are good reasons to have health and safety doubts about something, then we should be properly conservative in how we deal with those, it seems to me.

But a judgment as to whether something is frivolous or something is essential depends very much on where one is coming from and one's point of view as we've learned with the gemstone issue, for example, to hear the comments there of how essential that was for a certain part of the commercial activities.

CHAIRMAN CARR: If the mantle in the lamp is for reading, it's not frivolous. If it's for camping, it's frivolous, right?

COMMISSIONER ROGERS: Well, you may even say what it is you're reading that's frivolous or not frivolous. Who's going to decide that?

DOCTOR MOELLER: You already though are practicing judgments, I believe. In terms of the policy statement, as I recall, at least some of the earlier drafts, said that before you would approve of a radioactive source to do something, you would check

to be sure there was not a cheaper, non-radioactive way of accomplishing the same task.

COMMISSIONER ROGERS: Yes.

DOCTOR MOELLER: So, you are making some judgments already.

COMMISSIONER ROGERS: Well, presumably that's because we're concerned about a health issue rather than an issue of frivolous.

DOCTOR MOELLER: Oh, whether it's frivolous. That's correct. That's a good point.

COMMISSIONER ROGERS: I find that frivolous judgment one very, very touchy for us to get into.

DOCTOR STEINDLER: You obviously have been listening to our conversations in our meeting because we had a very similar sort of discussion.

COMMISSIONER ROGERS: Well, I haven't been.

DOCTOR STEINDLER: The issue, however, has got, like everything else, two sides and the concern on the other side of the coin is whether or not one would allow, regardless of the absolute magnitude of the health issue, someone to introduce a radioactive source for one reason or another into the crib blanket of a small child. The arguments about numerical standards and health effects, BEIR V or whatever else, rapidly take on a much different view when we get into

the non-technical area. And it's in that context that the notion of frivolity now has, I think, some more meaning.

I agree, however, that the method of adjudicating that is an issue which you need to look at very carefully because it's out of your normal charter, I would guess. But that's the concern that we have.

COMMISSIONER ROGERS: The concern is a health concern. It deals with perhaps a domain that we don't understand that well and we're not sure enough about and so we want to be very careful to --

DOCTOR STEINDLER: I'm trying to move the concern out of the numerical value and into the non-numerical area.

COMMISSIONER ROGERS: Fine. Right. Yes, I'm with you there.

DOCTOR STEINDLER: And it's in that context that it's difficult.

COMMISSIONER ROGERS: Yes. Right.

Does anybody else want to talk about frivolity?

DOCTOR HINZE: We've tried to change that name, but with no success.

COMMISSIONER ROGERS: Yes. Well, it's just

that there's certain aspects of it that I find troublesome from a regulatory agency point of view.

Just one other question that deals with nothing that we've been talking about today. But how is the division of responsibilities between ACNW and ARCS working out? How do you see that now? That was something that we've been looking at, hearing a little bit about. What's your opinion on that?

DOCTOR MOELLER: Overall, I think it's working very well. In fact, I cannot really cite any truly -- areas that would truly be problems. The decommissioning item, as you may know, recently came up through Mr. Fraley and Carlyle Michelson and myself. We've written up a memo which -- and agreed between the two committees and then I believe he's writing -- Mr. Fraley is writing to Chairman Carr to tell him -- or suggest or ask for his approval of what we're considering doing. But it really --

COMMISSIONER ROGERS: You seem to be able to work those issues out.

DOCTOR MOELLER: We have more than enough work to do, so it's not a case of them taking things over that we want to do. We all have more than enough to do and I see no problems.

COMMISSIONER ROGERS: Well, it's really not

just that but whether anything then falls between the cracks.

DOCTOR MOELLER: We hope not. We'll try to be sure that it does not.

CHAIRMAN CARR: Commissioner Curtiss?

COMMISSIONER CURTISS: Just two quick questions on BRC. First, what led you to conclude that one millirem for the individual dose was too low and a three to five millirem would not appear to be unreasonable, I think your words were, first.

DOCTOR MOELLER: Yes.

COMMISSIONER CURTISS: And secondly, would ten millirem appear to be unreasonable?

DOCTOR MOELLER: I think, in response to that, that ten millirem would be unreasonable if it were a source or a practice that could affect millions of people or hundreds of thousands because those same people would also be affected by other sources. If you combine too many ten millirem sources, you're reaching an unacceptable level.

COMMISSIONER CURTISS: Under the approach that's been discussed, if widespread practices were established on a level of one millirem and ten millirem were reserved for releases from regulatory control for decontaminated sites and for waste streams

from low-level waste facilities, would that appear to be unreasonable?

DOCTOR MOELLER: Really not. We were pushing the higher level than one millirem just to get it up to a higher level.

COMMISSIONER CURTISS: I'm curious to know whether -- it's an interesting discussion.

CHAIRMAN CARR: It's not a real technical basis for -- ten, one, three, four, five, you know, it's a few.

COMMISSIONER CURTISS: That was my question, whether three to five is reasonable because that's what other people do or because there's some technical conclusion that's driven you to that.

DOCTOR MOELLER: Well, mainly, the three to five would be based on the premise that most people would not be exposed to more than three such sources. We'd like to stay in a ten or 15 millirem total dose rate range. You need to gather some information on that or we do.

CHAIRMAN CARR: Even though we're in a hundred millirem background?

DOCTOR MOELLER: Right, right. And again, the one millirem, one reason it troubled us a little bit, but as I say, on rereading your proposed

statement, it makes very good sense that it's a beginning level and you'll look on a case by case basis at higher levels. But one millirem concerned us since that is the level at which the NCRP truncates its collective dose calculations. That was simply our concern.

COMMISSIONER CURTISS: No further questions.

CHAIRMAN CARR: Let me ask you if you're-- what plans you have for replacing Doctor Smith. Would your activities be impacted if we kept you three members?

DOCTOR MOELLER: They would be, yes. Yes, sir. And, in fact, our next agenda item as soon as this meeting is over was to discuss nominations or candidates for the potential position.

CHAIRMAN CARR: All right.

DOCTOR MOELLER: I would ask, please, that you do restore us to four people.

CHAIRMAN CARR: And how about the staff resources? Are they adequate to provide the types of constructive comments and detailed rationales that are most helpful to us?

DOCTOR MOELLER: They are rapidly reaching that level. Howard Larson has joined our supporting staff and so that gives us at the moment three people,

Charlotte Adams and Richard Major and Howard Larson. And we have a fourth position which either will be a fellow or a full-time staff member. And I think when we reach that, we can really move along the way we want to. We've been definitely hampered up to the present.

CHAIRMAN CARR: All right. Well, I'd like to thank you, Doctor Moeller, Doctor Steindler and Doctor Hinze, for providing this update on ACNW activities. I know these periodic discussions are helpful to each of us on the Commission in providing an opportunity to discuss your recommendations on waste management issues.

ACNW has had a formidable task since its inception in 1988 in becoming familiar with the broad scope of waste management issues confronting the Commission. Now that this period is behind us, I appreciate your willingness to focus your attention on the specific technical issues of particular interest to the Commission that I forwarded in my November memo to you.

I urge you to work with the staff in formulating your quarterly program plan to optimize the timing of your ACNW reviews. I also encourage you to continue the practice of attending major meetings

arranged by the staff on key technical issues to enhance communication and to optimize the use of our resources.

I appreciate your continuing efforts to keep us informed of your Committee's efforts through our personal staffs.

Do any of my fellow Commissioners have any additional comments?

COMMISSIONER ROGERS: Just that I thought it was an excellent session and --

COMMISSIONER ROBERTS: It certainly was.

COMMISSIONER ROGERS: -- really enjoyed it very much.

DOCTOR MOELLER: Thank you, sir.

CHAIRMAN CARR: We stand adjourned.

(Whereupon, at 3:45 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 BY ADVISORY COMMITTEE ON NUCLEAR WASTE

PLACE OF MEETING: ROCKVILLE, MARYLAND

DATE OF MEETING: FEBRUARY 21, 1990

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

OM7 ACNW

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

January 26, 1989

The Honorable Lando W. Zech, Jr.
Chairman
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Chairman Zech:

SUBJECT: WEST VALLEY DEMONSTRATION PROJECT

During its sixth meeting, January 23-24, 1989, the Advisory Committee on Nuclear Waste (ACNW) met with representatives of the U.S. Department of Energy (DOE), its contractors, and the New York State Energy Research and Development Authority for a review of the West Valley Demonstration Project. We discussed, among other concerns, the procedures that have been developed and are being applied in solidifying decontaminated supernatant low-level wastes and testing the melter for vitrification of the high-level wastes.

As a result of this review, the Committee concludes that the program is appropriately focused and that the results are favorable. Although there appears to be good communication between the DOE contractors and staff and the Nuclear Regulatory Commission (NRC) staff, there may be a need for additional input from the NRC staff in two areas:

1. Acceptance criteria for the vitrified high-level waste, including the enumeration of testing procedures to indicate conformance with these criteria, need to be identified by DOE for the waste producers, and these criteria, in turn, need to be reviewed by the NRC to determine if they are acceptable; and

2. Public health and safety criteria for the facilities and land areas being decontaminated and decommissioned as part of this project need to be established.

We plan to schedule a visit to the West Valley site within the next six months.

We trust these comments are responsive to your request.

Sincerely,

Dade W. Moeller

Dade W. Moeller
Chairman

1-26-87

References:

1. U. S. Department of Energy Report, DOE/NE/44139--15, "West Valley Demonstration Project Plan," January 1989
2. Letter dated August 3, 1988 from R. D. Hurt, U. S. Nuclear Regulatory Commission, to W. W. Bixby, U. S. Department of Energy, regarding comments on the revised West Valley Demonstration Project Plan

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

December 21, 1989

The Honorable Kenneth M. Carr
Chairman
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Chairman Carr:

SUBJECT: COMMENTS ON PROPOSED REVISIONS OF EPA'S HIGH-LEVEL WASTE STANDARDS

During its 15th meeting on December 20, 1989, the Advisory Committee on Nuclear Waste met with the NRC staff and representatives from the Department of Energy (DOE) and the Environmental Protection Agency (EPA) for additional discussions pertaining to the Standards for a high-level waste (HLW) repository currently being revised by EPA. We previously discussed this matter with a representative from EPA during our 14th meeting on October 11-13, 1989 and the ACNW or its predecessor, the ACRS, have had continuing interactions with the NRC staff on the matter over the past several years. We also had the benefit of the documents referenced.

On the basis of these discussions, we continue to doubt that compliance with the EPA standards can be demonstrated for a specific repository site, even recognizing the caveats included in the standard, such as the "reasonable assurance" phrase that allows for certain flexibilities in the interpretation of probabilistic analyses. If the construction of a Complementary Cumulative Distribution Function clearly demonstrates compliance with the EPA Standards, then the need for interpreting the "reasonable assurance" phrase is removed. If, as is more likely, demonstration of compliance is not clear, it will be necessary to have a definitive understanding of how the NRC staff plans to interpret the wording in the EPA Standards that:

> Proof of the future performance of a disposal system is not to be had in the ordinary sense of the word in situations that deal with much shorter time frames. Instead, what is required is a reasonable expectation, on the basis of the record before the implementing agency, that compliance with 191.13 (a) will be achieved.

The preferred alternative in the plan as outlined in SECY-89-319 for implementation of the EPA Standards calls for the NRC staff to resolve the major problems concerning implementation of Section 191.13 (a) through rulemaking. It is not clear to us, however, how

such rulemaking would resolve the uncertainties in applying probabilistic techniques, nor is it clear that this method represents the best approach for coping with problems that are, in the main, a result of what we consider to be an unacceptable set of standards.

We believe that the NRC staff in SECY-89-319 has not provided the Commission an adequate range of alternatives. One such alternative that we recommend would be that the Commission object to the EPA Standards on the basis that:

1. There are no obvious ways for demonstrating compliance of any specific repository site with the Standards. In this sense, the Standards may be unrealistic.
2. The Standards are also overly stringent and inconsistent. There is strong evidence that they will be wasteful of resources with little commensurate benefit.

The EPA Standards are internally inconsistent, in that lower level quantitative limits are more stringent than upper level qualitative goals. Thus far we have been provided no information to convince us that less stringent Standards would not provide adequate protection of the public health and safety. The NRC subsystem performance criteria have the potential for imposing even more stringent requirements on the repository.

While EPA has attempted to justify the added conservatisms as a means for allowing for uncertainties, we fail to understand the logic of this approach. Resolution of the problems of uncertainties would best be pursued through site characterization and performance assessment. The latter process, in particular, can be used to reveal where and to what degree uncertainties exist, and can provide guidance on where additional and better data are needed.

To resolve these issues, we recommend that the NRC staff be more aggressive in dealing with EPA. The task of the NRC staff, as we interpret it, should be to ensure that the EPA Standards are scientifically sound, consistent, and readily subject to interpretation and implementation. With the EPA in the process of revising their Standards, and DOE having announced an overall reassessment of its HLW program, this would appear to be an opportune time for the NRC to undertake these initiatives.

We will be pleased to discuss these matters with you in additional detail, if you desire.

Sincerely,

Dade W. Moeller

Dade W. Moeller,
Chairman

References:

1. SECY-89-319, "Implementation of the U.S. Environmental Protection Agency's High-Level Waste Disposal Standards," dated October 17, 1989
2. EPA Working Draft 1 of 40 CFR Part 191, dated June 2, 1989, "Standards for Management and Disposal of Spent Nuclear Fuel, High-Level and Transuranic Radioactive Wastes"
3. 40 CFR Part 191, "Environmental Radiation Protection Standards for Management and Disposal of Spent Nuclear Fuel, High-Level and Transuranic Radioactive Wastes"

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

January 30, 1990

The Honorable Kenneth M. Carr
Chairman
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Chairman Carr:

SUBJECT: NRC PROGRAM ON LOW-LEVEL RADIOACTIVE WASTES

During its 16th meeting, January 24-25, 1990, the Advisory Committee on Nuclear Waste met with representatives of the Division of Low-Level Waste Management and Decommissioning for a review of matters pertaining to the production, treatment, and disposal of low-level radioactive wastes (LLWs). These matters had also been discussed with other members of the NRC staff on several previous occasions. As a result of these reviews, we offer the following comments.

1. While considerable attention has been given to the development of requirements for the siting, construction, and operation of disposal facilities, there appears to be a lack of coordination of these activities with the processes that produce the wastes. It is these processes which, in turn, determine the chemical and physical characteristics, radionuclide content, and volumes of the wastes. In our opinion, these processes and the resulting products may have as much bearing on the protection of public health and safety as do the requirements for the disposal facilities. We believe this is an excellent example where a systems approach could yield dividends. Before this can be accomplished, however, there is a need for closer coordination of relevant activities by NMSS, NRR, and RES.

2. Under the requirements of the Low-Level Radioactive Waste Policy Act and amendments, a number of states and state compacts are moving forward to develop plans for the siting and construction of low-level radioactive waste disposal facilities. Although the NRC staff has prepared a multitude of reports containing information that would be useful to the Agreement States and LLW facility developers, there is currently no single document containing comprehensive guidance or a "road map" to

reports that pertain to this topic. To correct this situation, we recommend that a guidance document containing a summary of relevant laws and key regulations, regulatory guides, NUREG documents, and technical positions, suitably annotated and cross-referenced, be prepared. To the extent practical, pertinent standards developed by the U.S. Environmental Protection Agency and applicable key documents developed by the U.S. Department of Energy might also be cited in this report.

3. The Committee continues to believe that a need exists for a system through which the benefits of operating experience can be factored into NRC activities related to the generation and disposal of LLW. One contribution to this subject would be the preparation of a report based on a definitive review and digest of the experience gained at the Maxey Flats, Sheffield, and West Valley disposal facilities.

4. The Committee is concerned about the availability of adequate disposal capacity, licensed under the provisions of 10 CFR 61, Licensing Requirements for Land Disposal of Radioactive Waste, to accommodate LLWs after the scheduled closure in 1992 of the currently operated Barnwell, South Carolina, and Beatty, Nevada, disposal facilities. We urge that the Commission increase its efforts to encourage the States to accelerate the process for developing suitable disposal facilities.

We hope these comments will be helpful.

Sincerely,

Dade W. Moeller

Dade W. Moeller
Chairman

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

January 30, 1990

The Honorable Kenneth M. Carr
Chairman
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Chairman Carr:

SUBJECT: COMMISSION POLICY STATEMENT ON EXEMPTIONS FROM REGULATORY CONTROL

During its 16th meeting, January 24-25, 1990, the Advisory Committee on Nuclear Waste reviewed the above subject report (SECY-89-360). Because this has been a matter of continuing interest to the Committee, we take this opportunity to offer the following comments.

1. We believe that expressing the Policy Statement in terms of "Exemptions from Regulatory Control" is a positive step. We have, for some time, believed that the term, "Below Regulatory Control," was a misnomer. In fact, for the case of low-level radioactive wastes, the objective is to develop a system for granting approval for certain (exempted) wastes to be disposed of in facilities not licensed by the NRC.

2. We agree that the Commission is wise to be conservative in the selection of applicable dose rate limits until such time as more experience is gained relative to assessing the potential for individual exposures from multiple practices. However, we believe that the limits of 1 mrem/yr for individual dose rates and 0.1 mrem/yr for the truncation of collective doses are too low. Neither would be directly measurable and both would have large accompanying uncertainties.

   From our perspective, it appears that the Commission would need to take experience into account only in the establishment of an annual dose limit for individuals. Even so, a limit of 3 to 5 mrem/yr for each individual source or practice would not appear to be unreasonable. In the selection of a limit for truncating collective dose calculations, we suggest that the Commission adopt the 1 mrem/yr value being used by the National Council on Radiation Protection and Measurements.

3. As stated in our letter dated December 30, 1988, we believe that the collective dose limit should be variable. Following this approach, higher annual collective dose limits would be permitted for exempted practices that contribute smaller dose rates to individuals. It should be noted that the suggested collective dose rate limit of 1000 person-rem/yr may require the Commission to reconsider existing exemptions, such as those that permit the incorporation of licensed materials in smoke detectors and in luminous watches and clocks. Both of these applications appear to yield annual collective doses exceeding the proposed limit.

4. We believe the NRC staff is correct in urging that the Policy Statement include recommendations to discourage "frivolous" uses of radioactive materials. Although which practices constitute such uses may be subject to interpretation, most people would agree that exemptions should not be granted for the purposeful introduction of radioactive materials into food or toys, regardless of how low the associated dose rates might be.

We hope these comments will be helpful.

Sincerely,

Dade W. Moeller

Dade W. Moeller
Chairman

Reference:
SECY-89-360, Commission Policy Statement on Exemptions From Regulatory Control, December 1, 1989 (Predecisional)