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D I S C L A I M E R

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UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

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PUBLIC MEETING

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Briefing on the Status of

Efforts to Develop a De Minimis Policy

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1717 H Street, NW

Room 1130

Washington, D.C.

Monday, March 14, 1988

The Commission met in public session, pursuant to notice, at 2:00 p.m., the Honorable Lando W. Zech, Jr., Chairman of the Commission, presiding.

COMMISSIONERS PRESENT:

Lando W. Zech, Jr., Chairman

Kenneth C. Rogers, Commissioner

Frederick M. Bernthal, Commissioner

Thomas M. Roberts, Commissioner

Kenneth M. Carr, Commissioner

STAFF SEATED AT COMMISSION TABLE:

S. Chilk, SECY

W. Parler, OGC

V. Stello, EDO

R. Bernero

T. Speis

W. Lahs

B. Morris

B. Alexander

P R O C E E D I N G S

CHAIRMAN ZECH: Good afternoon, ladies and gentlemen.

The Commission will be briefed today by the Office of Research and Nuclear Material Safety and Safeguards.

The subject of the briefing is the status of their activities to define the potential use of de minimis and below regulatory concern concepts in the NRC's radiation protection policies and regulations.

The Commission has requested that the Staff develop a proposed policy statement that would identify the level of radiation risk below which government regulation becomes unwarranted.

This policy statement should be consistent with all existing government standards related to the protection of the public from radiation hazards. The Commission had previously requested that the Staff provide advice on how existing and proposed de minimis below regulatory concern and residual radioactivity standards are related.

Recently the Commission approved, with modifications, a proposed final rule on decommissioning of nuclear activities, nuclear facilities which will require that decommissioned facilities be decontaminated to an acceptable level.

I would be interested in hearing the status of activities to revise and update the agency's guidance in this area.

Lastly, there is interest in this subject by several government agencies, other domestic organizations, and a number of foreign organizations.

Time permitting, it would be worthwhile to have a brief summary of activities by other organizations in this area.

I would like to point out that this is an information meeting, and no formal Commission vote is anticipated this afternoon.

Do any of my fellow Commissioners have any opening comments to make? If not, Mr. Stello, you may proceed.

MR. STELLO: Well, thank you, Mr. Chairman.

Let me start by introducing those at the table with me here today. On my far right is Mr. Bernero from NMSS, the deputy of that office. To my immediate right is Mr. Speis, who is -- Dr. Speis, who is the deputy of our Office of Research. To my immediate left, Mr. Lahs, who will be making the presentation this morning from Research. And immediately to his left, Bill Morris from our Office of Research.

We do this afternoon want to tell you about our plans to bring together a symposium to discuss the complex questions related to issues of setting dose levels at a point where I think you would characterize them as de minimis or below regulatory concern.

We have been working hard to bring international

communities and various governments together to have a discussion in this very important area. And you have already correctly pointed out that there are others in the federal government of the United States who will participate with us in having this discussion.

You also are aware that we sent you a paper giving you an outline of the concepts involved a couple of weeks ago, and that paper is the basis upon which the briefing this afternoon will be based. And if I can, I will ask Mr. Lahs to proceed with the presentation.

CHAIRMAN ZECH: All right, thank you very much. You pay proceed.

MR. LAHS: As the Chairman has indicated, the purpose of my presentation today is really to initiate our direct response to your request made in the staff requirements memos dated back on February 5th and November 24th of last year.

In so doing, I am going to be presenting the status report, in which I am going to be discussing the below regulatory concern de minimis risk concepts and their potential uses in the development of radiation protection policies and regulations. I am going to be specifically focusing on the question which you raised on the efforts to use these concepts to try to develop a proposed Commission policy that would identify a level of radiation risk below which the government regulation becomes either limited or unwarranted.

In the November SRM, you also requested a near term status report. As Mr. Stello has indicated, we have submitted a Commission paper in response to your request, and my intention today is to discuss and elaborate on the major points raised in that paper.

As the next slide shows, please --

CHAIRMAN ZECH: Before you go to the next slide, are you going to talk to us about some of the criteria that you have used in making these judgments?

MR. LAHS: Yes. I am going to be mentioning it.

CHAIRMAN ZECH: All right. That's fine.

MR. LAHS: Could I have the next slide, please.

You got it backwards. There you go.

Okay, the topics I'd like to discuss, first of all, is the radiation protection framework and the terms and concepts associated with potential regulatory cut-offs.

Second, I would like to get into some discussion of some policy development considerations, and discuss these in light of current NRC, EPA, and international activities, and actually I would like to refer to current activities in discussing both these first two items, to give you some idea of the magnitude of some of the cut-off levels that are being proposed both nationally and internationally.

Third, a brief discussion of our plans for an international symposium which Vic Stello referred to.

And finally, a discussion of the preliminary resource estimates not only for development of the broad policy, which you asked for, but also some specific policies which are in the works.

CHAIRMAN ZECH: In the Commission paper that you provided, you talked about interagency working group.

MR. LAHS: Yes, sir.

CHAIRMAN ZECH: Can you tell us a little bit about what's going on in that group?

MR. LAHS: Essentially --

CHAIRMAN ZECH: As you go through?

MR. LAHS: Okay, yes.

CHAIRMAN ZECH: Or at the appropriate time. I'd just like to know. I think it's true that we do have an interagency working group, and I'd just like to hear what is taking place as far as that group is concerned.

MR. LAHS: Okay. Maybe that would be good to take up. There's a viewgraph here on authorities and people involved in setting the de minimis and below regulatory concern standards. Maybe if I could defer it to that time.

CHAIRMAN ZECH: That's fine, as long as you cover it. I think it's important we have that going on, and I would like to hear about it, and I think my fellow Commissioners would be interested in that, too. All right, let's go.

MR. LAHS: Starting with the first topic on the

slide. That first topic -- you know, at first it looks like it's fairly unimportant, but because of the wide differences in interpretations given to terms, especially those terms associated with regulatory cut-off concepts and specifically the term de minimis. I think I can assure you that an appreciation of the radiation protection framework and a consistent and common definition of the de minimis and below regulatory concern concepts is really vital to coherent discussion and understanding of policy options which you may have.

The current framework for radiation protection consists of three fundamental principles:

The first of these is whether particular usage of radioactive material is justified. That is, whether there is some benefit to be gained by use of radioactive materials.

Can I have the next slide, please.

The second principle involves dose limits which essentially establish the boundary between allowable and unacceptable exposures to individuals. These limits are contained in 10 CFR Part 20 and provide the adequate protection required for public health and safety.

Within that range of potential acceptable exposures -- in other words, below the line on this figure, exposures are further limited by application of the third principle, the ALARA principle, as low as reasonably achievable.

Also, though, within that region below these basic dose limits are other limits imposed by both NRC and EPA which further restrict dose levels for some licensees such as nuclear power plants and nuclear fuel cycle facilities.

Examples here are things like the EPA's uranium fuel cycle standard and the Clean Air Act and even our own Appendix I.

At the lower end of the ALARA region of doses, as we're getting now into the middle of the figure, the concept of regulatory cut-offs comes into play. The first one we run into is what we have called below regulatory concern or BRC. BRC, in our minds, connotes a level of risk or dose that may be considered small from a regulatory standpoint. Individual and collective doses essentially that warrant only limited government attention, taking into account the cost of further regulation and the likelihood that such regulation would significantly alter the resulting doses.

If certain specific BRC source or exposures -- I'm sorry, if a source of exposure could be considered as a candidate for reduced regulatory requirements, if certain specific BRC conditions are met, and the best way to describe this is to think of examples with regard to disposal of certain low level waste streams. You had a policy statement which you issued back in August '86, which was followed by an advanced notice in December of that year, addressing the issue of

disposal of certain low level radioactively contaminated waste streams.

And in those documents, you suggested that those waste streams might be disposed of at sites other than low level waste sites, if the individual doses associated with disposal were no more than a few millirem per year.

Now it turns out that EPA is developing generally applicable environmental standards for land disposal of low level radioactive waste which includes a 4 millirem per year individual dose criterion for the BRC waste streams.

Internationally, both EPA and ourselves are not too far out of step because, for example, the Atomic Energy Board of Canada, in also dealing with waste streams that they would like to designate as being below regulatory concerns, are suggesting a 5 millirem per year number.

This BRC approach that I mentioned in terms of waste streams --

CHAIRMAN ZECH: Excuse me. Have any other countries put a number on it like that, do you know?

MR. LAHS: Let's see, the United Kingdom, I believe, has a number of, I believe it's 5 millirem per year, and then to account for multiple sources, I believe they divide by 10 and get down to a half millirem per year. So they're all in the same ball park.

CHAIRMAN ZECH: So something around 5 or below?

MR. LAHS: Yes, for the waste streams.

CHAIRMAN ZECH: For the waste stream. All right. Thank you.

MR. LAHS: But the point is the BRC approach can also be considered to respond, for example, to your request on March 2nd directing the Staff to develop interim guidance for residual levels of radioactive contamination on lands or structures which could be released for unrestricted use following decommissioning. Now I am going to get into a little more detail on that effort in the resource part of my presentation.

Finally, at the bottom of the figure is the region of dose levels that would be low enough for the assumed risk to be considered as trivial by the individual, and that's what we have designated to be the de minimis or negligible individual risk level.

As a concept, the negligible risk level can be considered one in which no regulatory activity is required. To give you some feeling again for what others consider a de minimis risk, the National Council on Radiation Protection uses the phrase annual negligible individual risk level, and refers to this as the boundary below which the risk is dismissed from consideration.

Nationally, the Food and Drug Administration and the Environmental Protection Agency define a de minimis risk as

risk of one cancer per 100,000 to 1 million lifetimes. Now that translates into an annual fatality risk which generally we tend to deal with here on the order of about 10 to the minus 7th or 10 to the minus 8th. So we're talking about small numbers.

Okay, I should mention, to give you again a feeling for the numbers, that when we talk about the Part 20 limits, we are talking about the upper limits, we are talking about individual doses in roughly the 100 millirem per year range. The supplementary standards are generally in the 25 millirem per year range, except for Appendix I, which is down 10 or 5, depending on what interpretation you want to make.

COMMISSIONER BERNTHAL: As a matter of curiosity, when other agencies, EPA or whoever, arrive at these spectacularly low numbers, do they assume a linear hypothesis as well? Because they certainly don't test large populations for reaction to substances at that level.

MR. LAHS: I believe when they are talking about the toxic substances, I don't believe -- and the Food and Drug Administration has an applicable linear hypothesis. With EPA, I believe they do use it, but I might stand corrected on that, if anybody knows anything.

COMMISSIONER BERNTHAL: I can't see how else they would do it, quite frankly.

MR. ALEXANDER: Yes, the EPA's radiation standards

are based on the linear --

COMMISSIONER BERNTHAL: No, I'm not talking about radiation. I am talking about all the other stuff --

MR. PARLER: Mr. Chairman?

CHAIRMAN ZECH: Yes.

MR. PARLER: Could someone identify the gentleman?

CHAIRMAN ZECH: Yes, please, thank you. Would you identify yourself, please, for the reporter?

MR. ALEXANDER: R.E. Alexander, Office of Research.

CHAIRMAN ZECH: Thank you.

COMMISSIONER BERNTHAL: Yes, my question was not about radiation, although I assume that yours was a more generic issue, when you're talking about FDA things, for example. What do they do about things like toxic substances?

MR. LAHS: The number I referred --

COMMISSIONER BERNTHAL: Are they in your hypothesis?

MR. LAHS: The -- I believe that's correct, because the number I was referring to was a -- came from a Superfund determination and some number that applies to toxic waste, not necessarily radioactivity. But I'd like to double-check that for you.

COMMISSIONER BERNTHAL: The number I don't -- it is whatever you say it is, but I'm curious as to how they arrived at that policy.

CHAIRMAN ZECH: What's the top of your chart, basic

regulatory dose limit? Can you talk about that for just a minute? And then below that somewhere, I guess, could you talk about what do we get living here in the Washington, D.C. area? What do they get living in different parts of the country? Just to put some perspective on the numbers.

MR. LAHS: As I mentioned, the basic regulatory standard in Part 20 is essentially, or will become 100, roughly 100 MR per year to the individual, year in and year out, with I believe a maximum of 500 -- and again, Bob Alexander can correct me if I'm a little off on the numbers. Background in Washington, I would suspect is, if you count radon, is probably on the order of something a little less than 200, and the background over the country I guess varies from 100 to 300 MR per year, plus or minus 20 percent or so.

CHAIRMAN ZECH: Good.

MR. ALEXANDER: I didn't hear the upper range you gave.

CHAIRMAN ZECH: I said to 500.

MR. ALEXANDER: Yes.

CHAIRMAN ZECH: 100 to 500 throughout our country, depending on where you live?

MR. LAHS: Yes.

CHAIRMAN ZECH: Where is the highest radiation levels in our country, just as far as the --

COMMISSIONER BERNTHAL: In your basement.

[Laughter.]

MR. LAHS: In terms of cities, I would suspect it's something like Denver.

CHAIRMAN ZECH: Yes. Why?

MR. LAHS: Because of the --

CHAIRMAN ZECH: The altitude, I guess, right?

MR. LAHS: Yes.

CHAIRMAN ZECH: I imagine. Is that right?

MR. LAHS: Yes.

CHAIRMAN ZECH: Okay. All right, that's fine.

MR. LAHS: Okay. Let me --

COMMISSIONER BERNTHAL: Let me just make the point here that the canonical number for average radiation dose is simply -- was recently nearly doubled from the single influence of radon, as you know. It's up to 300 or something like that.

MR. STELLO: I just asked Bob, and he just told me the number was -- average in the country now, including radon, is 300 millirem per year average.

CHAIRMAN ZECH: Including radon?

MR. STELLO: Yes.

MR. LAHS: 200 roughly, from radon.

CHAIRMAN ZECH: What kind of a dose would you get if you flew an airplane from New York to Los Angeles?

MR. LAHS: I think it's a few millirem, but I'm not sure. I'd have to double-check. You mean --

CHAIRMAN ZECH: Just say one trip.

MR. ALEXANDER: 5 millirem.

CHAIRMAN ZECH: 5 millirem. So if you did a number of trips a year, it would be five times how many number of trips you made a year; right?

MR. LAHS: That's right.

CHAIRMAN ZECH: It would add to your yearly dose. Do the airlines keep track of their pilots and attendants? Do you know?

MR. LAHS: I don't believe so, no.

CHAIRMAN ZECH: Is there any concern about that?

MR. ALEXANDER: Yes, they are investigating now the necessity for monitoring the radiation doses of the flight crews and establishing a criteria, occupational dose criteria for them. But those have not yet been adopted or enforced.

CHAIRMAN ZECH: All right.

MR. STELLO: One other interesting number -- I have asked Mr. Alexander to join us at the table -- if I remember right, the average exposure at our nuclear plants is averaging I think it's on the order of half a millirem per year, living in the vicinity of a nuclear plant now? The average?

MR. ALEXANDER: Oh, no, for the people who live within 50 miles of a nuclear power plant, the average annual radiation dose is 7 microrem per year.

COMMISSIONER BERNTHAL: What about 10 miles?

MR. ALEXANDER: I'm sorry, Commissioner, the only number I have in mind right now is the average out to 50 miles. I don't know what it is to 10 miles.

COMMISSIONER BERNTHAL: It seems like that's probably a more pertinent number, for a variety of reasons.

MR. LAHS: If I could go on then, before we leave this framework slide, I would like to make one last point regarding what we called in the Commission paper de facto BRC levels that are currently in NRC regulations. I think a brief discussion of these exemptions may illustrate a consistency in the release standards that may not be immediately obvious, because the exemptions are often specified in terms of radionuclide quantity concentrations, and the relationship to individual or population dose is not always specifically called out.

Examples of these de facto levels include things like exempt quantities and concentrations of various materials -- materials in various consumer and industrial products which show up in Part 30, exempt concentrations of tritium and carbon-14 in animal carcases and scintillation fluids requiring disposal which appear in Part 20, and exempt quantities of soluble or dispersable radioactive material for release into sanitary sewer systems which also appears in Part 20.

The part I am trying to make here is that it was often possible for these exemptions and a lot of exemptions on

consumer products to be based on practical requirements or needs for the radioactive material associated with a specific source or practice.

As a result, the estimated individual doses which could potentially be associated with exposure to some of these practices and sources can be in the microrem range. A magnitude of individual dose that we have just got done discussing, which we probably can justifiably argue is in the negligible risk area.

So what's happened in a sense is that you've made -- at least in my mind you're making BRC determinations, but because of the practicality of the situation, many times in our regulation that shows up as a limit which is really a negligible individual risk level, in my mind.

These exemptions were promulgated by previous Commissions, not because they were always entirely risk-free, but because either as I mentioned before, the degree of risk was too small to justify the burden of additional regulatory constraints, or else little, if anything, would be gained in terms of risk reduction by the addition of regulatory controls.

There's another important point. You may also be aware that limited regulatory controls are often associated with some of these BRC levels. Something the name "below regulatory concern" doesn't necessarily imply, especially to people not familiar with the concept.

For example, when we were talking about disposal of the waste streams, where you can dispose of those waste streams is going to be limited, probably to sanitary landfills or to incineration.

Licensees may be required to perform radiological surveys, maintain exposure records, and be subject to NRC inspections for compliance.

In summary, then, the risk associated with specific BRC levels may -- and I want to emphasize may -- be what most people would consider trivial. But once the conditions for definition of BRC levels are defined and incorporated into practice, through either license conditions or into our regulations, additional measures taken by the licensees or the public to further reduce risk would be essentially entirely voluntary.

CHAIRMAN ZECH: When those decisions were made, are you aware, was there any attempt at consistency? Was there any attempt to bring them together? Any attempt to look at all of them as a whole, rather than each one individually?

MR. LAHS: I think the one thing they had in common was that they all had justification of practice, was a major factor. As far as -- like I say, you could look at something like allowable amounts of material say in a smoke detector, and people have done calculations in looking at what individual exposures could result from americium-241. You might come up

with the number of 9 microrem, and people have actually figured out population doses from smoke detectors. From some other consumer product, it could be something much higher or lower. And the reason being because the standards were essentially set in most cases based on essentially what was needed.

In other words, there was not a consistency in dose level, although there was a consistency in establishing the levels in the regulations, because it was based on the --

CHAIRMAN ZECH: But a determination had to be made that it was certainly not a health hazard or hazardous to the human being --

MR. LAHS: Yes.

CHAIRMAN ZECH: Is that -- I'm sure that --

MR. LAHS: Well, obviously when we're talking microrems or --

CHAIRMAN ZECH: Yes, but I mean below that, as far as you know, apparently there was not any attempt to look at the whole of these various specific items?

MR. LAHS: I believe that's correct. Bob, do you have anything -- Bob Bernero?

MR. BERNERO: No.

MR. LAHS: Okay. I think that's right.

CHAIRMAN ZECH: All right. Fine. Thank you.

MR. STELLO: The answer is they were not.

CHAIRMAN ZECH: All right, proceed. Thank you.

MR. LAHS: Okay, at this point I'd like to discuss some technically oriented policy development considerations on the next slide, please.

We just got done discussing that from the Staff's viewpoint, there are at least two different types of low level regulatory cut-offs, one which we call below regulatory concern, and one which we call negligible risk, or de minimis risk.

Okay, the first item coming down, and it says if BRC cut-offs are to be established, one of the first questions we'd have to address is whether generic or source or activity-specific cut-offs should be developed.

Now if we go the generic route, you say, well, how could I defend such a number? Well, you might do just what you were doing earlier. You'd say, well, maybe you could defend the number based on some small fraction of background, some small fraction of variation background; the number of flights you take across the country in a year. In other words, you have to use those sort of comparative arguments to justify a generic number.

The latter approach, by being -- because of the fact that it is source-specific, would definitely allow the possibility of using value impact or cost risk aversion arguments which implies at least a qualitative consideration of potential population doses associated with individual practices

or activities. And it's that approach, in fact, which EPA is using in trying to come up with their number for the disposal of waste streams.

The second bullet. One should also consider how to characterize cut-off levels. We've mentioned you could characterize them in terms of risk, individual dose, population dose, quantities, concentrations, or combinations of those parameters. The reason that's important is that for any regulatory cut-off policy to be useful, it has to be implementable. This suggests that even if cut-offs can be defined in terms of individual or population doses, somewhere along the line, these doses have to be translated into measurables. I mean if you're decommissioning this room, you have to translate that into what's going to be allowed on the surface of these walls, or what the concentration is going to be on the particular waste stream that you're going to allow to go into the landfill.

This then brings up the, I guess, familiar regulatory issue of consistent modeling. That is the regulatory agency then has to assure itself that a consistent and proper level of realism or conservatism is used in translating these measurable levels of radioactivity into estimates of individual or population doses.

Okay, the third consideration applies probably to the development of either BRC or negligible risk levels, and

relates to how one deals with the issue of potential exposures to multiple sources, and again you can again think about dispose of the waste streams, that if I tell you that disposal of a particular waste stream should not lead to an individual dose greater than 4 MR per year, and it's going to go to a certain particular landfill. The question, though, is how do we assure ourselves that more than one waste stream is not coming into that landfill, or from exposure to consumer products. Somewhere along the line we have to make a judgment how many consumer products an individual can be exposed to.

The fourth item really again is tied into whether we're going to be doing source-specific or generic determinations in terms of BRC levels, because if we do the source specific, it will bring population dose into the derivation of those levels, and implies that we'd be doing some sort of a cost-risk trade-off. So you get into what again is the appropriate number to convert a manrem into dollars.

Finally, the fifth consideration arises if the BRC levels or in fact de minimis levels are converted into fatality or cancer risks. Here if these sorts of determinations or conversions are made, the Commission essentially would be establishing, or maybe a better word would be reinforcing what is really probably a questionable practice of extrapolating the use of risk coefficients down to dose levels, where their use is really naturally supported by other data.

And then finally the last item is mentioned because of the choice of negligible risk level, as we have already mentioned it, in our minds, anyway, as more of a subjective judgment which is going to be somewhat difficult, I think, to quantify.

COMMISSIONER CARR: Why do you call those technically?

MR. LAHS: Well, the next viewgraph.

COMMISSIONER CARR: Well, but you said that last one is subjective down there. There's nothing technical about that last bullet you just explained.

MR. LAHS: Well, I guess that's a matter of interpretation. I guess you're right. It could come over into the next chart in terms of the -- I guess I see it as -- it's a judgment, we're saying, by the individual, but it becomes a technical issue in the sense that the Staff then has to somehow make a judgment on what most reasonable individuals would consider an individual risk level.

Okay. The next viewgraph is an attempt to identify the major authorities and regulations which are likely to have a significant impact on the development of regulatory cut-off policies, and the point which I've made before, and which is reemphasized here, is that there are really a number of significant players in the regulatory cut-off game, and many have already established or are establishing collective dose or

individual risk cut-offs for their specific purposes, and as a result, if we in the Commission are going to establish and implement a Commission BRC negligible risk policy, the logic of that policy and the levels which are set will have to be understood, defended, or put into context in light of these other cut-off levels, and radiation protection policies, mainly those put out by EPA.

CHAIRMAN ZECH: What standard did EPA apply when they established the radiation level in the Safe Drinking Water Act and the Clean Air Act?

MR. LAHS: That essentially is a 4 millirem per year value.

CHAIRMAN ZECH: 4 millirem per year, that's what they used.

MR. LAHS: For the individual dose limit.

CHAIRMAN ZECH: And they considered that then --

MR. LAHS: Before treatment, that's right.

CHAIRMAN ZECH: Before treatment, safe drinking water levels, and for air also?

MR. LAHS: For air, I believe it's 25 millirem per year.

COMMISSIONER BERNTHAL: Yes, I think the question then is how did they decide on those numbers?

MR. BERNERO: May I interject, Bill? One of the difficulties we have is the EPA standards are fragmented, and

they are subject to change, and we are in active dialogue with EPA right now because their -- what we call the fuel cycle standard, where they chose 25 for the fuel cycle, they are looking at low level waste standards now, and they may go down to something more like 4 millirem per year for that, and that has sort of a domino effect, because if you judge that to be appropriately at 4, they may reconsider these others.

They had a big hearing back in the mid '70s, the same time we had an Appendix I hearing, and it looked at the technology of the fuel cycle, what the different doses were from. It looked at epidemiology by what biological effects could be inferred, but basically did a long risk-benefit, cost-benefit sort of analysis in choosing those standards. And now, you know, they are always subject to that revision.

CHAIRMAN ZECH: And we are working with them closely now on this?

MR. BERNERO: Yes, we are. We have direct dealings with EPA on a regular basis, and also through what is called the CIRRPC Committee, the interagency committee.

CHAIRMAN ZECH: Okay, thank you.

COMMISSIONER CARR: I don't understand why we've got more of a problem than they had.

MR. LAHS: Well, in fact, they had the same problem, and that's one of the reasons --

COMMISSIONER CARR: Only they solved theirs.

MR. LAHS: They haven't yet, but for example, in terms of the BRC waste streams, the -- I believe they would have -- and this may be putting some words in their mouth, I believe they could have justified a somewhat higher number, but they chose the 4 millirem per year value --

COMMISSIONER CARR: For whatever the reason, they picked one.

MR. LAHS: Yes. Oh, that's correct. Then you're correct. I see what you're saying.

COMMISSIONER BERNTHAL: Bob just referred to the key, though, and that's a "long cost-benefit or risk-benefit analysis." What did they use for that analysis? I mean there really is a figure of merit hidden somewhere in that, which presumably is expressed in terms similar to the ones that we use here. What did they use?

MR. LAHS: Right. They traded off the savings in not having to send waste streams to the low level waste sites against increased -- in this case it would be increased different levels of population exposure.

COMMISSIONER BERNTHAL: Yes, but what was the population exposure criterion? Was it -- how many dollars per rem avoided, or whatever, million dollars per human life, or however you want to express it?

MR. LAHS: I believe they used the same numbers we did, about $1000 per manrem, but again I'd like to check that

out for you and come back to you.

CHAIRMAN ZECH: All right, let's proceed.

MR. ALEXANDER: That's the one point I think that Senator Bernthal --

[Laughter.]

MR. ALEXANDER: -- Commissioner Bernthal --

COMMISSIONER BERNTHAL: I'm not sure whether that's a promotion.

[Laughter.]

MR. ALEXANDER: Promotion was intended, Commissioner.

The point I wanted to make was that neither the EPA nor the NRC has the benefit of recommendations from the NCRP or the ICRP in making these decisions. Agencies like ours normally have such recommendations for setting the upper limits on exposure, but when you get to the low levels of trying to decide where to discontinue regulation, we're on our own.

COMMISSIONER CARR: That ought to make it easier to work.

CHAIRMAN ZECH: All right, let's proceed.

MR. LAHS: All right. Then I'd like to, I guess, now discuss some more, I guess, nuts and bolts type items. The first having to do with Staff efforts relative to the international symposium's regulatory authorities on the use of these regulatory cut-off concepts; and second, complete the presentation of the Staff's reviews regarding preliminary

resource estimates associated with the development of various regulatory cut-off policies.

On the former, the Staff has initiated efforts to convene a symposium because of the obvious international implications of the Commission's desire to identify this level of radiation risk below which government regulation becomes limited or unwarranted.

We had initially planned for a meeting on September 20th to 22nd of this year, but it appears there's a conflict overseas, so it may have to be delayed either one week or into, I believe it's the second week of October, so that's still being worked out, to be held here in Washington. The meeting will be held by us in cooperation with the Nuclear Energy Agency. Letters have already been exchanged. In fact, George sent a letter to Klaus Stadte, and we have received a favorable reply late last month.

Dick Cunningham of NMSS will be attending a joint committee of Radiation Protection and Public Health, a CNSI Bureau meeting tomorrow, and is carrying with him NRC's suggestions for a symposium agenda.

As you can get from this briefing, we are still in the process of developing an NRC position which could serve as the focal point for symposium discussion.

On the help side, we have a contract with the Oak Ridge Associated Universities to provide us technical

assistance to both formulate and conduct and summarize the symposium.

COMMISSIONER CARR: Now Research has got the lead on this, haven't they?

MR. LAHS: Yes.

COMMISSIONER CARR: And have they got the lead in the symposium, too?

MR. LAHS: Yes. I thought the first question had to do with the symposium. You were talking about the policy statement?

COMMISSIONER CARR: I guess I'm talking about all of it, but they aren't IREP to the symposium?

MR. LAHS: Well, I think the representation at the symposium will be -- you know, will be somebody pretty high level, so it might be Vic Stello or could be somebody high up in NMSS or --

MR. STELLO: If you're asking who's responsible for --

COMMISSIONER CARR: I'm asking why we don't send the guy who's got the responsibility to take charge of the program and march off.

MR. STELLO: Research is doing that. The reason Dick Cunningham is over there for a different purpose, he is the chairman of a particular long-standing committee on radiation protection, the international committee, and he is going to

introduce this subject to that committee, which he is a standing member of.

COMMISSIONER BERNTHAL: I guess I'm -- it always is deflating to see how long it's going to take to do anything around here, but I'm just looking at the proposed schedules here. Is there really so little in the record or in the Commission's various utterances over the years with, one hopes, supporting data to deal with various problems? Do we not have some long standing sense around here of starting out from the fundamental here, which really is the kind of thing we're speaking about a few minutes ago, the value, like it or not, that you attach to a human life? Do we have to start all over from scratch again in this area, or --

MR. LAHS: No, I don't think we're starting over from scratch. Let me get into this, and I can tell you what's gone through our thinking in coming up with these schedules and the resources and, as you know, the problem -- some of these problems have been on the books for like 10 years, I guess.

MR. PARLER: About 28, sir.

COMMISSIONER BERNTHAL: Yes. As long as the General Counsel's been here.

[Laughter.]

COMMISSIONER CARR: Could I ask one question? What do we hope to get out of that symposium?

MR. LAHS: Well, I guess the best we could hope to

get out of the symposium, if we got a general consensus internationally on the need to develop both below regulatory concern and negligible risk levels --

COMMISSIONER CARR: Oh, you can get that, surely, the need -- I mean, what I would hope is somebody go over there with a straw man and get an agreement on what to come out with.

MR. LAHS: Well, when you say that, I think you'll find that the -- overseas, from the material that I've read, anyway, that everything they are doing in terms of what they call unfortunately setting de minimis risk levels is really what we call below regulatory concern. The reason I say that is because justification of practice is always a presumption, when they are talking about this subject.

Here we are going to be talking about the possibility where justification of practice is -- I don't say there is none, but certainly it's questionable or very hard to quantify. I'm thinking along things like some of the consumer products.

COMMISSIONER BERNTHAL: Well, maybe we can agree fairly quickly that de minimis is the wrong word to use; that there is no point at which risk is zero. I think that's an easy assumption to start out from, and we can then start talking about below regulatory concern with some rational basis for it, and Lord knows we've been -- we've been ad-hoccing rational bases for various actions for years around here. And I guess I am just surprised that we sort of start all over

again reinventing the wheel, in fact.

MR. SPEIS: I think at this symposium we will discuss substantial questions like the form and the framework of these levels. So we will have our positions and put them on the table, and hopefully we can get some consensus. So that's the objective, basically, you know. They are not going to dictate to us, but we will do our homework and put on the table what we think makes sense, and you know, with a good dialogue with our counterparts in the other parts of the world, come up to some understanding.

COMMISSIONER BERNTHAL: And this symposium will happen next fall, you say?

MR. SPEIS: Yes. You know, in the summer, it's very difficult to get all these people from all of the countries together in Europe.

COMMISSIONER BERNTHAL: What would be wrong with this agency consulting with the ACRS, perhaps consulting with our own expert staff, with other agencies, and at least taking the step of putting an advanced notice out on the street in the meantime? Anything wrong with that?

MR. LAHS: Well, a lot of that is being done. I mean -- and let me tell you the formulation just of this information paper, there was considerable involvement with NMSS and NRR and Research.

MR. STELLO: Let me suggest that one of the things

that I hope we will be able to do is to provide for the Commission for endorsement of carrying to that particular meeting, just as Commissioner Carr said, a straw man proposal to raise as a possible mechanism to establish some numbers finally, and framework. I hope that we can have that.

COMMISSIONER BERNTHAL: Yes, I think that's a good idea, except that I would hope the proposal is a little better than a straw man. I mean it should reflect the fundamental precepts we have used around here for years, and that's why I sort of wonder whether why you can't proceed from that thesis to a fairly -- an advanced notice of proposed rulemaking, for example, should not be a straw man. One hopes that one puts something on the street that reflects a reasoned judgment in the agency, and I would think by now that we have already had such a thing.

MR. STELLO: Well, we realize we already have $1000 per manrem.

COMMISSIONER BERNTHAL: I know.

MR. STELLO: As a requirement now. How that can be used to produce a number to suggest here is where you will establish below regulatory concern in all of the areas that we are responsible for regulating, is not easy.

COMMISSIONER BERNTHAL: Well, no, that doesn't translate immediately, I agree, but --

MR. LAHS: Well, look up there, you have an advanced

notice of proposed rule out on the waste streams, for example, so you have already issued --

CHAIRMAN ZECH: That's out already.

MR. LAHS: Right. Something is already out on the specific source. I guess one of the bigger questions is, is that the way you want to continue, or you know, do you --

CHAIRMAN ZECH: It might be interesting for the Commission to receive any comments you have received on that advanced notice in a summary form. It might be very helpful for us to see what's come in so far.

COMMISSIONER BERNTHAL: But I have no problem at all dropping the concept of de minimis. I was told when I was in Italy that it was improper Latin, anyway, so we ought to just forget about it. I think really what we are talking about here is below regulatory concern. I'm not interested in arguing whether something is -- can or cannot in principle be a de minimis level.

MR. LAHS: Okay. But the following question is would you match up something like a consumer product, like the gemstone issue against the NRC level? Or are you thinking of lower levels?

COMMISSIONER BERNTHAL: I think so, yes.

MR. LAHS: Okay. Well, that's --

COMMISSIONER BERNTHAL: And get away from this frivolous concern standard, which is a separate issue, but

frivolous application, I guess, for frivolous use, which is an impossible standard.

COMMISSIONER CARR: The line here we have got now drawn at 5 MR?

MR. LAHS: It's supposed to be 5, something in that area.

COMMISSIONER CARR: What's wrong with that? That's a good line. I'll buy that.

MR. LAHS: I'll look forward to your comment on that.

COMMISSIONER CARR: Well, I mean, what's left, you know? I mean --

MR. LAHS: Those are the numbers that are being considered, that's right.

MR. ALEXANDER: Commissioner, we want to be careful. For example, if you take the Commission's safety goals and translate that into a generic BRC level, it comes out about 15 or 16 millirems per year. So if that would be a preferable, more reasonable number to use, one providing further distance from the negligible level, we'd like the opportunity to study that and make a presentation to you to that effect.

COMMISSIONER CARR: I don't understand what you just said.

MR. ALEXANDER: I just said -- what I'm saying is that a level higher than 5 millirems per year might be a more reasonable number --

COMMISSIONER CARR: Okay, pick it out. I mean what's -- what are we -- how long is it going to take us to decide that number?

COMMISSIONER BERNTHAL: Three years.

COMMISSIONER CARR: Well, it's taken more than that. I got papers here that go back to when, you know.

MR. MORRIS: I think that one of the things that we are recognizing here is that we won't be doing this, the Commission will not be making this decision in a vacuum. EPA will be making decisions about comparable levels of --

COMMISSIONER CARR: Well, they made theirs in a vacuum.

MR. MORRIS: And foreign nations will be making other decisions, having other positions, and it was our intent to bring as much of that information to light on this issue as we can through the mechanism of the international symposium, and recognizing what the EPA is going to be doing as it tries to deal with a court decision on how to use -- whether or not and in what circumstances it may use cost-benefit analysis in establishing standards. So the point that we make is that there's a lot of dynamics that are going on.

We would agree that we could, in principle, set forth a standard such as what you just mentioned.

COMMISSIONER CARR: Some number.

MR. MORRIS: And that would be the thing that we

would propose to do in our document that we prepare before the international symposium. So we will get that for you.

And the other thing I would point out is there are a number of activities going on in terms of specific BRC levels, the work we will be doing on BRC waste streams for reactors, and we have intended also to develop a BRC level for decommissioned lands and structures.

CHAIRMAN ZECH: Will you talk about decommissioning a little bit? You haven't talked about that, I don't think, and that might relate to what we're talking about now because, you know, the residual activity matter in decommissioning has been considered --

MR. LAHS: That will be the third item down here on this last slide.

CHAIRMAN ZECH: All right.

COMMISSIONER CARR: Well, I don't get the warm feeling that we are going to get through. I mean, all those words you gave me -- all the things you can think about that we have still got to do, and what we have got to consider --

MR. MORRIS: Think of it in terms of two different kinds of things that are going on. One is a set of specific activities that we are engaged in to deal with specific waste streams or specific activities.

COMMISSIONER CARR: That's only one option. You don't have to go that way.

MR. MORRIS: That's correct. We could --

COMMISSIONER CARR: Okay.

MR. MORRIS: -- could back out of that and try to come up with a generic policy.

COMMISSIONER BERNTHAL: That's right, and I think that's what the Commission was asking for, is it not? I thought that was the general gist of the SRM that we wrote on this gemstone thing.

MR. MORRIS: But remember Bill's point earlier, that having a policy on what dose level you want to reach, 5 millirem, does not provide you with a measurable quantity that you can use in practice very easily, such as the contamination levels for land or for structures. Those levels have to be evolved from the models that you build for decommissioning, and for the --

CHAIRMAN ZECH: But as far as the gems were concerned --

COMMISSIONER CARR: When you say not measurable, do you mean not measurable by what? Instrumentation?

MR. MORRIS: No, contamination levels of lands or structures could be measured by instrumentation. Dose levels that individuals would encounter would be the result of not only those contamination levels, but a model for how the population would be receiving that dose. So setting the dose level doesn't get the agency to where it eventually is going to

have to go in terms of determining measurable quantities.

CHAIRMAN ZECH: No, but when you provided us the gemstone business, I think, as I recall, you provided us a paper that showed the anticipated radiation levels expected from those, and you provided them in picocuries or something, but if you could do that for that particular item, I think what the Commission is trying to get at is -- and that was useful, but we're trying to come up with a number that we can all agree that will be below regulatory concerns, and if you could do it for the gemstones issue, if you can do it for decommissioning certain things, if you can do it for other things, then we're wondering what's the big problem.

MR. LAHS: Well, as you're saying, for multiple exposures, for example, from more than one source becomes a problem; how are you going to handle that.

CHAIRMAN ZECH: All right, fine.

COMMISSIONER CARR: I'm not sure --

MR. LAHS: What Bill was trying to mention was, for example, even though I tell you that this room is contaminated and I'm going to allow you to decontaminate this room to a level which I will say will not lead to a maximum individual dose greater than -- let's take the number 10 millirem per year. Whether you go generic or source-specific, somebody along the line has got to translate that into what am I going to allow in terms of curies per centimeter or per meter squared

on that wall.

COMMISSIONER BERNTHAL: But that's --

COMMISSIONER CARR: That's simple. Are you going to allow that person in there 24 hours a day, 365 days a year?

MR. LAHS: That's the sort of modeling you have --

COMMISSIONER CARR: Then it's easy to figure out the number.

COMMISSIONER BERNTHAL: I guess I think that we should not get hung up on problems that are secondary, or problems of implementation. It is the same problem that we -- as you know, you have gone through more than we, I would say, with respect to the extraordinary nuclear currents criteria, measurement vs. dose, and that kind of stuff. Of course, in every individual case you're going to have modeling problems. There will be a specific set of difficulties in applying a generic standard for every single case, but that's always going to be there. It just seems to me that starting with a generic standard is already going to be of tremendous regulatory assistance to us, in separating the wheat from the chaff. Then at least you only have to prove that you're meeting the standard instead of sort of ad hoc'ing it case by case, as we go along, like we've been doing for 27 years, is it?

MR. PARLER: A long time, yes, sir, since the early '60s.

COMMISSIONER CARR: That's all I have.

CHAIRMAN ZECH: All right. All right, proceed.

MR. STELLO: I'm not sure Commissioner Carr got an answer to the question. Let me see if I've got the question, because I think it deserves one.

Are you looking for when will the Staff provide you with a recommended number that can be used to characterize it as below regulatory concern --

COMMISSIONER CARR: De minimis is below that. You can forget de minimis. Just give me the BRC number, and I don't have to worry about anything else.

MR. STELLO: The answer to the question is we want to have that number that will have the backing, in a preliminary sense, as a reasonable basis, along with a lot of other baggage with it, to carry into the meeting that we are going to go to this fall. So the answer to your question is it will be before this fall. That's what we are hoping to have to take into the meeting with us. That means that's going to be what we think is -- again characterize it as a preliminary view of the Commission, because it will have to make a final decision some time later. That will require us to work with DOE, with EPA, as partners.

COMMISSIONER CARR: Yes, I guess that's what I don't understand. If we don't have to depend on them for any numbers, and the international community is only going to listen and critique and kibitz --

MR. STELLO: Oh, no, they're coming --

COMMISSIONER CARR: -- why can't we just do it ourselves?

MR. STELLO: I don't think you practically can because there is dual responsibilities of regulating --

COMMISSIONER CARR: Well, EPA did it.

MR. STELLO: Well, yes, we're dealing with Part 20 as well, but I think when you finally settle down, I think you're going to have to have a particular policy that will guide all of the agencies that have responsibilities for this activity in the country.

COMMISSIONER CARR: Well, who's the lead agency?

MR. STELLO: I think we think we are, and that we're going to --

COMMISSIONER BERNTHAL: Well, maybe we ought to lead.

COMMISSIONER ROBERTS: You might get some argument from other people.

COMMISSIONER CARR: I thought EPA was the lead agency.

MR. STELLO: Well, we're taking the lead in trying to get the answers, how's that.

COMMISSIONER ROGERS: If you have a set of expectations or a position as you go into that symposium, have you asked yourself precisely what it is that would change that as a result of the symposium, what kinds of things would happen

at the symposium that would lead you to change those numbers or assessments or positions, and try to come in some way at what the issues are? The thing I have trouble with in this presentation, and the whole problem is, I don't quite understand what the issues are. It seems to me that they're not very clear and transparently obvious to me what it is that you don't know, what it is you have to find out, and what decisions have to really be made. And if that could all be sorted out some way so that one can see where the uncertainties are or what decisions have to be resolved, either through further study or just somebody makes a decision, it's not clear.

I mean, after all, I hope we are not going to come out of that symposium with a result that simply is determined by how many people voted one way versus voted another way, and if that's the case, then you know, why do it that way.

So I'm just really uncomfortable with what I don't understand to be the issues that are an impediment to your coming to something right now. Is it a lack of data, a lack of understanding, a lack of agreement on some principles that you can't establish or haven't been able to establish one way or the other by some scientific means or what? What is it? What is it that is holding up grabbing ahold of this thing and moving ahead with it? What has changed over the last 28 years that have taken us from a state of ignorance to a state of less

ignorance where we are today? And where are we? I don't see it in a framework that I can understand at the moment.

MR. LAHS: Well, again, I think the big issue is here is your -- you're a regulatory agency and you're trying to set a threshold below which you're saying you're not going to be concerned any more. That in itself is quite a task. And, in fact, like I say, if you look at the international -- what the international people are doing, you might not be too happy with the members there. They're talking about 1 millirem per year. The question is --

COMMISSIONER ROGERS: Well, happy or unhappy with the numbers, that's a different question. The question is what kind of principles are going to guide you? Are you guided by whether people are happy or unhappy with the numbers, or are we guided by something that we think is a little more solid?

MR. LAHS: Okay. Well, we said if you're going generically, you're going to have to make your arguments based on comparisons with things like background, comparisons with variations in background. So somebody is going to have to pick the numbers, like you did in the safety goal, a tenth of a percent. Now was that the right number? I mean those are the things you have been arguing about.

COMMISSIONER BERNTHAL: Well, but I think Commissioner Rogers' point is a very good one, that you aren't going to arrive at the answer by taking a vote, and --

MR. LAHS: No, I don't think we intend to take a vote.

COMMISSIONER BERNTHAL: The international community may well these days be driven by considerations that are not grounded purely in the science.

MR. ALEXANDER: I think I might be able to shed a little bit of light on Commissioner Rogers' question, and also on Commissioner Zech's question, by giving you a very brief report on the interagency committee's work toward establishing criteria for decommissioning facilities and structures.

The EPA considers itself to be the responsible agency for establishing environmental radioactivity criteria. I believe most of us agree with that. So they have formed, more than two years ago, an interagency committee to arrive at radiological criteria for walking away from these facilities, leaving them safe.

We worked -- I was the, or am the NRC representative on that committee. We worked for about a year pretty hard, and were, I think, making a lot of progress, and now it's been about 15 months since that committee has met. So with that sort of priority being established by the EPA, who is the recognized agency for establishing radioactivity criteria levels, I think -- I'm not making an excuse for our staff, but the fact is that there isn't any government agency in Washington right now really pushing this issue.

COMMISSIONER BERNTHAL: What about us?

MR. STELLO: Except us.

MR. ALEXANDER: We're here.

COMMISSIONER BERNTHAL: No, really, I'm not being facetious. I really think that on this subject in particular, certainly it was true five years ago -- well, let me go back a few more years, perhaps, but up until very recently, most people looked to the NRC for leadership and guidance, and I think that is still substantially true, in this area. And so it just seems to me that whether or not we end up being a little bit out of sync with the rest of the world 10 years later when they're finally able to arrive at some consensus doesn't really matter all that much.

What may matter a lot more is that this agency take a leadership role because I suspect that that may itself mean a great deal to what the rest of the world finally decides in this area.

MR. ALEXANDER: Well, my experience, which is rather long, is that in the area of health physics, once anyone with any authority at all adopts a number of any kind, from then on, that's the stone tablet number that is used throughout the world.

COMMISSIONER BERNTHAL: Well, I think there is some truth in that, but that doesn't mean that you should shrink from chiseling something in the stone until everybody agrees on

what should be done, or we'll be waiting another 28 years if we do that.

COMMISSIONER CARR: I think what he is saying is we ought to go ahead and be Moses and chisel it in stone and get it over with.

[Laughter.]

CHAIRMAN ZECH: I think one thing we haven't talked about very much, that I'm aware of, and I think my colleagues are, too, is there's a great deal of thought also that's complicating the problem -- I'm sure it's complicated it for the Staff -- on the whole subject of low level radiation and how dangerous is it. That's been discussed, I think, for many, many years, maybe as long as this whole subject has been discussed, and I guess there's not really a consensus amongst the scientists, as far as I know.

Would anybody care to comment on that, very briefly?

MR. ALEXANDER: I'd like to.

CHAIRMAN ZECH: Please.

MR. ALEXANDER: Back in the '50s -- and I was around then, too -- when we were originally establishing our criteria in order to allow progress to take place in applications of nuclear energy, this linear nonthreshold hypothesis was adopted. And it has been a very useful hypothesis, allowing us to set levels for which we felt workers could be exposed safely, and through which the public could be protected

adequately while we proceeded toward what we thought would be best for people around the world.

Now we are working at a much lower level of radiation exposure where the statistics completely break down, so that the data base substantiating risk at levels like 5 millirems per year, 25 millirems per year, is very weak. So one of the difficulties that I think Commissioner Rogers was searching for is in using the linear nonthreshold, this great line, down to zero in establishing below regulatory concern levels, brings us face to face with making a probabilistic determination, much as you did in setting the safety goals, saying let's back up this line from zero to some reasonable point and say that below this point, people should be allowed to govern themselves, and we'll step out of the picture.

When you start trying to determine a probability, then everyone becomes an expert, and it is very difficult to arrive, Commissioner, at a scientific consensus to come to a group of people like yourselves and say this is the consensus of opinion in the scientific community, that the probability should be X, and that the annual dose associated with that probability is Y. We are simply not at that point.

COMMISSIONER BERNTHAL: Do you think we ever will be? I mean I don't think there's any basis to believe that we will ever be at a consensus on that issue, at least not in our lifetime.

COMMISSIONER CARR: The point is --

CHAIRMAN ZECH: And the point is, when we get there, what we want to do is to find a level that would be at least reasonable, and so something that we could approach in a very conservative manner. What we are saying, if you don't have the exact answer, perhaps there is something that common sense would dictate would be a conservative approach that would be acceptable.

So even if you can't come up with the exact answer, I think what we are trying to say is -- and I appreciate, I really do, that this has gone on for many, many years, and we don't expect you to solve it at the table today; I don't think any of us expect you to do that. But we do feel perhaps that if you can't come to the exact answer and we don't see that we're going to get the exact answer any time soon, perhaps we know enough now, as you have just pointed out, in the low level field, perhaps we know enough now to put a band on something that we feel very comfortable with.

MR. ALEXANDER: Some of us feel that this decision is a policy decision.

CHAIRMAN ZECH: Well, that's what we're here for.

MR. ALEXANDER: A probability decision is a policy decision.

CHAIRMAN ZECH: But that's what we're here for. But on the other hand, we base our policy decisions on our best

judgment, all the analysis we can assemble from various peer groups, as well as our own staff, and so we want to make sure that the policy decision we make is a good one.

On the other hand, it is a policy decision. Some time it just has to be made. That's what we're here for. And we are willing to accept that responsibility. We are just asking you to give us, you know, your best analysis, your best recommendations, and we will make the decision.

MR. ALEXANDER: I believe you have already gone through the deliberations.

COMMISSIONER BERNTHAL: So do I.

MR. ALEXANDER: When you set the safety goal applicable to effluents, you made that policy decision. That was a very big decision. Comes out at about 15 millirem per year.

CHAIRMAN ZECH: And then you will have to tell us perhaps whether there's any reason for us in the things we're talking about to go anything less than that.

COMMISSIONER BERNTHAL: Let me give an example of a certain amount of leadership and courage, I guess, that was simply required and the EPA stepped up to it, and made a decision, they made a decision which did not hold up over the long run, as well as I would hope a conservative decision that we might make might hold up over the long run, and that was with respect to lead.

They set certain tolerance limits for lead, I guess in the blood, some years ago, because everybody knew that lead had certain hazards. It was not so clear whether there was a de minimis level for sure, let alone one below regulatory concern, and in fact they have now had to go back and are seriously considering lowering that limit, as I understand it, because of the latest epidemiological results.

So it just seems to me that it's better to begin and to step out and make your best effort, and I'm relatively confident that we have a far better data base on radiation and its effects than they had to start out with on lead. It's better to make a beginning and be conservative enough so you're not put in the position of having to lower it, but perhaps can relax it later on. That's clearly the better way to be in a position to go.

CHAIRMAN ZECH: Could we have a response, and then Commissioner Carr has a --

MR. ALEXANDER: Can I answer Commissioner Carr's question with regard to where the statistics break down?

CHAIRMAN ZECH: All right, go ahead.

MR. ALEXANDER: It will just take a moment. The National Academy of Sciences provided risk coefficients for us to use for doses greater than 10 rems, or for annual doses greater than 1 rem per year. In their report they simply said with regard to your question that -- this is not a direct

quote, but paraphrasing -- we do not know whether there are radiation risks at doses less than 100 millirems per year or not. So to my mind, that's where the statistics break down, and I have become concerned about public exposures when they reach that level.

COMMISSIONER CARR: At 100 millirem?

MR. ALEXANDER: Yes.

COMMISSIONER CARR: So if you want to be conservative, you could take an order of magnitude and say 10 millirem, we could pick the number.

MR. ALEXANDER: Yes.

COMMISSIONER CARR: Which isn't far from 15 which, you know, is close to the safety goal.

MR. ALEXANDER: We did --

COMMISSIONER CARR: That will be about as good data as we will get for quite a few years.

MR. ALEXANDER: We don't actually measure at that level. We just calculate. So those are essentially the same numbers.

COMMISSIONER CARR: That's all.

MR. STELLO: Mr. Chairman, I think this meeting has suggested that you want something very soon. I hope that the process that we are about, we can continue it. But we will provide you with a paper with a number and a proposed rationale as best we know it to you, and I will commit to a date as soon

as I have some time to raise that question.

CHAIRMAN ZECH: All right. Fine.

MR. STELLO: We will do it.

CHAIRMAN ZECH: Other questions, my fellow Commissioners? Commissioner Roberts?

COMMISSIONER ROBERTS: No.

CHAIRMAN ZECH: Commissioner Bernthal?

COMMISSIONER BERNTHAL: Is the Staff finished? I thought they had another --

MR. STELLO: I just decided that in light of this discussion, there was no point in going any further.

CHAIRMAN ZECH: Well, we looked at the last slide. I hope I didn't cut you off, but please --

MR. STELLO: I think we went through it far enough that I think we got the message, and I think I propose that we stop here, go back and give you a date, we'll commit to providing you with this --

CHAIRMAN ZECH: Theimy, does that make you happy? I don't know if you're smiling at that. It's hard to tell.

MR. SPEIS: No, I still think it's very important --

CHAIRMAN ZECH: You heard what he said, of course.

MR. SPEIS: I think I have told you before, Mr. Chairman, he is my boss.

CHAIRMAN ZECH: Yes, I know that.

[Laughter.]

MR. STELLO: Mr. Chairman, that isn't fair. He is the one who told me it's time, let's commit to do it, and that's -- I'm repeating what he said.

CHAIRMAN ZECH: Okay.

MR. SPEIS: I think I have said enough.

CHAIRMAN ZECH: All right.

[Laughter.]

COMMISSIONER BERNTHAL: You didn't say anything.

COMMISSIONER CARR: Besides, just look at all the FTE you can save.

CHAIRMAN ZECH: Commissioner Bernthal, did you have anything further?

COMMISSIONER BERNTHAL: Well, I don't have anything -- I have lots, but I think that the point of this briefing was the Staff's report, and I believe that what you have heard here is that we also wanted to get to that second part of the Commission's SRM. We asked for a status report/options paper. You clearly aren't ready yet with an options paper, and that's what you have now committed to do.

I think I will just save my comments on the issue which really brought all of this up, and that was the gemstone question. There is also a serious regulatory policy issue, this business of frivolous application that we need to address there. Suffice it to say that one person's frivolity can turn out to be someone's reason for being, and I feel we ought to

get away from that kind of standard.

I know of few other agencies in the government -- and I'll probably be contradicted here by some knowledgeable person -- that would try to apply that kind of standard to the government regulation and interference with individuals' lives.

So I may put out a short memorandum on that gemstone subject, and Staff's response which contained what seemed to be a differing professional opinion, and I want to compliment you, Vic, and the Staff for the straightforward and open way that that was handled. It was slightly less than the usual DPO approach in channels, but nevertheless it was clear that somebody disagreed with what we did, and that's fine, and I enjoy reading that kind of disagreement; it could have an influence on us.

CHAIRMAN ZECH: Commissioner Carr? Commissioner Rogers?

COMMISSIONER ROGERS: Well, just that it does seem to me that as the Chairman has pointed out, there's probably really a policy issue here that's going to decide this, and that you're not -- it isn't simply a matter of some data and some calculations and there's the answer, or it would have been done a long time ago. And so I think that we do have to, as Commissioner Bernthal has said, step up to the problem and make a decision. I would like, though, to try to see that the issues are as clear and the options as clear as possible before

we try to do that, so that we really do understand what it is we are deciding upon, and where the pitfalls are, and what the options really do consist of.

Once you have that, then if you make a decision, you know exactly what you are deciding, not on something that you really didn't quite see its implications at the time. So all that thinking is the thing that has to be done before the options are considered seriously by us.

CHAIRMAN ZECH: Well, let me just say that I think this has been a very valuable meeting today, it's been very helpful. I think it's important that you continue working with the interagency group that's working in our country. I do think -- and I think you have heard the Commission certainly support a leadership role in this area for the NRC. We recognize that EPA has a valuable role to play, too, but I do think you should work with that interagency group to continue to develop a national solution to the problem.

I am fully aware, too, of the importance of international groups. Some of them are vitally interested in what we do. Others take a different viewpoint, and maybe would seem to not necessarily support what we have in mind.

On the other hand, I do think it's important that you come to the Commission with your paper before you go to the international meeting, so that you will go with Commission views in hand, and I think that that will give us all a better

feeling of leadership in this role.

Between now and then, of course, you have got to get as much coordination in our own country as you can with EPA and others. So it is an important issue. It's been going on for many years. I think all of us recognize the public health and safety impact it could have.

We also recognize our responsibility as policymakers in this regard to make the very best decision for the citizens of our country that we can. I think you see a willingness on the part of the Commission to step up to the plate and be ready to take on the responsibilities we have talked about today.

So what we do need from the Staff, though, is your continuing analysis, support, integrity, using outside input as you can, to help us make the best possible decision that we can.

It seems to me that your last slide here, with a question mark, doesn't leave any of us too comfortable, and some of the other dates are kind of off into the future, but again, we recognize that it's not an easy issue. An awful lot of hard work has gone into this by a lot of people.

We have learned more in recent years about the radiation and perhaps we can make a good decision a bit sooner than we thought we could. In any case, the Commission stands ready to receive your thoughts and your recommendations, and we will look forward to that as you work with the interagency

group and prior to your going to the international meeting.

With that, we will stand adjourned.

Thank you very much.

[Whereupon, at 3:19 o'clock p.m., the meeting was adjourned.]

REPORTER'S CERTIFICATE

This is to certify that the attached events of a meeting of the U.S. Nuclear Regulatory Commission entitled:

TITLE OF MEETING: Briefing on the Status of Efforts to Develop a De Minimis Policy
PLACE OF MEETING: Washington, D.C.
DATE OF MEETING: Monday, March 14, 1988

were held as herein appears, and that this is the original transcript thereof for the file of the Commission taken stenographically by me, thereafter reduced to typewriting by me or under the direction of the court reporting company, and that the transcript is a true and accurate record of the foregoing events.

Suzanne B. Young

Ann Riley & Associates, Ltd.

STATUS REPORT

REGULATORY CUTOFFS

APPLICATION OF BELOW REGULATORY CONCERN & DE MINIMIS CONCEPTS

COMMISSION BRIEFING – MARCH 14, 1988

"REGULATORY CUTOFF" CONCEPTS
–THEIR POTENTIAL USE IN THE DEVELOPMENT OF RADIATION PROTECTION POLICIES & REGULATIONS

BACKGROUND

RESPOND TO COMMISSION REQUESTS TO ADDRESS ISSUES SPECIFIED IN SRMs OF FEBRUARY 5 & NOVEMBER 24, 1987

ADVISE ON HOW EXISTING & PROPOSED DE MINIMIS, BELOW REGULATORY CONCERN & RESIDUAL RADIOACTIVITY RELEASE STANDARDS ARE RELATED & HOW CONSISTENT RELEASE STANDARDS ARE ACHIEVED

DEVELOP COMMISSION POLICY STATEMENT THAT WOULD IDENTIFY A LEVEL OF RADIATION RISK BELOW WHICH GOVERNMENT REGULATION BECOMES UNWARRANTED

NEAR-TERM ACTION

STATUS REPORT/OPTIONS PAPER REQUESTED

MAJOR TOPICS FOR DISCUSSION

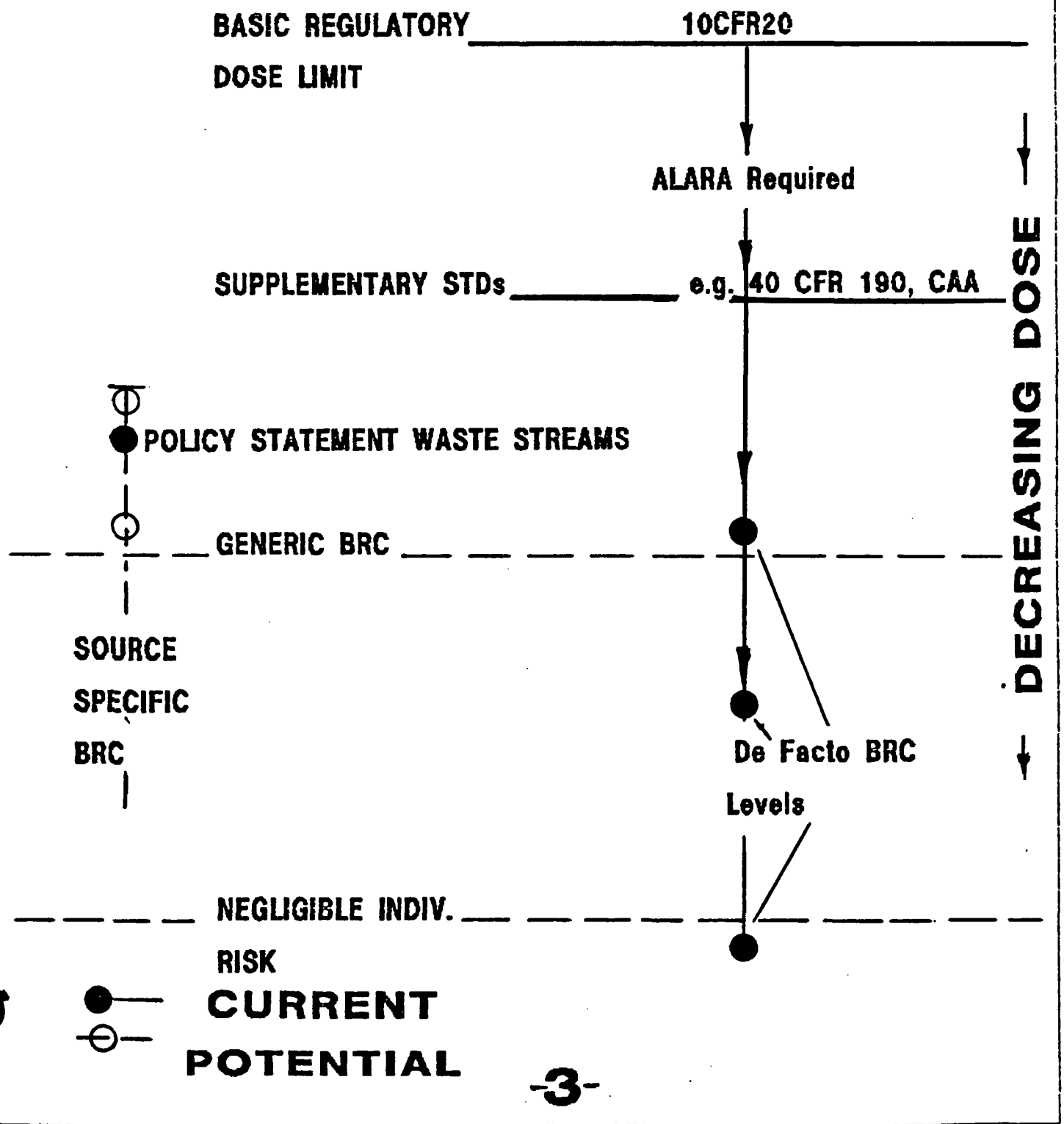
RADIATION PROTECTION FRAMEWORK & THE TERMS & CONCEPTS ASSOCIATED WITH REGULATORY CUTOFFS

POLICY DEVELOPMENT CONSIDERATIONS– IN LIGHT OF CURRENT NRC, EPA & INTERNATIONAL ACTIVITIES

PLANS FOR INTERNATIONAL SYMPOSIUM

PRELIMINARY RESOURCE ESTIMATES FOR BROAD & SPECIFIC POLICIES

RADIATION PROTECTION FRAMEWORK



POLICY DEVELOPMENT CONSIDERATIONS

"SOURCE SPECIFIC" VS "GENERIC" BRC LEVELS

CHARACTERIZATION OF CUTOFF LEVELS

CHARACTERIZATION OF SOURCES ON A NATIONAL BASIS

ROLE OF COST/ RISK TRADEOFFS

CONVERSION OF BRC DOSE LEVELS TO RISK

DIFFICULTIES IN ESTABLISHING "NEGLIGIBLE RISK" LEVELS

MAJOR AUTHORITIES & REGULATIONS IMPACTING REGULATORY CUTOFF POLICIES

EPA

- GENERALLY APPLICABLE ENVIRONMENTAL RADIATION STANDARDS (AEA)
- SAFE DRINKING WATER ACT
- CLEAN AIR ACT

NRC

- EXEMPTION AUTHORITY (ATOMIC ENERGY ACT SECTIONS 57d, 62& 81)
- LOW-LEVEL RADIOACTIVE WASTE POLICY AMENDMENTS ACT OF 1985

PRELIMINARY RESOURCE ESTIMATES

TASK	RESOURCES	SCHEDULE
Broad Policy Statement on BRC/ De minimis	4-5 FTEs	1 1/2-2yr
Review & Initiate Rulemakings Waste Stream Petitions	7-9 FTEs	3- ? yrs
Generic BRC Rulemaking Activity Waste Stream Disposal	2-3 FTEs	2-3 yrs
Policy Statement- Acceptable Residual Radioactivity Levels (LANDS & STRUCTURES)	3FTEs	2 yrs