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IN THE MATTER OF:

POLICY SESSION 78-9

DOLLAR PER MAN-REM RULEMAKING

Place - Washington, D. C.

Date - Thursday, 16 February 1978

Pages 1 - 38

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UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

POLICY SESSION 78-9

DOLLAR PER MAN-REM RULEMAKING

Room 1130  
1717 H Street, N.W.  
Washington, D.C.

Thursday, February 16, 1978

The Commission met, pursuant to notice, at 10:45 a.m.

BEFORE:

- DR. JOSEPH M. HENDRIE, Chairman
- PETER A. BRADFORD, Commissioner
- VICTOR GILINSKY, Commissioner
- RICHARD T. KENNEDY, Commissioner

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P R O C E E D I N G S

CHAIRMAN HENDRIE: The Commission needs to move fairly promptly forward to the next item.

The next item is a 78-63 paper, dollar per man-rem discussion. see Mr. Minogue has moved to the center table. You're having a big morning today. That's efficiency; as long as you've got to make that long trip, you may as well come in with several.

Please go ahead.

MR. MINOGUE: Mr. Chairman, there are three issues addressed in this paper that relate to the rulemaking the Commission ordered some years ago regarding the setting of a dollar per man-rem figure to be used in cost-benefit analyses.

(Slide.)

These three issues are identified on the first vugraph: first, the need for that rulemaking as it relates to handling of the effluents from reactors; second, the need for that rulemaking as it relates to the fuel cycle, quite a separable issue; and last, the EPA role in such a rulemaking procedure.

Before I get into a brief discussion of each of these alternatives -- second Vugraph please.

(Slide.)

I want to reiterate a very basic concept that one should bear in mind in talking about this issue. When we talk about dose-reduction, whether it relates to the

dkw 2

1 exposure of the public or occupational exposures, consistently  
2 we have to think in terms of the dose to individuals and the  
3 dose to populations, to large numbers of individuals.

4 This follows particularly from the so-called linear  
5 hypothesis, in which it's assumed, for purposes of public  
6 health protection, that exposures at all levels are harmful,  
7 and therefore, exposures of large numbers of people, even  
8 at very low levels, is in itself harmful. So that throughout  
9 the discussion we'll be talking about individual doses and  
10 population doses, the so-called man-rem doses.

11 (Slide.)

12 Let me ask you to bear with me, and give you a  
13 little history as to how we got where we are, because I  
14 think it's important to understand the current Staff attitude  
15 to recognize the extent to which we've been racking and re-  
16 racking this same issue for a good many years.

17 Prior to 1970 in the licensing process, the limits  
18 that were set on effluents from reactors -- and I'm speaking  
19 now to the first issue which is the reactor issue -- the limits  
20 were based on part 20, which listed a lot of concentration  
21 and individual dose limits.

22 The net effect -- and I'm really oversimplifying this --  
23 was that there was a whole body dose limit of about 170  
24 millirem, and in actual practice, it was significantly better  
25 than that.

dkw 3

1 It was not formalized in any way. It was done by  
2 voluntary action, by industry and by case-by-case analysis.

3 Trends developed in the late sixties which caused  
4 concern both within the Staff and outside the Staff. And in  
5 1970 the then-Atomic Energy Commission acted to formally  
6 establish the principle of a law in the regulations to provide  
7 what we were discussing in the previous paper, a sort of  
8 enabling legislation to enable the Staff to get considerably  
9 tougher with licensees and applicants regarding these effluents.

10 The next need that presented itself was a very  
11 difficult issue, and that was how to quantify the law. The  
12 law is -- the concept is great, but you have to enforce it or  
13 implement it in the real world in some way, and that always  
14 regarded -- this is a prop here just to show the volume of  
15 material under the present rule required to quantify the  
16 procedural mechanisms by which you apply a law.

17 A number of alternatives considered by the Staff  
18 ranging from defining and specifying specific types of  
19 equipment, running to curie limits on discharges to population  
20 dose limits to concentration limits and so on. Out of all  
21 that shook down a few alternatives which were proposed by the  
22 Staff and moved by the Commission into a rule-making procedure  
23 which went on for several years and brought very extensive  
24 public input -- next Vugraph --

(Slide.)

dkw 4

1 -- which resulted in the present NRC regulation,  
2 the so-called Appendix I regulation, which was a rule-making  
3 which established individual dose objectives, which established  
4 a procedure for cost-benefit analysis as related to population  
5 dose, hence the need for a dollar-per-man ram figure.

6 Just about the time that package of stuff came about --  
7 it is called a package; I was just waving it around -- EPA  
8 began action on the uranium fuel cycle standards, 40 CFR 190,  
9 which, in terms -- let's go to the next Vugraph --

10 (Slide.)

11 I'm sorry. I'll try to cut this a little short.  
12 Let me jump ahead two Vugraphs --

13 (Slide.)

14 -- in the interests of time.

15 In terms of the actual effect of 40 CFR 190,  
16 compared to Appendix I, you get substantially the same  
17 result. The EPA criteria for most sites are slightly less  
18 conservative than the NRC criteria. If we did not implement  
19 the individual dose limits, which we are currently still doing,  
20 the difference is small in any case. I wouldn't want to make  
21 too big a deal out of it.

22 In a sense, this isn't surprising, because EPA  
23 based their analysis on a sort of generic ALARA determination.  
24 They took the data base that had been developed by  
25 contractors, and of course the case review and NRC review,

dkw 5 1 and used it to establish an assessment of the technology  
2 and its capabilities.

3 The numbers came out about the same as what we  
4 were doing, which should be no great surprise.

5 But it does mean that one could regard the EPA  
6 regulations as being a sort of generic quantification as low  
7 as reasonably achievable as it would relate to population  
8 exposures.

9 And if you take it that way, then you don't really  
10 need to do the cost-benefit analysis in individual cases.

11 Another way of looking at this that gets the same  
12 conclusion is that it is a practical matter in actual case  
13 review what determines this individual dose, and not the  
14 population dose.

15 So it's the same answer, but we come at it by  
16 two entirely differently grounds.

17 Let me go on and talk about the fuel cycle  
18 effluents.

19 (Slide.)

20 This is a much tougher and more complex question.  
21 Here we have a problem that although the basic unit operations  
22 involved in the processing treatment of effluents from fuel  
23 cycle plants are well understood, their commercial application  
24 in fuel facilities is an area where we have experience from  
25 very limited to none at all. It makes it very difficult to

dkw 6 1 establish a good technological base for the cost-benefit  
2 determinations.

3 In one of the many iterations of this subject in  
4 the various commissions over the years, we were directed to  
5 issue a series of reports that defined the effluent  
6 treatment technologies as they were best understood, taking  
7 into account not just limited commercial experience but the  
8 experience in many military-type facilities.

9 This Vugraph lists these reports. They've all  
10 been completed, and they've been issued. And all of them  
11 were used in some way, either in final form or in draft form,  
12 by EPA in their generic determination of effluent limits.

13 The next Vugraph --

14 (Slide.)

15 -- discusses briefly the uranium fuel cycle standards  
16 that EPA has developed. To a great extent it speaks for  
17 itself. There are a lot of loose ends in this process; not  
18 all are listed in this Vugraph.

19 Treatment of the long wave radio nuclides,  
20 transuranics, iodine 129 and so on; radon 222, not listed here,  
21 is a very critical issue that bears on some of the mil  
22 issues, and tritium.

23 So there is ongoing now an EPA effort to broaden  
24 the scope of the 40 CFR 190 to cover all of the isotopes  
25 involves in handling the fuel cycle questions.

dkw 7

1 All I might add with that reference to any cost-  
2 benefit determination or dollar-per-man-ram figure, although  
3 again in fairness, there is consistently throughout the  
4 EPA process, the way they're coming at this, you get an  
5 effective ALARA determination. They're really trying to make  
6 that kind of assessment. They're just not quantifying it that  
7 way.

8 Let me go on to the next Vugraph.

9 (Slide.)

10 Last year a new actor entered the scene, the  
11 Clean Air Act, which was passed, I believe, in September,  
12 mandates several things that have a significant impact on  
13 what I've been discussing up to this point.

14 First, they require the administrator of the  
15 EPA, by late '79, to make a determination whether the  
16 emissions of radioactive materials would cause or contribute  
17 to air pollution which may reasonably be anticipated to  
18 endanger public health.

19 My own personal view is, it's difficult for me  
20 to imagine that they could not make such a determination.

21 In any event, if that finding is affirmed, then  
22 EPA is directed under this law to work with the NRC and  
23 establish some regulatory framework for the implementation  
24 of the law. Staff has been working very closely with EPA  
25 over the last few months, and it's an ongoing effort to define

dkw 8

1 some understanding as to how we might proceed with some sort  
2 of delegation by EPA to the NRC of its responsibilities under  
3 this Act.

4           There's no dispute throughout these discussions  
5 regarding the adequacy of the Appendix I limits or the  
6 40 CFR 190 limits. There's a consensus that they do represent  
7 an appropriate level of limitation of the discharges from  
8 these plants.

9           So what we're talking about here relates to some  
10 procedural questions. Key ones: all of the work that this  
11 Staff has done over the years has taken into account the  
12 complex pathways by which released radiation can affect  
13 people.

14           Unfortunately, the law sees two biased views:  
15 air, and everything else. And these are two completely separate  
16 things. And unfortunately, the radioactive material doesn't  
17 see that artificial boundary.

18           All the artificial analysis methods, everything  
19 that the Staff has done in the past, look at crossing of  
20 this boundary by individual isotopes,

21           The other problem is the unclear relationship  
22 between the end product of whatever allocation or assignment  
23 or delegation maybe is the better work, of EPA responsibilities  
24 is made to NRC; the extent to which the states will or will not  
25 accept this is not clear at this point.

dkw 9

1 So there's another complicating factor that we have  
2 on our hands.

3 So if I could sort of recap what I've tried to cover  
4 very briefly on the fuel cycle question. I've tried to touch  
5 on the uncertainty of technology, which makes any monetary  
6 base highly uncertain; I've tried to emphasize the fact that  
7 we've really reached the point where we're churning a public  
8 health problem.

9 I think we should move on to other issues. God  
10 knows, we have plenty of them. We're racking and re-racking  
11 the same material eight different ways.

12 And last, I think to some extent the action of the  
13 Clean Air Act, and the complications it has introduced, almost  
14 makes the whole issue moot. It's beginning to be so derivative  
15 to go back through several tiers of subsequent action to the  
16 Appendix I rule-making proceeding. It almost seems to be a  
17 wasted effort.

18 Let me go to the EPA participation issue, the third  
19 issue.

20 (Slide.)

21 Here there was agreement reached between Mr.  
22 Ruschi and Strilo, both principals no longer in the picture,  
23 some time ago, that EPA would join with us in the publication of  
24 a request for public comments on a proceeding leading to the  
25 establishment of a dollar-per-man-ram figure.

dkw 10

1 No further commitment was made by EPA at that  
2 time. WE had discussions. We recently got from the  
3 Commission a request to explore this matter further with  
4 EPA. That exploration went very quickly, because the  
5 reaction was highly negative.

6 I think I could fairly categorize Mr. Rowe's  
7 reaction to me, that it's an issue of priorities. From  
8 where he sits, he's got critical problems of the radioactive  
9 waste problems; issues regarding medical X-rays and getting  
10 guidance on that; and it's now out. The President signed  
11 it within the last few days.

12 The very critical issue that has us bothered, as  
13 well as occupational exposure, and the need to take into  
14 account recent work which has indicated or has raised some  
15 questions regarding the present practices of the standards,  
16 in that context of things they just don't regard this as a  
17 high priority issue.

18 It was made quite clear to me that they're not  
19 prepared to allocate large blocs of resources to playing  
20 any sort of lead role in this proceeding.

21 I have said all these negative things. I really  
22 should make a few comments-- I don't think I need the next  
23 Vugraph -- before I discuss the recommendations and the  
24 technical support work.

25 It is fair to admit that there are some

dkw 11

1 peripheral activities where such figures could be useful: in  
2 the value-impact assessments the Staff does for particular  
3 regulatory decisions; for handling things like that.

4 For example, there was one that was recently identi-  
5 fied by NRR. So I'm not trying to pretend that a number like  
6 this has no value whatsoever. I'm really trying to say that  
7 I don't see that it has any value in the context of an  
8 application, in Appendix I, or in any comparable regulation  
9 that might be put up for fuel cycle facilities.

10 So let's skip the recommendations and go to the  
11 one on the tech. assistance.

12 (Slide.)

13 Before I get to the recommendations, reflecting  
14 what I just said, we would not propose to terminate or to not  
15 go forward with the support contracts that were reviewed with  
16 the Commission some time ago, but rather, to redirect them,  
17 to put more emphasis.

18 There were three proposed originally. The first  
19 spoke to actual cost, directly quantifiable cost, either  
20 for health treatment or for other indirect costs, but things  
21 that you could quantify.

22 The second, Task 2, spoke to the expenditures in  
23 other areas, public expenditures, to take care of health costs  
24 from other things that were adverse.

25 And last was a sort of psychological assessment

dkw 12

1 of the role of risk-perception.

2           What we would plan to do, if the Commission acts  
3 favorably on our recommendations, is to not go forward with  
4 the second two of these, and to redirect the first one, to put  
5 much more emphasis on actual, direct costs, toward the point  
6 of finding a data base that would then be available to the  
7 licensing reviewers and people doing value-impact assessment  
8 for their use in wrestling with the specific issues, not as  
9 something that would apply in any sort of appendix item.

end #4

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1 Let me go to the recommendation slide.

2 (Slide.)

3 We're making two recommendations.

4 First, we believe that the commission should  
5 formally tell the world that we are not going to proceed with  
6 the dollar-per-man rem proceeding.

7 COMMISSIONER KENNEDY: What is the present status  
8 of that proceeding?

9 MR. MINOGUE: The status is that a notice at the  
10 time of Appendix I was issued — what is the date?

11 MR. PETERSON: May 5, 1975.

12 MR. MINOGUE: The commission first directed the  
13 staff in that proceeding to develop such a figure. They used  
14 an interim figure of \$1000-per-man rem, which, incidentally,  
15 is not a bad choice. It's a pretty guess. They said use the  
16 interim for now, but go into a rulemaking mode to develop a  
17 better figure. It didn't come to us as instructions to do  
18 this as a crash project, but to do it in some deliberate way.

19 At that time and, I think, as a separate action,  
20 the commission issued a notice of a rulemaking proceeding,  
21 and this notice is on the record. We're on record as saying  
22 that we are doing such a proceeding.

23 COMMISSIONER KENNEDY: That was with \$1000?

24 MR. MINOGUE: It may be in the rule itself. I know  
25 we are formally on record, and we should formally say that

pV  
1 we're not going to do it.

2 The other recommendation that we are making --

3 COMMISSIONER KENNEDY: Excuse me. What does that  
4 do, vis-a-vis the \$1000?

5 MR. MINOGUE: At the present, it would say that we  
6 would keep using it to the extent that we are now using it.

7 COMMISSIONER KENNEDY: To the extent that it is  
8 useful, it gets used. Then you use that number.

9 MR. MINOGUE: Now, we might well propose that  
10 Appendix I be modified to eliminate the requirement to do  
11 that cost-benefit determination, but we would not propose a  
12 decision on that today. We think that decision should be  
13 made after the ongoing work. The staff is working very  
14 closely with EPA on detailed implementing regulations to  
15 implement 40 CFR 190.

16 Mr. Vollmer, who is here, is the chairman of that  
17 group, and the results of that effort should be factored in.  
18 As that shakes out, it would be clear whether we ought to  
19 leave Appendix I as it stands, to do this analysis, or to  
20 eliminate it completely.

21 I wouldn't propose a decision on that at this time.

22 So, in effect, then, in the interim, we would keep  
23 doing what we have been doing, doing the \$1000-man rem and  
24 using the analysis on this, even though it does not determine  
25 in specific cases.

PV  
1 That's all I have, Mr. Chairman.

2 CHAIRMAN HENDRIE: Thank you.

3 Let's see. We have papers from OGC opposing, and  
4 from OPE supporting.

5 COMMISSIONER KENNEDY: Let me note, as long as we  
6 have brought them up, that I have read neither of them. I  
7 didn't receive them until 6:30 last night, but I appreciate  
8 your sending them, in any event. And if I ever get time, I  
9 will read them.

10 CHAIRMAN HENDRIE: About three minutes apiece,  
11 gentlemen. The essence of the arguments.

12 Do you want to go?

13 MR. SLAGGIE: The OGC as such does not propose  
14 what the staff is proposing. We're directly opposing the  
15 idea of dropping this rulemaking.

16 What our paper attempted to do was to call  
17 attention to a number of issues that we think are very  
18 important, that would have been a draft in the rulemaking,  
19 and what we think would continue to need to be a draft.

20 What we wanted to do was to direct the commission's  
21 attention to their question which they should in turn pass  
22 on to the staff to make clear how these issues will be  
23 addressed, if the dollar-per-man rem concept is dropped.

24 Another point we wanted to make in our paper is  
25 that we feel that, even though currently the EPA standards

PV

1 may be equal ones in their immediate effect to what the  
2 commission would require if we were to impose a dollar-per-man  
3 rem rule as what Appendix I establishes, that this would first  
4 of all not necessarily always be the case, as technology  
5 changes and improves. And secondly, that the dollar-per-man  
6 rem concept embodies a form of analysis and a mode of  
7 decisionmaking and an approach to the entire problem which is  
8 not really built into merely setting up standards. But when  
9 EPA set up these standards, they represent as one specific  
10 cost-benefit analysis based on today's technology and  
11 furthermore, as we understand it, based on the notion that  
12 doses would be calculated only out to a very limited time in  
13 the future. Isn't that correct?

14 MR. MINOGUE: I don't believe that's correct. They  
15 have an ongoing effort on the long-lived isotopes. I wouldn't  
16 think that's fair to characterize —

17 MR. SLAGGIE: The OGC is particularly concerned  
18 about a problem we think is going to be coming up very  
19 shortly, again, on the concept of uranium milling. But perhaps  
20 elsewhere, where the commission will have to confront what it  
21 wants to say about the significance of doses over a very long  
22 period of time, low doses, but over a long period of time to  
23 large populations.

24 It seems to OGC that the dollar-per-man rem concept  
25 is at least a clear-cut way of approaching the problem of how

PV  
1 you intend to evaluate the significance of long-term doses  
2 and what you propose to do about it if we use that concept.

3 CHAIRMAN HENDRIE: Do you seriously suggest that  
4 a number, however carefully derived, \$632.17 derived from  
5 agonizing analysis in the year of our Lord 1978, is to be  
6 multiplied by the world population over hundreds of thousands  
7 of years in order to make a determination like that? That's  
8 absurd.

9 MR. SLAGGIE: What I'm seriously asking is: How  
10 do you propose to make a determination like that? And I  
11 believe that the man rem approach, the dollar-per-man rem  
12 approach is a useful tool in generally considering the  
13 problem.

14 CHAIRMAN HENDRIE: The background of that may be  
15 of interest in the analysis, but could you use that number?  
16 And then to multiply on out to infinity over a very large  
17 population and very large and definite spans of time is  
18 absurd.

19 MR. SLAGGIE: But how far one does intend to  
20 multiply — I would say that cutting off at 100 years and  
21 perhaps to cut it off at a particular unlimited population  
22 is equally absurd.

23 CHAIRMAN HENDRIE: But that argument is not one  
24 which is proposed for the treatment of the longer-term  
25 problem. It's proposed as a way to define the shorter-term

PV  
1 problem and to distinguish it from the longer-term problem.  
2 So, to cite it as an argument that you're not going to treat  
3 the longer-term problem, I find peculiar.

4 Well, what the objections which appeared to arise  
5 in this paper seemed then to me to deal with what might ever  
6 subsequently be done with Appendix I and so on, at a time  
7 when it's a little clearer how these clean air things are  
8 going to work out and how the 40 CFR 190 matter is worked out.  
9 You think that?

10 MR. SLAGGIE: Yes.

11 CHAIRMAN HENDRIE: Good. It's not an objection to  
12 the recommendation before the house.

13 MR. MINOGUE: Mr. Chairman, may I make a comment.

14 There was another point embedded in the OGC remarks  
15 that I think deserves a hearing. The approach that EPA's  
16 standards used does not have the same element of enforcing  
17 the improved technology that the ALARA approach does, so that  
18 the comment which was implicit is a fair comment.

19 However, the basic authority and responsibility for  
20 setting down the adequate environmental standards rests with  
21 EPA, and I don't think that issue needs to get folded into  
22 this dollar-per-man rem question.

23 CHAIRMAN HENDRIE: Precisely. One faces it when  
24 one contemplates eventual changes to Appendix I, when we see  
25 a little clearer how the negotiations go and whether there's

PV  
1 any further legislation.

2 MR. MINOGUE: We have other ways, also, of forcing  
3 improvements in technology where we think the public health  
4 interest questions mandate this, as, for example, some of the  
5 data on the effects of low-level radiation may indicate a  
6 tougher attitude toward forcing technology. There are other  
7 ways of doing this.

8 CHAIRMAN HENDRIE: Do you want to make a comment,  
9 Al?

10 MR. KENNEKE: I suggest, in response to Bob's  
11 latest comment, that those very ways are the ways that led  
12 to the 3-year hearing on ALARA and the dollar-per-man rem  
13 notion that the commission came up with as a way of solving  
14 the impasse, came about because of that. I would merely  
15 suggest that where any action the commission would take with  
16 regard to the staff's current proposal about dropping the  
17 rulemaking would lead the public to think that you're moving  
18 away from the use of dollar-per-man rem as a concept in the  
19 course of your policy judgments, particularly the fuel cycle.  
20 That would be a mistake, in our view. We feel that Bob's comment that  
21 \$1000 is not a bad choice is a good one and that therefore  
22 you could rest on the value that you used. But you intended to  
23 use the idea of dollars-per-man rem as one additional tool that is very  
24 useful to you and you ought not to give any indication that  
25 you're moving away from it.

PV  
1           COMMISSIONER KENNEDY: That seems to be very  
2 sensitive, and it can easily be taken care of in whatever  
3 determination or rulemaking might follow.

4           CHAIRMAN HENDRIE: There is, at the present time,  
5 in reviewing cases, that the applicants, in fact, have to do  
6 the Appendix I work through those individual analyses. Does  
7 the staff have to review and confirm and so on?

8           MR. MINOGUE: Yes, sir, they do do that. It's one  
9 of the viewgraphs I skipped in the interest of time.

10           The figure that I have been given is that it's  
11 estimated to require from 1-1/2 to 2 man-years per site on  
12 the part of the applicants, and a quarter of a man-year per  
13 case on the part of the staff to do this analysis.

14           (Slide.)

15           The Appendix I cost-benefit analysis -- that's the  
16 figure that was furnished to me through Vienna.

17           COMMISSIONER KENNEDY: They'll be doing that  
18 anyway.

19           MR. PETERSON: Those numbers are over and above  
20 effort necessary to show compliance with the design  
21 objectives. This is related just to the cost-benefit.

22           COMMISSIONER KENNEDY: Okay. This is to the  
23 \$1000-per-man rem ALARA computations.

24           MR. MINOGUE: That we do right now. And we're not  
25 proposing to stop doing that, at least pending the resolution

1 of the details of implementation.

2 COMMISSIONER KENNEDY: These are true computations  
3 that are required to satisfy individuals?

4 MR. MINOGUE: Yes, sir. Exactly.

5 CHAIRMAN HENDRIE: Yes. It's worth a couple of  
6 hundred thousand dollars to produce a result which you say  
7 in 29 cases where it was used there was no change in the  
8 equipment supply.

9 MR. MINOGUE: Yes.

10 MR. KENNEKE: Common sense would argue that  
11 we adjust our staff practice in regard to that. If the  
12 experience is such that we do not come out with useful  
13 results, there is no reason to insist on it. It's a matter  
14 of guidance.

15 MR. MINOGUE: That wasn't self-evident at the  
16 beginning. It's after you've done a number of cases. For one  
17 thing, initially most applicants avail themselves of an option  
18 that they had up until June 1976 to use what the staff had  
19 proposed, which didn't involve this analysis.

20 I really feel that this matter of what they ought  
21 to do or not do in individual cases is best resolved in the  
22 context of how we implement 40 CFR 190, and that effort is  
23 actively ongoing, and I think — correct me on the date — but  
24 I believe it's a year from now or less at which that matter  
25 will have been resolved between us and EPA and there will be

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1 an agreement on the exact specifics of how we implement  
2 40 CFR 190 and what if any changes in our rules should be  
3 required.

4 I also think it's fair to add that EPA has given  
5 some weight in their determination to what we do under  
6 Appendix I. They regard it as a very good approach. They  
7 have said to me on a number of occasions that they regard  
8 the Appendix I process -- and they didn't say "except for  
9 the cost-benefit analysis" -- as being the right and  
10 constructive way to come at these issues in individual cases.

11 CHAIRMAN HENDRIE: But, at any rate, the  
12 recommendation before the house does not contemplate removing  
13 the need for those analyses.

14 MR. MINOGUE: Yes, sir. That's correct. Yes, sir.

15 MR. TRUBATCH: The recommendation freezes the  
16 dollar value. Let's take it one step back.

17 When the commission adopted this dollar value, it  
18 was adopted without a good, adequate technical basis. It was  
19 just the highest of all the numbers proposed. And now we are  
20 saying, with no further backup, that that is the number we  
21 will now stick with. At the same time, we know that the  
22 occupational dose exposure is in flux, and the general  
23 population dose exposure has been taken as arbitrary, half  
24 of the occupational dose exposure.

25 CHAIRMAN HENDRIE: I think that's quite incorrect,

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1 not simply factually incorrect.

2 Would somebody care to speak to the point?

3 Jake or Bill?

4 MR. PETERSON: I'll take it, if I may.

5 The occupational exposure is the primary  
6 consideration for the lower population exposure. It was not  
7 individual risk, as it was genetic. It was a larger genetic  
8 pool.

9 MR. TRUBATCH: What's the difference?

10 MR. PETERSON: The difference is a factor of 10.

11 MR. MINOGUE: That is not correct. The average  
12 occupational exposure of the employees that are really at  
13 risk runs around 7/10 of a rem per year. And the average  
14 exposure of individuals in the population from the operation  
15 of a reactor is .05 millirem per year.

16 MR. TRUBATCH: We're talking about the dose limit  
17 as set. The EPA file on environmental statements comes right  
18 out and says that the original FRCB limit of 5.00 millirems  
19 was taken as 1/10 of the occupational dose limit.

20 MR. PETERSON: Wasn't that the other way around?

21 MR. TRUBATCH: If the occupational dose limit comes  
22 down, it's inconceivable to me that we won't have to rethink  
23 the general population dose limit.

24 MR. KENNEKE: Now, you're talking individual dose  
25 limits.

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1 MR. MINOGUE: What you're saying is not correct.  
2 It's just not factually correct.

3 COMMISSIONER GILINSKY: What is factually correct?

4 MR. MINOGUE: The individual limit is not 1/10 of  
5 the present FRC guidance occupational exposure limit, which  
6 is 5 rem per year. 1/10 of that is 5/10 rem per year, and  
7 that is not the individual limit for members of the general  
8 population.

9 CHAIRMAN HENDRIE: And in particular, the statement  
10 that if the 5 rem per year were reduced to a half rem per  
11 year, that would immediately compel a reconsideration of the  
12 individual dose limits for the general population.

13 MR. MINOGUE: I don't think that follows.

14 CHAIRMAN HENDRIE: It just does not follow.

15 MR. MINOGUE: I think that reexamination has, in a  
16 sense, already been done. It was a concern about the  
17 uncertainties --

18 CHAIRMAN HENDRIE: In enormous detail, I might say.

19 COMMISSIONER GILINSKY: What is the significance of  
20 the half rem per year? What is that a limit for?

21 MR. MINOGUE: A half rem -- the old FRC guidance,  
22 which has been set aside by 40 CFR 190, was a half rem per  
23 year to the public, with a factor in it that made it  
24 effectively 170. Let me stick to the same terms -- .17 rem  
25 per year. That limit has no standing and has had none since

1 the early '70s. It still exists in FRC guides someplace.

2 When I talk about the limits, I'm talking about  
3 what the present regulations require. There, the difference  
4 is not a factor of 10.

5 MR. KENNEKE: 40 CFR 190, though, Bob, is a narrow  
6 spectrum. It doesn't cover situations beyond that spectrum.  
7 So, .5 still is applicable in appropriate situation.

8 MR. MINOGUE: I stand corrected on that. That's  
9 right. Of course, EPA is currently reexamining this whole  
10 question with an eye toward rulemaking later this year or  
11 next year.

12 There is on the books some very stale FRC guidance  
13 which, as a practical matter, is not followed by our staff,  
14 which uses a much, much more conservative basis. That  
15 guidance is certainly in question, because of these recent  
16 bits of data, and is being reexamined. And I'm quite sure  
17 that EPA will make modifications in that guidance. They're  
18 actively working on this now. They expect their technical  
19 analysis to be complete in June or thereabouts, and the  
20 rulemaking, which would be through the FRC rule, which means  
21 it's for comment to other agencies and then to the President  
22 for approval, late this year or early next year.

23 MR. KENNEKE: There is a sense, however, in which  
24 the two thoughts run together. Any thought of changing  
25 individual limits will inevitably raise questions as to how

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1 that will affect population exposure, that is man rems.

2 MR. MINOGUE: Yes.

3 MR. KENNEKE: And that inevitably brings in the  
4 question of what it would cost to reduce the limits. And  
5 you have a situation where you'll have to compare  
6 alternatives. It will be in terms of the fairness of the  
7 risk to an individual within a given population, the impact  
8 to us in economic terms and in terms of exposures, of  
9 spreading that risk around and conceivably increasing the  
10 total exposure, the total numbers of biological effects.

11 I would come back again to say that's a very good  
12 example of why I believe you have to keep in your hip pocket  
13 this idea of a translating factor, a conversion factor between  
14 biological risk on the one hand, and economic costs on the  
15 other, if for no other reason than to settle issues. Even if  
16 it's only imprecise, it's a way of dividing the world. That's  
17 not zero and not infinite.

18 COMMISSIONER KENNEDY: That seems to me to make  
19 eminent sense. But that doesn't lead one to conclude that we  
20 ought to go ahead with a rulemaking, but simply keep on the  
21 shelf --

22 MR. KENNEKE: Oh, I agree, in that sense, yes.  
23 That's precisely --

24 COMMISSIONER KENNEDY: They've been good enough for  
25 the purpose.

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1 MR. KENNEKE: Exactly right.

2 COMMISSIONER KENNEDY: It was conservative, indeed.

3 MR. KENNEKE: Right. But I believe you should  
4 reaffirm your use of the idea.

5 MR. PETERSON: The proposed continuation of some  
6 of the technical support will provide perhaps a better basis  
7 for our number, although, in our opinion, it wouldn't be  
8 sufficient to substantiate a full rulemaking.

9 MR. MINOGUE: I agree with what Mr. Kenneke has  
10 been saying in the last few minutes.

11 CHAIRMAN HENDRIE: Now, if we were go to in this  
12 direction, there would be what — an order published? What  
13 would we do?

14 MR. MINOGUE: We would draft something.

15 MR. SLAGGIE: Suspend the rulemaking. I dont' see  
16 any problem. A simple order.

17 CHAIRMAN HENDRIE: And the language which would be  
18 used there needs to reflect the sort of considerations that  
19 have been discussed here.

20 MR. SLAGGIE: It should be.

21 CHAIRMAN HENDRIE: Not just approving abandonment  
22 of the concept, but rather a considered judgment that the  
23 value of a further refinement of the kilobuck per man rem  
24 number is simply not warranted on the basis of 30-odd cases,  
25 the experience in 30-odd cases, the assorted ongoing

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1 developments which may give rise to more substantive sorts  
2 of adjustments.

3 COMMISSIONER BRADFORD: Obviously, the rulemaking  
4 — are we then tied indefinitely to the \$1000 figure?

5 MR. MINOGUE: Well, we would be, barring some  
6 action by the commission. But what I would contemplate is  
7 when this task force completes the work of the EPA, we would  
8 come to the commission proposing appropriate rule changes to  
9 reflect the final agreement that's worked up between the two  
10 agencies as to how we would implement 40 CFR 190. That might  
11 well recommend dropping this specific determination from  
12 Appendix I.

13 COMMISSIONER BRADFORD: And substituting a  
14 different number, or just dropping it?

15 MR. MINOGUE: Just dropping it completely, on the  
16 basis that the individual dose experiences, the individual  
17 doses determined that it's not a constructive use of the  
18 manpower and is not necessary because of the incremental  
19 protection that the EPA standard gives as regards population  
20 dose with some of the specific limits they have on various  
21 isotopes.

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1 I'm looking to the future. It is an ongoing  
2 effort. I'm not sure what that group will conclude.

3 MR. KENNEKE: Let me ask you a question.

4 Is the rule specific now that the analysis must  
5 be performed, or can it be interpreted now that it might be  
6 optional in the sense that if it might gain something, it  
7 might be optional?

8 MR. MINOGUE: I think it's a must.

9 MR. KARST: I'm sorry -- may I comment on that?

10 I think there's a clause in the appendix on our  
11 ruling that says regardless of the stipulation, regardless  
12 of the cost-benefit situation, you can still do something  
13 else if you want to.

14 There's a paragraph in there which is sort of an  
15 escape clause.

16 MR. KENNEKE: I would hope there would be a way  
17 to interpret this thing in terms of the -- the nonsense of  
18 going through calculations, at least, that don't produce  
19 anything -- and find a way to interpret it properly for the  
20 interim.

21 MR. PETERSON: I think in light of Mr. Kenneke's  
22 suggestion, I think we might consider something. That still  
23 leaves us the option though of perhaps requiring it in a  
24 certain case but generally does not require it for most  
25 license applications.

1 MR. KENNEKE: Simply properly interpreted.

2 CHAIRMAN HENDRIE: Watch out.

3 MR. KENNEKE: I don't like instant rule making.

4 CHAIRMAN HENDRIE: I think it becomes more a  
5 substantive question and one with more subtle aspects as a  
6 fairly simple decision before the House, and although I  
7 hate to see this churning of the wheels which seems in  
8 all cases so far, some 29, not to have affected the design  
9 outcome, at least both we and the industry people now have  
10 substantial practice in how to spin those wheels. And I  
11 think we ought to think a little further and read that  
12 paragraph with some care before we start putting in language  
13 and saying, never mind doing that anymore.

14 I think I'd prefer to stick this morning to a  
15 simple proposition that it seems just needless and inefficient  
16 to go forward with the rule making till we find the  
17 \$1000-per-man REM number at this time in view of the past  
18 experience and the ongoing developments with regard to 40 CFR  
19 190, the Clean Air Act amendments, and the working out of  
20 those details with EPA.

21 Further discussion?

22 COMMISSIONER KENNEDY: You're not ruling out one  
23 further statement on the order that we will be continuing to  
24 use, when appropriate, the \$1000 --

25 CHAIRMAN HENDRIE: No. I think the statement has

1 to reflect the fact that in deciding that this rule making  
2 would not be a useful thing to do for this purpose, we are  
3 not casting out any of these concepts. All right? Those  
4 matters are left to future consideration sometime down the  
5 line.

6 COMMISSIONER BRADFORD: The only other question  
7 that I had is, the OTC paper does note that following at  
8 least the staff recommendations as written and proposed, it  
9 would in some ways expose us to adverse action in the  
10 courts. Now, does this modified form carry the same risks,  
11 in your opinion, or is that not now a problem?

12 MR. SLAGGIE: You are suggesting adverse action  
13 in the court?

14 COMMISSIONER BRADFORD: No, you suggested adverse  
15 action; I'm quoting. Maybe the first thing we have to do is understand  
16 better how that would come about. The last page of your memo is whether  
17 such a decision is made openly and could be supported.

18 MR. SLAGGIE: With regard to the general  
19 population, long-term dosage, that, of course, is not  
20 directly what we're doing here. This is something we felt,  
21 in our memo, about the general approach, was something that  
22 was related to it. And I would have to stand by our  
23 statement that if the Commission were at this point really  
24 to state that long-term doses beyond 100 years need not be  
25 considered. I don't believe that there is sufficient

1 support for that. But I don't see that that relates  
2 directly to what we're doing with regard to this \$1000 rule.

3 MR. KENNEKE: There's another facet. I hesitate  
4 to get into the prior discussion, at least at that moment.  
5 Part of the difficulty is distinguishing between the  
6 calculation of the man-remS as opposed to the value you place  
7 on man-remS.

8 But the basic question indeed involves a value  
9 judgment to some degree, and that is, how far into the  
10 future do you calculate the man-remS?

11 But quite aside from that is the question of what  
12 price you put on a given man-rem.

13 So I think OGC's point is more a question of your cal-  
14 culation of the man-remS rather than the value on man-remS,  
15 although I agree, in this case there is some degree of mixing  
16 of the two. A value judgment. Do I count the cost in future terms  
17 or count it here in the present?

18 MR. SLAGGIE: The points will be entwined when we  
19 eventually make a firm decision as to how far out in the  
20 future we want to calculate these man-remS, and then we  
21 decide what we will require to be done about that.

22 MR. KENNEKE: I don't believe you've worsened  
23 the situation to hold dollars per man-rem in your rule and  
24 in your policy-making judgments. I believe you would make the  
25 problem worse if you were to take it out.

1                   COMMISSIONER GILINSKY: Where are these other  
2 matters being discussed?

3                   MR. KENNEKE: Well, mill tailings, that's going  
4 to come to a head.

5                   MR. SLAGGIE: I think there will be a major  
6 paper from this staff very shortly, if it's not come up here  
7 already, that will address some of the problems associated  
8 with the long-term radiation from mill tailings.

9                   MR. KENNEKE: The subject of occupational doses  
10 is coming slowly.

11                   COMMISSIONER GILINSKY: But is it going to  
12 discuss the question of how far one ought to go as opposed  
13 to simply calculating the answer?

14                   MR. KENNEKE: You mean the mill tailings question?

15                   COMMISSIONER GILINSKY: Yes.

16                   MR. KENNEKE: I would hope that that issue will  
17 be coming to a head and that you yourselves will take very  
18 much into that. Chairman Hendrie's reaction is one point  
19 of view. There are reactions that are quite the opposite.  
20 And it is a policy issue that's going to have to be decided  
21 at some point -- before very long, I would hope.

22                   MR. MINOGUE: There is a difference in timing,  
23 though. I think the occupational exposure issue on which  
24 we're working very actively is not coming up quite as soon  
25 as this other issue on the long-term effects of operating,

1 such as mills. The earliest I could hope to be at the  
2 Commission with a solid package on occupational exposure  
3 would be mid April, and I think that's optimistic. There's  
4 a great deal of work we have to do.

5 COMMISSIONER GILINSKY: Are you talking about a  
6 discount rate for future man-rems?

7 MR. MINOGUE: No. As a matter of fact, the  
8 rule-making proceeding we've been discussing here today, I  
9 think, would have given no light at all as to the cost of a  
10 man-rem in the year 2500. I just don't think it would have  
11 spoken to that at all.

12 COMMISSIONER GILINSKY: What I asked was a  
13 question of how far you could go and be covered. Did you say that?

14 MR. MINOGUE: Yes, but in a different context.  
15 I think the staff has been focusing on an issue, which we  
16 all agree has to be faced squarely, which is the long-term  
17 effects, but that issue is being focused in a different  
18 context than what we've been discussing here today.

19 COMMISSIONER GILINSKY: When would that be coming  
20 before us?

21 MR. MINOGUE: I don't have the lead on that paper.

22 I do say I'm embarrassed, not for the first time  
23 in my life. It's very far along. I know I've been involved  
24 in a lot of discussions on this. I think we're talking a  
25 paper that would be to you within the next few weeks, as I

1 understand .

2 MR.. PETERSON: We have the same problem on the  
3 staff with the diversions.

4 MR. MINOGUE: There's a sharp difference of  
5 opinion within the staff on these questions of how you handle  
6 these long-term doses. This is not an easy question. EPA  
7 has trouble with it, too. It's very difficult to know how  
8 to handle this.

9 COMMISSIONER GILLINSKY: There isn't any one way  
10 of how to do it. It's a value judgment.

11 MR. MINOGUE: Now, the others — you have  
12 occupational exposure. There you have an oddity, because  
13 what we do right now under ALARA gives us a dollar man-rem  
14 figure that far exceeds \$1000. Industry estimates run up to  
15 \$30- or \$40,000, and I don't think they're exaggerated.

16 So in a sense — I'm not advocating backing off  
17 what we've been doing, but the dollar cost of the measures  
18 required in the present ALARA program to industry to reduce  
19 occupational exposure, with particular emphasis on the  
20 man-rem, the total exposures rather than the exposures of  
21 individuals, is very, very high.

22 MR. KENNEKE: I only want to say one thing, Bob.

23 To say that we are using this is a little bit  
24 misleading. Industry uses it, quite aside from what we would  
25 require. The fact that they are independent economic costs

1 of reducing exposures justifies their going ahead without  
2 regulatory requirements. It's a little bit different.  
3 What if their costs were only \$1.00 per man-rem: we would  
4 have the \$1000-per-man-rem figure to fall back on. That  
5 requires we go further, which is a technology-forcing idea.

6 MR. MINOGUE: I agree with that.

7 CHAIRMAN HENDRIE: Further discussion?

8 (No response.)

9 CHAIRMAN HENDRIE: Let me propose then a vote to  
10 you and see if we're ready with the decision.

11 What I would propose is that we direct that an  
12 order be prepared which, as I have said previously, having  
13 searched out the transcript, would announce that we're not  
14 going to go ahead with the rule-making on dollars per  
15 man-rem which was announced in connection with the  
16 Appendix I publication. It will note the reasons for this,  
17 which are that we now have a rather large body of experience  
18 with this and find that it has not been controlling on the  
19 installed equipment in any case thus far, that staff's  
20 judgment is that the present dollar-per-man-rem value is,  
21 while not supported with any precision by detailed studies,  
22 is nevertheless not a bad general number, that there are  
23 other things going on in connection with the implementation  
24 of 40 CFR 190 that suggest that over the near term there  
25 would be appropriate occasions indeed to make adjustments,

1 and note in particular that in deciding not to do this  
2 rule making now, that we are not backing away or revoking  
3 the sort of principles that underlie the present Appendix I  
4 language.

5 Those in favor?

6 Let's see if I can produce enough votes.

7 (Chorus of ayes.)

8 CHAIRMAN HENDRIE: So ordered.

9 Peter, the others have been out. Could you and I  
10 get a minute and a half? They are not going to go far.

11 (Whereupon, at 11:40 a.m., the hearing in the  
12 above-entitled matter was adjourned.)

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