

ACNWT-0016  
ORIGINAL

# UNITED STATES NUCLEAR REGULATORY COMMISSION

ADVISORY COMMITTEE ON NUCLEAR WASTE

In the Matter of:           )  
                                       )  
                                       )  
14th ACNW Meeting         )  
Day 2                           )

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2 UNITED STATES NUCLEAR REGULATORY COMMISSION'S  
3 ADVISORY COMMITTEE ON NUCLEAR WASTE

4 October 12, 1989  
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8 the proceedings of the United States Nuclear Regulatory  
9 Commission's Advisory Committee on Nuclear Waste (ACNW), as  
10 reported herein, is an uncorrected record of the discussions  
11 recorded at the meeting held on the above date.

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UNITED STATES NUCLEAR REGULATORY COMMISSION  
 ADVISORY COMMITTEE ON NUCLEAR WASTE

In the Matter of:                    )  
   )  
   )  
 14th ACNW Meeting                    )  
 Day 2                                    )

Thursday,  
 October 12, 1989

Room P-114  
 7920 Norfolk Avenue  
 Bethesda, Maryland

The meeting convened, pursuant to notice, at 8:30  
 a.m.

BEFORE: DR. DADE W. MOELLER  
 Chairman, ACNW  
 Professor of Engineering  
           in Environmental Health  
 Associate Dean for Continuing Education  
 School of Public Health  
 Harvard University  
 Boston, Massachusetts

ACNW MEMBERS PRESENT:

DR. MARTIN J. STEINDLER  
 Director, Chemical Technology Division  
 Argonne National Laboratory  
 Argonne, Illinois

DR. BILL HINZE

CONSULTANTS:

DR. DAVID OKRENT  
 DR. EUGENE VOILAND  
 DR. MELVIN CARTER

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DESIGNATED FEDERAL OFFICIAL:

DR. S.J.S. PARRY

NRC STAFF PRESENTER:

RICHARD K. MAJAR

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P R O C E E D I N G S

1  
2 DR. MOELLER: The meeting will now come to order.

3 This is the second day of the 14th meeting of the  
4 Advisory Committee on Nuclear Waste.

5 During today's sessions we will discuss this  
6 morning first the proposed rule on Anticipated and  
7 Unanticipated Processes and Events. And then secondly, the  
8 Low-Level Waste Manifest Rule or Proposed Rule.

9 This afternoon, as the agenda indicates, there  
10 will be a general Administrative Session during which the  
11 committee will consider the development of formal reports on  
12 the various subjects that we covered yesterday and well as  
13 the subjects we are covering this morning.

14 That meeting will be open to the public. Or that  
15 portion of the meeting. In fact, the entire day will be  
16 open to the public, but I wanted to make it clear that this  
17 afternoon's Administrative Sessions will be open.

18 This meeting is being conducted in accordance with  
19 the provision of the Federal Advisory Committee Act.

20 Seated on my right is Richard Major, who is the  
21 designated federal official for the initial portion of the  
22 meeting.

23 We have received no written statements or requests  
24 from members of the public or other groups to make oral  
25 statements regarding today's sessions. If, however, someone

1 has input or wants to make a statement, simply let us know  
2 and we'll try to accommodate you.

3 A transcript of this morning's sessions will be  
4 kept and it is requested that each speaker use one of the  
5 microphones, identify himself or herself and speak with  
6 sufficient clarity and volume so that he or she can be  
7 readily heard.

8 Do any of the consultants or committee members  
9 have any comments before we move ahead?

10 (No response.)

11 DR. MOELLER: Okay. The first item then on the  
12 agenda is the review of the proposed rule related to  
13 considerations of anticipated and unanticipated processes  
14 and events.

15 Who will be the spokesman? Let's see. Bob  
16 Browning is addressing the podium.

17 DR. BROWNING: We have a temporary glitch.

18 The presenter of this session, Clark Pritchard of  
19 the Office of Research, has just called in. He's ill and  
20 will not be able to be here today.

21 So what I would suggest is that we have as a  
22 backup Dr. Trapp who's been the technical lead on that  
23 particular rulemaking, and he will try to fill in the gap.

24 Unfortunately, I don't think we have copies of  
25 Pritchard's briefing charts, and that may put us at a little

1 bit of a disadvantage. But my understanding is you do have  
2 copies of the version of the proposed rule and the statement  
3 of concern. Is that correct? Does everybody have the  
4 documents?

5 Okay. In that case, what I'd suggest is that Dr.  
6 Trapp give a presentation, try to explain to you why we are  
7 doing this particular rulemaking. How it fits in the total  
8 scheme of our proactive rulemakings.

9 At the last meeting I had asked if you people  
10 could give us a letter so that we could go through the  
11 process of getting this document to the Commission for  
12 approval to publish as a proposed rule. And you asked for  
13 the latest version of the document which was transmitted to  
14 you.

15 I should point out to you that in our own internal  
16 review process we still think we need to make some changes  
17 to the document, completely independent of any changes you  
18 might make. And Dr. Trapp can identify some of the things  
19 that are still under consideration on our part.

20 But even given that situation, we would appreciate  
21 very much if we could get formal comments from you on the  
22 version that you have in hand so that we can continue the  
23 process of getting this document so it's understandable and  
24 resolve some of the regulatory concerns that we've  
25 identified in our dialogue with DOE to date, so that we can

1 get this into the public domain for the public comment  
2 processes as soon as practicable.

3 With that, I'll turn it over to Dr. Trapp.

4 DR. MOELLER: Dr. Okrent has a question.

5 DR. OKRENT: Could I give Dr. Trapp a minute or  
6 two to collect his thoughts and ask if you'd help my memory.

7 How do the terms "anticipated" and "unanticipated"  
8 relate to EPA terminology of undisturbed or all significant  
9 events? Or is there a connection? Could you help me?

10 DR. BROWNING: Yes, there is. But Dr. Trapp is  
11 better able to give you the specifics and fortunately he has  
12 a chart that will make all that crystal clear.

13 DR. OKRENT: Thank you very much.

14 DR. BROWNING: There is a connection but not an  
15 exact correlation between the two.

16 DR. MOELLER: Well, one other thing. In our  
17 letter of August the 1st 1988, one of the major themes of  
18 the committee's letter was that other federal agencies,  
19 including DOE, EPA, and USGS, so far as knew at that time  
20 had not responded or commented in any way on this proposed--  
21 or on the draft.

22 DR. BROWNING: At that point in time--keep in mind  
23 at that point in time the form of this document was to be a  
24 branch technical position. And that's the form in which you  
25 commented on officially before. I think also one of the



1 major comments was that the words "anticipated" and  
2 "unanticipated" in the context they were being used in the  
3 regulatory phase "anticipated events and processes," didn't  
4 match up exactly with Webster's Dictionary definition of  
5 "anticipated" and "unanticipated." And I think that's also  
6 part of the problem of the connection into the terms that  
7 are used in the EPA standard.

8 But if I could, I would prefer to defer to Dr.  
9 Trapp who has had many attempts at practicing how to explain  
10 that difference and how we are proposing to deal with it in  
11 the proposed rule changes that we either have them in the  
12 works or have in mind.

13 DR. MOELLER: Okay.

14 DR. TRAPP: Obviously I hadn't been planning on a  
15 formal presentation today but there's a whole bunch of  
16 things, slides, et cetera, that I've got that came from a  
17 series of other talks, and there's a series of slides which  
18 I've put together recently based on questions, discussions,  
19 et cetera, which I want to go through.

20 DR. HINZE: John, before you get started, could  
21 you please move that over to your left, if you would.

22 Thank you very much.

23 DR. MOELLER: And could you shorten the strap or  
24 tie on your mike and increase the volume that way. Thank  
25 you.

1 DR. TRAPP: How is that?

2 DR. MOELLER: Great.

3 DR. TRAPP: If we want to go through this one  
4 specific on first--actually I'll drop into something else.

5 As was stated previously or questioned previously  
6 at the time there was a briefing on this as a quote "GTP,"  
7 we had not received comments from the Department of Energy.  
8 We had not received comments from the EPA. We had not  
9 received comments from the USGS.

10 We have received comments from all those people.  
11 They came in within a couple of weeks, et cetera, after  
12 that. And the various comments have been taken and have  
13 been considered in all the discussions and all the work that  
14 has been going on with the proposed rulemaking.

15 This specific slide which was questioned by Dr.  
16 Okrent--

17 DR. OKRENT: I'm interested in the first bullet  
18 particularly. I am trying to understand how you reach your  
19 definition of "anticipated" and make it equivalent to I  
20 guess what EPA says if the disposal system is not disrupted  
21 by human intrusion or the occurrence of unlikely natural  
22 events. I assume somehow there is a connection here.

23 DR. TRAPP: It's basically, that connection that  
24 you are talking with directly there.

25 DR. OKRENT: And I guess--well, what is the

1 staff's definition of "unlikely"? I suppose where it comes  
2 down to. Or "likely." The opposite of "unlikely" is  
3 "likely." If I understand it.

4 DR. TRAPP: To get into that, I would have to drop  
5 back to a whole series of other slides. I'll be glad to do  
6 it, and go through it maybe at the end.

7 DR. OKRENT: Now, it seems to me it's a policy  
8 kind of thing. I mean something can be--I can think of  
9 anticipated transients without scram, for example, in the  
10 reactor area. Or however you want to put it. Because  
11 certain of the--certain parts of the EPA standards have to  
12 be met for the undisturbed event.

13 I'm asking, in effect, your choice of quaternary  
14 record when you get more specific. Why something that has a  
15 chance smaller than perhaps one in a hundred is considered--  
16 in ten thousand years is considered likely?

17 DR. TRAPP: Basically because there are a series  
18 of things that have to be drawn through. It's a combination  
19 of taking a look at the quaternary record and taking a look  
20 at the processes, the rate of the processes, et cetera, and  
21 tying the processes and events into a total understanding  
22 of how the natural system works.

23 Now, one of the points that keeps on getting to be  
24 a problem when we try to discuss anticipated and  
25 unanticipated processes and events, is everybody tries to

1 make the terms do more than they are supposed to. Everybody  
2 tries to make the rulemaking solve all the problems. They  
3 aren't intended to solve all the problems.

4 What we are trying to do here is define a series  
5 of processes and events from which--and these are natural  
6 processes and events--or processes and events in the  
7 geologic setting. Not within the engineer barrier system.  
8 But with the geologic setting. From which you start your  
9 analysis.

10 We are not talking about how you do your analysis,  
11 how you assign probabilities and all this other kind of  
12 thing. We are starting from, quote, "a deterministic base"  
13 from which point things move out.

14 DR. OKRENT: I'm sorry if I have to pursue a  
15 certain course, but if I understand correctly, there are  
16 portions of the standard that are to be evaluated in terms  
17 of what EPA calls the undisturbed repository.

18 DR. TRAPP: Yes.

19 DR. OKRENT: Namely, individual protection and  
20 groundwater protection in the remanded standard. Also,  
21 since they say you are not to use unlikely events I assume  
22 they are talking in terms of likely events included in the  
23 undisturbed.

24 And I guess maybe because I've had an interval  
25 when I was away from being intensely looking at what the

1 staff's rulemaking or so forth was, I found I didn't really  
2 understand the correlation or the connection between the  
3 usage of the term likely or undisturbed, and what I read in  
4 the staff's definition and expansion of anticipated in this  
5 proposed rulemaking. Because what I read didn't look to me  
6 like what I would ordinarily consider to be likely. It  
7 seemed to me to be stretching somewhat beyond likely.

8           And this is why I'm asking the basic question.  
9 How you make the philosophic or whatever it is policy  
10 connection between undisturbed and anticipated. To me it's  
11 a fundamental question. But if the committee is all  
12 satisfied, I'll drop the issue.

13           DR. TRAPP: No. It's a question which relates not  
14 only to the definition, but a question which relates to  
15 other parts of the rule such as--one of my favorite parts of  
16 the rule--60.122(a)(2).

17           Now, when you get to 60.122(a)(2), it basically  
18 describes how certain analyses have to be done. Assumptions  
19 that have to be made by the applicants when they come in for  
20 the license. And it's talking about the investigations,  
21 including the extent to which things are not present.  
22 Assumptions which are, again, not likely to underestimate  
23 the effect, this type of thing.

24           What we are really talking about here is putting  
25 the burden of proof on DOE. Now, if you take a look at the

1 definition or the philosophy behind the definition for the  
2 process, the process--basically what we are trying to do and  
3 we've got best projection, what I would like to use is  
4 something like "expected value." Except with expected value  
5 you are sitting there and you are saying you've got one  
6 model. If you, say, had a normal model, et cetera, you would  
7 expect the volume to be the mean.

8           What we are trying to do is say that the likely  
9 process should approximate something close to the best  
10 scientific projection of the rate that's going to be  
11 happening.

12           Now, how do you tie events into that? If DOE  
13 cannot show a could tie into the events, et cetera, then  
14 what they are doing, what we are doing, is suggesting maybe  
15 a slight degree of conservatism.

16           If they can sit and show that they understand the  
17 process, understand the basic philosophy--not philosophy--  
18 what the mechanism that is going in the process which  
19 produces these events which basically are nothing more than  
20 manifestations of the process, the events can be modified.

21           So it is forcing or attempting to force them to  
22 understand what's going on. To factor this into their  
23 analysis.

24           DR. OKRENT: I'm sorry. Whatever it was that may  
25 be behind the staff's trying to get DOE to do something,

1 there is a certain wording used here and there's a certain,  
2 in fact, kind of definition of the term "anticipated" in  
3 this proposed rule. I don't remember whether the term  
4 "anticipated" is this much defined in the earlier rule.  
5 It's too long ago for me.

6 DR. TRAPP: It's not.

7 DR. OKRENT: It is not. All right. Because it's  
8 a long time since I've looked at that. But, again, as I say  
9 when I read this and see how the staff defines  
10 "anticipated," it is not my own usage of the word  
11 "anticipated" or the word "undisturbed." Or the word  
12 "likely."

13 DR. TRAPP: "Undisturbed" as stated by the EPA  
14 would not be my definition either.

15 DR. OKRENT: And, well, if it's not your  
16 definition of "undisturbed," then if you are doing something  
17 sort of as a club--that's my word--to force DOE to do  
18 something you think they won't be doing in connection with  
19 the undisturbed part of the analysis, now, not talking about  
20 the other part, and somehow trying to--well, even without  
21 trying--in this way adding, in my opinion, a rather  
22 considerable degree of conservatism to an already stringent  
23 standard, I am not sure that that is necessarily in  
24 conformance with the guidance of the EPA as to how to do the  
25 analysis or with even the best interests of all involved.

1                   So just, you know, it would--

2                   DR. TRAPP: I could show you some notes back when  
3 we originally started working on these terms. And these  
4 notes--one of the things that we did as kind of an exercise  
5 is we sat a whole bunch of people in the room and with the  
6 information we had at that time on nine sites, we sat down  
7 and we said, well, gee, what do you think is, quote,  
8 "anticipated," and what do you think is "unanticipated"?  
9 Give us your definition.

10                   And according to what happened, it really went  
11 from the full spectrum as to whether you were a conservative  
12 or a liberal. Everybody had their own specific way they  
13 wanted to use the term and it was a very basic philosophical  
14 difference.

15                   What we are trying to do is narrow the philosophy  
16 slightly and come to something that's a little bit more  
17 proscriptive so we at least have got a starting point.

18                   But, again, this is not to say how DOE does the  
19 analysis. DOE can take these things and if they wish to use  
20 a totally probabilistic analysis on all the rest of these,  
21 that's fine. If they can convince the licensing board that  
22 this gives them reasonable assurance.

23                   DR. OKRENT: I really don't quite understand that  
24 statement. Since if this is a rule and you were defining  
25 that, the choice of anticipated events as guided, in fact,



1 proscribed by this rule, it seems to me that you are not  
2 giving DOE a choice. This is not--

3 DR. TRAPP: We are not giving them a choice on the  
4 starting processes and events, no. But we are giving them  
5 tremendous choice and tremendous latitude as to being able  
6 to perform an analysis and to show with reasonable assurance  
7 that they have met the performance objectives.

8 We are trying to look ahead. With the fact that  
9 there is probably going to be a tremendous advance in  
10 statistical analysis and all this other kind of things in  
11 the years to come.

12 DOE at that time may want to use a very detailed  
13 statistical analysis to demonstrate all these things. If  
14 they can do it that way and they can convince the licensing  
15 board, we want to offer them the flexibility.

16 DR. OKRENT: Well, I won't belabor this at the  
17 moment, but maybe the committee understands it all. If not,  
18 I'd suggest they ask enough questions until they do.

19 DR. MOELLER: Well, thank you. And I hope we can  
20 come back to it, Dave.

21 Go ahead.

22 DR. TRAPP: I think I'm going to drop back to  
23 something a lot farther back. And this isn't the page.

24 DR. MOELLER: Could you drop back far enough to  
25 identify fairly clearly who had what kind of problem with

1 the original approach? And why this rulemaking is going to  
2 solve--or what problem this rulemaking is going to solve?

3 DR. TRAPP: Very simply, there was nobody who had  
4 a complete agreement as to how and what these terms meant.  
5 In going through it, one of the places where there was a big  
6 disagreement is what was going on first off with the  
7 Department of Energy, which appeared to be using a straight  
8 probabilistic definition of the terms which we could not  
9 accept. At least the staff could not.

10 So we tried to come up with something which we  
11 could work with which would carry us through.

12 Also another area that gave us a lot of problems  
13 was taking a look at what was going on, for instance, in the  
14 design of the waste package. And we took a look at what we  
15 saw being conducted at that time and it basically was an  
16 analysis and design which seemed to assume in the case of  
17 Yucca Mountain, for instance, that you had the waste package  
18 in a perfect type of sphere with no local static loading, no  
19 nothing.

20 Now, in this case we didn't figure that this was a  
21 reasonable projection of what to expect during either the  
22 300 to 1,000-year period or the 10,000 year period, the  
23 regulatory concern, because you are talking about a site  
24 with a tremendous amount of tectonic activity and there's  
25 going to be a certain amount of fault movement. There's

1 going to be a certain amount of sloping, et cetera. This  
2 type of thing seemed to be the type of thing that should be  
3 considered in the analysis and design.

4 In addition, if you go back to the whole problem  
5 with, quote, "undisturbed," and start talking "undisturbed"  
6 by itself. What you end up with is penalizing good sites  
7 and giving favor to poor sites if you go with a straight  
8 undisturbed type of definition. Because you are not talking  
9 about the natural geologic processes that are going to be  
10 affecting the sites.

11 In certain sites there may be a tremendous amount  
12 of things happening to the whole engineered barrier system  
13 during that 10,000-year period and this should be factored  
14 in so that you are judging sites on their characteristics.

15 MR. BALLARD: This is Ron Ballard. I would like  
16 to just interject a little bit.

17 We have been informally working with EPA, Dan  
18 Egan, discussing these difference of terms and trying to  
19 resolve them. And we have agreement that we are going to  
20 have a number of sessions just to reconcile the differences  
21 in these words and we are hoping to come up--as a matter of  
22 fact, we intend to come up with identical terminology.

23 The undisturbed performance term, for example, is  
24 one which has been construed by some to mean the status quo  
25 site. As it is now for the next 10,000 years, you assume

1 that. And that, as I understand it, was not intended by Mr.  
2 Egan, and it's these kinds of activities that we already are  
3 scheduling a number of sessions just to work out the  
4 differences.

5 You may recall that we had conforming regulations  
6 that were all ready to come out after EPA issued their  
7 standard, which would have gone a major way toward resolving  
8 those. Those are conforming standard--were withdrawn when  
9 EPA's standard was remanded. And now EPA is actively  
10 scheduling the reissuance, hopefully within the next few  
11 months of their revised standard. And that's where we are  
12 working directly with them. And we are intending to have  
13 our conforming regulations built up in parallel and to come  
14 out very close to each other. To try to reconcile this  
15 whole problem.

16 DR. OKRENT: Excuse me. It appears that this is  
17 an EPA standard, not Mr. Egan's standard even though he was  
18 a principal working on it. And the words that were adopted  
19 after a lot of different people reviewed it and finally the  
20 head of the EPA presumably or his representative signed off.

21 There is a definition of "undisturbed," and it  
22 says something which, as I said, is equivalent to I suppose  
23 you might say includes likely events since it does not  
24 include unlikely events. You know, one minus "unlikely" is  
25 "likely" in mathematics sort of. Kind of mathematics.

1 I must say, I haven't heard anything today that  
2 helps me either under. Why the staff thinks--the  
3 definition of "anticipated" it seems to be working toward is  
4 really equivalent to "likely."

5 DR. TRAPP: And it's locked up right in those  
6 thoughts right there. And I'm sorry if I'm not getting them  
7 across.

8 DR. OKRENT: No, no.

9 DR. TRAPP: But it's processes and events. It's  
10 the relationship of processes and events and it is tied in  
11 directly to understanding the process which is driving the  
12 whole system.

13 DR. OKRENT: But something may be driving the  
14 whole system but not at all be likely in a thousand years.  
15 So I don't connect--I have to disagree, in fact, with that  
16 aspect. However much as a physicist I favor understanding  
17 the whole system.

18 DR. TRAPP: I'm not sure if we can get past that  
19 philosophical difference.

20 I'll throw a couple of things up which I talked to  
21 Bill Hinze a little bit before. And these don't have the  
22 blessing of anybody, but let's just use them as starting  
23 point.

24 Mainly because we keep on talking and using terms  
25 and you talked about it yesterday that nobody knows what the

1 different terms mean.

2 When we are using--or at least when I'm using  
3 deterministic--this is the way I am trying to use it. It's  
4 basically talking about a direct mathematical relationship  
5 between the variables.

6 Now, we use probabilistic and actually we  
7 shouldn't be using probabilistic. We should be using  
8 something like stochastic because stochastic is the antonym  
9 of it.

10 We sit and the question keeps coming, how do you  
11 go from a deterministic to a probabilistic, et cetera?  
12 Well, truthfully we do it all the time.

13 And as soon as I find one other piece of paper--  
14 I'll use this. Start from here.

15 Let's take a basic--a basic thing that earth  
16 scientists work with that anybody who has worked with fluid  
17 mechanics works with, civil engineers, Stokes Law, which  
18 basically is a description of the frictional resistance to a  
19 sphere that's passing through a fluid.

20 Now, I can sit down and give you all the math, et  
21 cetera, but you sit down and use it in geology, civil  
22 engineering, you basically end up with something like this.

23 You've got the velocity of the sphere that's going  
24 through the fluid is equal--or at least according to the  
25 law--is equal to some constant which takes care of

1 differences in viscosity and all this other kind of thing  
2 times the radius squared the sphere. Deterministically  
3 stated. A very definite mathematical relationship.

4 Now, what happens if you sit down sometime and  
5 actually try to verify Stokes Law experimentally? You can  
6 sit down and you can drop a whole bunch of spheres or  
7 especially in the case of geologic materials, different  
8 grains into some type of media, watch the thing settle down.  
9 And you'll find out that you are never able to quite equate  
10 with Stokes Law.

11 Some will come down faster. Some will come down  
12 slower. If you've ever taken a look at stuff moving through  
13 there, stuff like a mica flake, et cetera, will go skidding  
14 all over the place. When you get down to the smaller sized  
15 particles, you've got the brownian effect that's going into  
16 it. You've got electrostatic forces on the edge of the clay  
17 particles which sometimes causes it to flocculate, so you  
18 end up with not a true relationship.

19 What you do end up with is velocity as equal to  
20 some constant times the radius squared plus some error bar.  
21 Well, we never use this when we are sitting and talking  
22 about grain size. We never use it when we are going through  
23 all the things. We keep on with the first equation which is  
24 basically a straight deterministic equation with the  
25 understanding that what we are doing is describing a quote,

1 "random probabilistic process."

2 And we take this deterministic equation and what  
3 do we do with it? We take the results and display them  
4 probabilistically. We put down a grain-size curve. We make  
5 some assumptions, some type of deal. Here we've got a CDF.  
6 If we want to play the game and make a CCDF for grain size,  
7 here's a grain-size curve where we can make decisions based  
8 on probabilistic standards on a CCDF.

9 Now, if you take a look at this, it seems like of  
10 screwy because we are going from big to small. If we change  
11 it to the EPA standard, or something like that, we are like  
12 so. And we will end up with some curve that's running down  
13 through the thing and make the decision.

14 The point is, there is not anything magical about  
15 deterministic, stochastic, going from one to the other,  
16 because it happens all the time.

17 You take a look at the fault studies. We make  
18 some type of assessment of a fault based on its length, et  
19 cetera. This type of thing. And we say this fault can  
20 generate magnitude X.

21 Now, the reason we're making that statement is  
22 because we've got a whole bunch of probabilistic data that  
23 backs it up which says that all worldwide or during this  
24 specific province that this certain length of fault will  
25 generate such and such a magnitude.



1           We are stating it deterministically with the  
2 understanding that there's a probabilistic basis. We can  
3 carry the step farther and we can make a deterministic and  
4 probabilistic cut where we will again talk about the  
5 specific fault but we may put recurrence intervals on it and  
6 describe it with the recurrence intervals. And we may go  
7 the full range and describe everything on a total  
8 probabilistic basis.

9           All the way through this very honestly it's a  
10 standard process that is used by different people all  
11 through all these geologic type of decisions.

12           Now, let's try just something else.

13           DR. HINZE: Excuse me a moment, John.

14           Are you saying, for example, in your analogy to  
15 the Stokes Theorem that--

16           DR. TRAPP: Could you speak up. I can't hear you.

17           DR. HINZE: I am trying to. Okay. I'll yell it  
18 out.

19           In your analogy to the Stokes Theorem, are you  
20 suggesting that the electrostatic effects, the roughness  
21 factors and so forth which give us our error bars, are  
22 unanticipated events?

23           DR. TRAPP: No.

24           DR. HINZE: Okay. I thought that's where you were  
25 going and--

1 DR. TRAPP: No.

2 DR. HINZE: Okay. Where is the--can you relate  
3 these to anticipated and unanticipated, or are you strictly  
4 deterministic and probabilistic?

5 DR. TRAPP: All I was using that for was to show  
6 that we've got a deterministic type law which in reality is  
7 a probabilistic type phenomenon.

8 If you wanted to relate it and try as close as I  
9 can with that example, when we are talking quote  
10 "anticipated," it would be quote, "the mean value."

11 When we are talking "unanticipated," it would  
12 include the range that you would expect.

13 DR. HINZE: On the basis of physical laws?

14 DR. TRAPP: Yes.

15 DR. HINZE: Right.

16 DR. OKRENT: Excuse me. I don't think there's a  
17 good equivalent between a mean value and likely value.  
18 Because you can have the mean value of a process which was  
19 terribly unlikely--

20 DR. TRAPP: I can't understand what you are saying  
21 because I don't agree with that at all.

22 DR. OKRENT: Well, I'll just give you an example.

23 You could try to compute the mean value of a  
24 meteorite hitting directly on the repository and there would  
25 be some uncertainty in this, and so there would be a

1 distribution. And after you computed the mean of this,  
2 there would be a rather large exponent on the 10 to the  
3 minus something. And so therefore I would say you would  
4 have a mean which is very unlikely.

5 DR. TRAPP: Now you are going back and forth  
6 between an event and processes. What you are talking about  
7 there is specifically an event the way we would be using it.  
8 Not a process.

9 What you were just talking about is the average of  
10 the process which would be dealing with celestial mechanics  
11 and that's so God damn far beyond me I don't know where we  
12 are.

13 But it is the process you'd be describing and the  
14 events--well, the events would basically fall out because in  
15 this case it is so--yes, so unlikely that it could be shown  
16 to be not worth considering.

17 DR. OKRENT: I am sorry. I was taking your use of  
18 equating mean and anticipated and I was just saying--

19 DR. TRAPP: No. We are talking about the expected  
20 rate of the process. Now, let's take a another--

21 DR. OKRENT: Or the expected rate of the process  
22 of meteorites hitting the earth or specific targets on the  
23 earth. I would prefer not to get into semantics. I  
24 personally think there may be a basic issue in the way the  
25 staff is going on the use of this term "anticipated" as

1 distinct from "undisturbed."

2 DR. TRAPP: And you are confusing "processes" and  
3 "events." Now, I'll give another example that we can try  
4 putting out there.

5 In a tectonic setting such as Yucca Mountain, just  
6 about everybody is going to agree that one of the processes  
7 which is going on is extension. If we are talking about the  
8 anticipated process it would be our best projection as to  
9 the amount of extension which would occur during that  
10 specific time frame of regulatory concern.

11 Now, associated with the extension, there's going  
12 to be certain events. There's going to be events such as  
13 faulting. The faulting that would be tied with it would be  
14 the event and unless DOE can show that they understand the  
15 process and where they sit in the process well enough to say  
16 otherwise, what we are saying is use the quaternary fault  
17 movement that you saw. If they can show that the process is  
18 such that they can understand it and describe it, so that  
19 this fault movement is not the one that you would expect  
20 with the process, then this is one that the staff would  
21 accept.

22 DR. OKRENT: You've now successfully confused me  
23 on the difference between what you mean between an event and  
24 a process.

25 DR. TRAPP: Okay. Well, let's go that step.

1           See, it really doesn't matter I think because it's  
2 anticipated processes and events. And so you have to link  
3 anticipated and events even as apart from processes, and in  
4 fact you very example of the quaternary I think is an  
5 example of where the staff may be taking a position that is  
6 far beyond what one would read from the standards, again,  
7 for the anticipated events or processes.

8           Because the words on page 9 of this latest version  
9 are the record of a quaternary period even though incomplete  
10 must be sufficient to permit a demonstration of the various  
11 things that you need.

12           Now, for events that are likely, somehow there is  
13 to me a disconnect if you are forced to look at things that  
14 are relatively rare so that there isn't going to be abundant  
15 evidence everywhere including in the last 10,000 years and  
16 so forth or 50,000 years necessarily. So some periods.

17           But you must have evidence from the quaternary  
18 period on the chance that it might have occurred once. It  
19 just doesn't mesh well with I think an interpretation of  
20 undisturbed or likely.

21           DR. HINZE: I want to come back later to  
22 quaternary. I think this is a viable topic of discussion,  
23 particularly in view of the emphasis that is in CFR 60 and  
24 this document we have.

25           But, John, going back to anticipated and

1 unanticipated--take me by the hand and guide me through.

2 We've been talking for the last couple of days  
3 about using tectonic models. And from this we can derive  
4 anticipated and unanticipated events and processes and so  
5 forth.

6 You've just brought out an example, the example of  
7 the extension tectonic model in the Yucca Mountain area,  
8 Walker Lane, whatever.

9 Can you take me by the hand and tell me what might  
10 be a derivative from that model that would be an anticipated  
11 and one that might be an unanticipated event?

12 DR. TRAPP: If you go straight through it, an  
13 anticipated event according to the definitions that we are  
14 talking about right here, would be, for example, movement on  
15 the fatigue wash, fault, et cetera. If you take a look in  
16 Trench C2, C3, out in Crater Flat, you've got very definite  
17 undisputed evidence that there has been movement on that  
18 fault during the quaternary. As a matter of fact, several  
19 times during the quaternary.

20 Anticipated event on that fault would be movement  
21 that approximates what happened during the quaternary.  
22 Without any other information.

23 If you want to carry something through to a quote  
24 "unanticipated event," let's make the assumption that the  
25 Walker Lane comes straight down through the site and that

1 the Cedar Mountain events, et cetera, are tied directly to  
2 this whole Walker Lane structure.

3 Transposition of the Walker Lane, the Cedar  
4 Mountain events, down the Walker Lane, et cetera, would be  
5 considered an unanticipated event. Now, how is it  
6 considered in the EPA standard?

7 DR. HINZE: But why is it an unanticipated event?  
8 Because it's less likely? Because it is not an acceptable a  
9 theory in your mind?

10 DR. TRAPP: Basically because we are carrying  
11 through a difference from what has happened in the  
12 quaternary and using that as a projection versus what could  
13 possibly happen in using that as a projection.

14 It's really one of the problems with statistics  
15 versus extrapolation and interpolation. When you are taking  
16 a look at the statistical stuff, what you can do is make a  
17 very good interpolation but extrapolation, you start running  
18 into problems.

19 DR. HINZE: I am not an expert on the Walker Lane,  
20 but I would suggest to you that there's enough geological  
21 evidence of movement in the Walker Lane that that's an  
22 anticipated event as well.

23 DR. TRAPP: Yes. The Cedar Mountain event at  
24 Cedar Mountain is considered an anticipated event. The  
25 Cedar Mountain event at Yucca Mountain would be considered

1 unanticipated and to factor it into the EPA standard they  
2 would sit down and calculate the probability of occurrence  
3 to determine if it is sufficient to go into the EPA  
4 analysis.

5 Now, like I said, in making an assumption that you  
6 can carry through. Let's try something a little bit  
7 different.

8 DR. STEINDLER: Before you leave that, can I  
9 interpret what you've said is an anticipated event is a wild  
10 guess?

11 DR. TRAPP: No. No, an anticipated event is not a  
12 wild guess.

13 DR. STEINDLER: It's not a wild guess.

14 DR. TRAPP: Let's use an example which has gotten  
15 a lot of discussion lately and that's volcanism.

16 A lot of the stuff that Crow has been talking  
17 about and his processes, et cetera, suggest that there is a  
18 decrease in the amount of magma that's being produced and  
19 he's using this to make some of his projections.

20 Now, his rate--I think the latest rate he's got is  
21 something like, quote, "66 meters per year of magma being  
22 produced."

23 Let's assume that that is the correct theory, that  
24 it appears to be the best that we can come up scientifically  
25 as far as a process goes. That would be the anticipated



1 process rate, the 66 cubic meters per year.

2 And associated anticipated event would be  
3 something like the eruption of Lathrup Wells, approximately  
4 right where it occurred. There has been eruptions in there,  
5 many eruptions, et cetera, in carrying one of these things  
6 through and this type of thing would have to be considered  
7 in doing the analysis for the engineered barrier in the  
8 waste package.

9 Okay. Let's carry it a step farther and make it  
10 unanticipated. The rate calculation, et cetera, is very,  
11 very wild. Not wild, but poorly constrained. I think  
12 that's a better scientific term. You can get values without  
13 even trying of 200 to 300 cubic meters a year and certain  
14 people have been known to suggest values as high as 500.

15 If you use these values, you come up with a  
16 totally different projection as to the rate--well, you've  
17 already got the different rate--but you can get a totally  
18 different projection as to the number of events that could  
19 occur during the period of performance and their likelihood  
20 of occurrence.

21 Because the basic assumption that you are putting  
22 through on here is that you have to generate X amount of  
23 magma before you can have an event.

24 So these extremes would then be calculated into  
25 the whole analysis to try to find out whether you do or do

1 not have sufficient probability to meet the EPA standard.

2 DR. STEINDLER: Probability? Is that what you  
3 said?

4 DR. TRAPP: Yes. Okay, if you want to use another  
5 one, just for an example, let's take climatology.

6 If you take a look at the global circulation  
7 models, the best guess at global circulation would show that  
8 in the 10,000-year period you are most likely going to have  
9 an increase from about 45 percent global ice to about 60  
10 percent global ice. This equates to approximately an  
11 increase in precipitation of about 50 percent during the  
12 10,000 years.

13 You are interested in this case not really in the  
14 events, because the events that you are talking about are  
15 thunderstorms, they are snow storms, et cetera, all this  
16 other kind of thing. What you are interested in is the  
17 whole process which is getting you more precipitation into  
18 this thing. So you are looking at the rates.

19 Now, let's carry it a step farther. That would be  
20 the 60/65 percent, whatever it is, would be the anticipated  
21 rate. What's the unanticipated? Well, if you use the  
22 extremes, what you end up with is something that actually  
23 comes out slightly, shall we say, farfetched.

24 The total extreme basically gives you global ice  
25 which would be about 175 percent of what has ever been

1 recorded. This would equate to approximately a 300 percent  
2 increase in precipitation.

3 Now, because it's so extreme because it is  
4 something which does not agree with the geologic record,  
5 does not agree with our understanding of the processes.  
6 This thing would probably be truncated at what happened  
7 during the quaternary maximum. And use this as a projection  
8 to figure out your probabilities of increased or decreased  
9 precipitation.

10 DR. VOILAND: Dr. Moeller, can I go on with a  
11 question about the quaternary?

12 DR. MOELLER: Yes.

13 DR. VOILAND: The quaternary certainly is very  
14 prominent in your transparencies and of this document and  
15 we've all taken a freshman historical geology course in  
16 which we learned that periods were not arbitrarily  
17 selections. But were based really upon events which may be  
18 regional or in some cases global. Which also represent  
19 certain processes going on within the geological settings.

20 Is there something about the quaternary, and  
21 frankly my recollection of my freshman historical geology  
22 course is not that good, as to why the quaternary was  
23 selected where it was in terms of events and what processes  
24 were involved, and is the quaternary then really a  
25 legitimate cut off in North America, and specifically, the

1 U.S., for us to use it as a basis of decision regarding this  
2 rulemaking?

3 DR. TRAPP: In the simplest form we recognize what  
4 you are talking about. It is a somewhat arbitrary selection  
5 and the processes and events, and all this other kind of  
6 thing, vary tremendously. For instance, the end of the  
7 quote, "Pleistocene going into the Holocene" varies  
8 depending on exactly where you were in the United States.

9 Where I went to undergraduate school, our best  
10 calculation was that the Pleistocene ended about 6,000 to  
11 8,000 years ago. Where it's normally considered 10,000 as  
12 an average number for the United States. But this happened  
13 to be one of the more northern universities in the  
14 contiguous United States.

15 But, no, we do recognize this. It is the reason  
16 why when we go into unanticipated processes and events that  
17 we are carrying through the discussion of the pre-Quaternary  
18 record, the understanding the cycles, et cetera, the analogs  
19 to make sure that while we may have neglected something in  
20 the original discussion, it will not get neglected possibly  
21 in the overall evaluation of the site.

22 DR. VOILAND: What's the change in the process or  
23 processes or what is the event that led to the definition of  
24 Quaternary generally? And how does that apply? I know we  
25 are not being specific in this, but how does that apply to

1 the southwestern United States?

2 DR. TRAPP: I'm not sure I can give you a straight  
3 answer right now. I'd have to go back and look at it.

4 DR. VOILAND: I can't answer it either. But I  
5 think it bears on what you are trying to do here. And that  
6 is set up a cut-off point that relates to it. And the fact  
7 of the matter is, if we are talking about this in terms of a  
8 generic basis, if you want to put a repository in the Wolf  
9 River, deer country--a quaternary may not be a long enough  
10 period in which to evaluate this.

11 DR. TRAPP: That's why this part, in going into  
12 "unanticipated," it is recognized. It's very specifically  
13 going into that.

14 DR. VOILAND: I would like to read the first  
15 sentence of a paragraph starting at the bottom of page 13,  
16 and that says, "The question of whether a site has  
17 'adequate' quaternary record." And I don't know what  
18 "adequate" is and perhaps no one else does. "Such that  
19 information is present to classify processes and events are  
20 either anticipated" et cetera.

21 And going on with this, what you say is that you  
22 are going to leave the adequacy of the quaternary record to  
23 the site characterization.

24 DR. TRAPP: That's not what was really intended.  
25 What is really intended--

1 DR. VOILAND: That is what is stated here.

2 DR. TRAPP: I am not going to quibble about words  
3 because there are several spots in there that have already  
4 been mentioned where the words are not coming through the  
5 best. I am being generous, but they are not coming through.

6 DR. VOILAND: I don't want to quibble, but I am  
7 concerned about where you are putting in the rulemaking the  
8 guidance and so forth to prove that the quaternary is an  
9 adequate record of the processes.

10 DR. TRAPP: It wasn't intended to be that the  
11 quaternary is adequate. It was intended to be that the  
12 recent geologic history of the site can be deciphered to a  
13 sufficient degree that you can actually make legitimate  
14 projections.

15 Now, that may say totally different than what  
16 you've got on the page, but that's basically what we are  
17 trying to get across.

18 DR. VOILAND: Let me ask another question, if I  
19 can find it here. And this will perhaps help me to  
20 understand, or hopefully all of us understand, "anticipated"  
21 and "unanticipated" better.

22 On page 15 of our material 10 of the document, in  
23 particular it seems desirable to state explicitly that human  
24 intrusion will need to be viewed as an unanticipated event  
25 and analyzed accordingly.

1           There are some human events that we might consider  
2 as anticipated, I would think--

3           DR. TRAPP: It was human intrusion.

4           DR. VOILAND: And even some--okay.

5           DR. TRAPP: It was human intrusion. What we are  
6 talking about there, and it's the difference between the  
7 controlled area versus the non-controlled area. It's the  
8 difference between what DOE has the ability to put their  
9 arms around and those things that they are not.

10           Now, a good example. In the controlled areas  
11 you'll have the markers, you'll have the records, you'll  
12 have all this other kind of thing. And there will be some--  
13 there will be anyway different things which should make  
14 future populations somewhat aware that you've got a site  
15 here. For that reason, stuff such as direct human  
16 intrusion, which is drilling through the site, is considered  
17 unanticipated.

18           Now, the other extreme are things such as, quote,  
19 "the greenhouse effect" which is something which we may not  
20 know exactly what it's going to do to the climate, but we do  
21 know it's doing something. This fact that it's out of DOE's  
22 control. They can't stop people from putting aerosols, stop  
23 smokestacks, et cetera. This is a quote "reasonable  
24 projection" of what man can be expected to do and the effect  
25 that man can be expected to do that's outside the control of

1 DOE. It has to be factored into the anticipated processes.

2 DR. VOILAND: I'm sorry. The anticipated?

3 DR. TRAPP: Yes. It has to be factored actually  
4 into both the anticipated and non-anticipated. And it gets  
5 factored in basically the same way.

6 The best projection versus the extremes.

7 MR. JUSTICE: Dr. Hinze, may I review one  
8 particular point that you raised. I am not sure it was  
9 fully discussed, if you wish. I'd like to pursue it a  
10 little bit further. That's the matter of quaternary.

11 Which you were questioning in such a fundamental  
12 way, I think it may deserve some more discussion. Because  
13 you were getting at the quaternary as a record, which is  
14 built into Part 60. It's one of the bases, fundamental  
15 bases and assumptions, on which Part 60 is developed and  
16 which we are now trying to implement.

17 And if there is a concern about the fundamental  
18 basis for us implementing Part 60, in other words, then we  
19 have I think a problem that is beyond the scope of this  
20 particular session.

21 But let me try to address this a little bit  
22 further.

23 DR. VOILAND: Excuse me. Let me interrupt. You  
24 know, I never thought of it before, but as I sat last night  
25 reading through this document, it just occurred to me that



1 just what is the definition? What are the defining  
2 processes and events in North America that really define the  
3 quaternary?

4 MR. JUSTICE: Well, it's been some time since I  
5 had historical geology as well, but I dare say that the  
6 quaternary period marks a change that apparently was based  
7 on significant climatic change from the tertiary, in part  
8 based on change in platectonic motion vectors, that is to  
9 say, rates and directions.

10 The tertiary record, especially, let's say, post  
11 Miocene, rates of volcanism and I should say tectonism, led  
12 to the widespread climatic and sedimentological regime  
13 that's similar to our current modern regime.

14 That's, of course, rather general, and because  
15 it's general, it can't be applied in every place as clearly  
16 as the demarcations in the typed sections point out. But  
17 it's based on the record of oceanographic sediments as well  
18 as land-base sediments which point to significant changes in  
19 the sedimentological and hence climatological and tectonic-  
20 initiating causes.

21 But more to the point though is why the framers of  
22 Part 60 utilized it is that the quaternary represents a time  
23 frame as well as a record that's apparent near the surface--  
24 a record that's accessible. Such as it exists. That can be  
25 utilized to document movements of the crust. In fact, as a

1 baseline for climatological change by which projections can  
2 be made with relative confidence. Where the quaternary  
3 record exists the last two million years, it tends to be--  
4 well, again, this is a generalization, but it reflects this  
5 period, the most recent period, of earth history that can be  
6 the basis, the relatively uninterrupted basis, for making  
7 projections over the next 10,000 years.

8 DR. VOILAND: Well, it's been forty years since  
9 I've had historical geology, but it seems to me that we had  
10 this similar definition in terms of age for the quaternary  
11 then as we do now, and we have a lot better control on the  
12 dating of climatological change. And I wonder whether the  
13 quaternary is a vestige of the time when our dating of  
14 events, especially in the near term, were much more  
15 imprecise, which were much less accurate.

16 And such an emphasis is placed upon the quaternary  
17 here that I wanted to raise the question. And the events--  
18 and I want to make certain that we are really talking, as  
19 I'm sure you do, that we are talking about this, and the  
20 rulemaking is very generic, and not just focused at the  
21 southwestern U.S.

22 MR. JUSTICE: We recognize that there is not a  
23 consensus on the actual age--let's say, the absolute age of  
24 quaternary tertiary boundary. Various conventions can be  
25 raised that would provide an age range from about 1.6

1 million years to about 2 millions years before present.

2 DR. VOILAND: Perhaps you can help me, and I want  
3 to go back again to page 8 of your document, page 13 of our  
4 material, and this question of whether a site has an  
5 adequate quaternary record can be resolved through site  
6 characterization. And I think that's very reasonable.

7 How is that thought implemented in the rulemaking  
8 or TPs or guidance? Can you direct me to someplace where  
9 that is made clear? Other than this introductory material.

10 DR. TRAPP: That basically is a statement which is  
11 tying directly back to 60.122(a)(2). And 60.122(a)(2),  
12 again, is the, quote, "definitions"--I'm sorry. It's not  
13 definition. But it's a statement of the proof that is  
14 necessary for DOE to make in the license application on  
15 favorable conditions.

16 DR. VOILAND: You know, I think that kind of  
17 statement is a good caveat. It really puts the onus onto  
18 the site characterization where it really should be.  
19 Because whether Yucca Mountain, Wolf River, the age over  
20 which you want to consider may be quite different. And the  
21 quaternary may not be it.

22 Let me, while I've got the mike here, let me ask  
23 another question that occurred and was emphasized by your  
24 transparencies.

25 On page 12, there's a definition of anticipated

1 processes. And, again, I am going to take the liberty to  
2 read, "Anticipated processes are described by the most  
3 reasonable projection." Singular.

4 Now, on your transparency, I noted that you not  
5 only used "best projection," but you also used the plural.  
6 And I found the plural to be much more acceptable because  
7 yesterday as we were discussion this about tectonic models,  
8 I think there was general agreement with the geo-science  
9 people here that we would have models, plural, and therefore  
10 there would be projections.

11 Is that not right? Why the flip from the  
12 transparency to this?

13 DR. TRAPP: As a direct answer, there's been,  
14 shall we say, general technical agreement within the staff  
15 that what we are trying to do on the process is for the  
16 anticipated process to be able to get the consensus of the  
17 scientific community that this is the best guess, best  
18 estimate, whatever you want to call it, as to what is going  
19 to happen during this period.

20 Now, how do you translate that into words that can  
21 be bought by all the scientists, all the lawyers, everybody  
22 else? Right now the only honest answer I can give you is we  
23 haven't come up with an exact term that somehow gets this  
24 thought across.

25 DR. VOILAND: I wish I were clever enough to give

1 you the word.

2 DR. TRAPP: If you can give us the word I would  
3 love it. Because we are having problems with that.

4 DR. VOILAND: You know, I worry about "reasonable"  
5 and I'm sure you do too.

6 But I look on your first line there and you have  
7 "projections" and then I read the document and I see  
8 "projection." And I think there's quite a difference. I  
9 think there's a difference in philosophy represented by  
10 that. And obviously you've had a change of heart in  
11 arriving at this document. I assume that this is an older  
12 one.

13 DR. TRAPP: No, this one was written by me. That  
14 was written by somebody else.

15 DR. VOILAND: Okay. Who should I ask then if this  
16 should be singular or plural? Obviously I shouldn't ask  
17 you, because you--

18 DR. TRAPP: You shouldn't ask anybody right now  
19 because what we are trying to do is come up with the words  
20 that best describe the intent that we are trying to get  
21 across. Right now they aren't there and if you have got a  
22 suggestion, I would greatly appreciate it.

23 DR. VOILAND: My suggestion is that you keep it  
24 plural. I agree with you and I hear no arguments to make it  
25 singular.

1 DR. TRAPP: Thank you

2 DR. MOELLER: What page was that on again?

3 DR. VOILAND: Well, it's page 17 of our document.  
4 Page 12 of theirs.

5 DR. TRAPP: It's in several other spots. That  
6 exact phrase is in several other spots aside from that page.  
7 And our discussions that have been conducted since that  
8 document was given to you, like I said, it's one of the  
9 phrases or the exact terminologies which is getting a lot of  
10 discussion and a lot of problems. How do we convey the  
11 exact point that we are trying to get across?

12 DR. OKRENT: Are you taking other questions?

13 DR. MOELLER: Yes, let's go ahead.

14 DR. OKRENT: Let's see. If we could look at your  
15 definition of unanticipated processes and events for a  
16 moment on page 16 of your document, which is 21 of the  
17 handout. I am just trying to understand some of the  
18 specific bullets, if you will.

19 There's one which says "The occurrence of a  
20 natural event at any time and at any location within the  
21 geologic setting at which it is credible for it to occur.  
22 Similar to one that occurred within the geologic setting  
23 during the quaternary period."

24 DR. TRAPP: The best example I can give would be  
25 going back to the Cedar Mountain event. And what we are

1 trying to do there is say in that case that "DOE, is it  
2 credible that the Cedar Mountain event could occur at some  
3 other location from which the records show it occurred?  
4 Please evaluate that and include it in your analysis."

5 DR. OKRENT: Well, I was wondering, should I read  
6 this to mean that we could have a--whatever you call a large  
7 volcano under the site.

8 DR. TRAPP: Yes.

9 DR. OKRENT: That's intended.

10 DR. TRAPP: Yes.

11 DR. OKRENT: So one would estimate the  
12 probability.

13 DR. TRAPP: If the process by the time they get  
14 done with their studies indicates that it is credible. It  
15 depends on which model you are using exactly. But what we  
16 are saying is right now if we are using a totally random  
17 model, which is what is being proposed by DOE.

18 DR. OKRENT: What is credible--how does one  
19 interpret credible in this?

20 DR. TRAPP: I'm not sure I want to touch that  
21 right now.

22 DR. OKRENT: Well--

23 DR. TRAPP: The reason is we've gone through  
24 discussions on Appendix A as to maximum credible, and all of  
25 that, and it goes around in circles.

1 DR. OKRENT: Now, I understand the difficulties  
2 with credible and I used to have trouble when the AEC,  
3 before the NRC, used the term "maximum credible, accident."  
4 And I never knew really--people use the term differently  
5 and--

6 DR. TRAPP: Okay. This is important to understand  
7 that what we are saying is bring these into the analysis to  
8 start with. But after you've gone through the analysis or  
9 the--not the whole analysis, but as you go through, if you  
10 show that it doesn't need to be carried farther, you can  
11 drop it out.

12 Now, in this case if we assume that the EPA  
13 standard, and you are talking non-anticipated, so that's  
14 where it applies--if you assume that the EPA standard  
15 remains about what it is, if you go through and you show  
16 that the probability of this is so low that it doesn't need  
17 to be considered for the EPA standard, throw it out.

18 DR. OKRENT: And so the same idea applies then to  
19 the last bullet or the third bullet on that page 16. "A  
20 natural process or event which due to pertinent  
21 characteristics of the geologic setting could occur even  
22 though there's no conclusive geologic evidence that it ever  
23 occurred within the geologic setting."

24 DR. TRAPP: Analogs, et cetera. You bring in  
25 these type of things to make sure that you've got the



1 complete range. Again, after you've done the analysis, if  
2 it shows--

3 DR. OKRENT: So this is so that they have a long  
4 list and they are supposed to somehow then estimate the  
5 probabilities of these, if I understand. And screen out  
6 those that don't meet the intent of the four criterion, is  
7 that your idea?

8 DR. TRAPP: That would be one way you could screen  
9 them out, yes.

10 Now, the other thing is the exact EPA standard may  
11 change. There may be different probabilities, et cetera,  
12 this type of thing. If you sit down and give a probability  
13 right now, that could be changed.

14 DR. OKRENT: I understand. In a sense--well, let  
15 me come back to the anticipated event here which is the one  
16 that where I have more questions, as you can tell--

17 DR. TRAPP: I've discovered that.

18 DR. OKRENT: I can see your logic in trying to  
19 start with a long list of unanticipated so that you haven't  
20 missed something important. That's, in simple terms, I  
21 assume is what you are trying to do.

22 DR. TRAPP: It's really trying to tie into the  
23 60.122 of the reasonable assurance, the whole thing, yes.  
24 It's trying to tie various components of the rule into one  
25 logical process. Or at least a process that we think is

1 logical.

2 DR. BROWNING: But I think his concept of the  
3 starting point is a list, is an important one to have in  
4 mind. What you do with that list is a whole different  
5 thing. I think you are beginning to understand my way of  
6 looking at this thing. Which is when you look at where they  
7 are in the process right now--they've picked a site and they  
8 are going to go investigate or characterize the site.  
9 Starting that process.

10 They know something about the process. They know  
11 something about the site now. And they've listed certain  
12 events and processes that they think from looking at the  
13 thing with calibrated geologic eyeballs or things that  
14 happened there over the last couple of million years. And  
15 you start making a list.

16 And then you try to decide what's the process for  
17 putting the things on that list into an anticipated pile and  
18 an unanticipated pile and I think there's even a third pile.

19 DR. TRAPP: That would be the ones that you just  
20 throw out.

21 DR. BROWNING: You sort these things in. And I  
22 think you've got to keep focused on the process and where we  
23 are in the process right now. We are not at the point yet  
24 where we can say, you know, even what's on the list. And  
25 that's DOE's job of doing that as part of site

1 characterization.

2 Also their job is to try to sort out the piles.

3 DR. OKRENT: Well, let me ask a question that may  
4 be troublesome.

5 In the background discussion on page 2 of your  
6 document or 7 of ours, it says, "Anticipated processes and  
7 events are the primary design basis processes and events."

8 After you have this list of anticipated processes,  
9 and you've given some fairly encompassing guidance for  
10 anticipated, in my opinion, these somehow--you don't just  
11 make a list and later estimate probabilities. Apparently  
12 they somehow have to be factored in to the design, although  
13 I don't know that there's explanation later of how this is  
14 factored into design.

15 DR. TRAPP: No, there is not. And the reason  
16 there is not is because, again, people are trying to make  
17 this rulemaking more than it's supposed to do.

18 DR. OKRENT: What is it supposed to do?

19 DR. TRAPP: This is supposed to give you your  
20 original quote "list," if we use that term of the different  
21 processes and events in the natural system that need to be  
22 carried through. Now, how they get carried through and how  
23 the design analysis is done in the waste package and how  
24 they demonstrate compliance is something that also needs to  
25 be discussed. But it is not being discussed in this

1 rulemaking.

2 DR. OKRENT: Then let me ask a second question,  
3 which in fact did come up before.

4 It appears that it's felt that one--well, it says,  
5 "The record of concurring period must be sufficient to  
6 permit such a demonstration," and so forth.

7 And at least with regard to anticipated events,  
8 the less probable the event that you are requiring to be on  
9 that list it seems to me the more difficult you make the  
10 task of trying to meet this statement that the record of the  
11 quaternary period must be sufficient and perhaps this is  
12 going beyond what is equivalent to undisturbed.

13 In other words, what I am getting at is I think  
14 the EPA standard is quite stringent and if you broaden--

15 DR. TRAPP: Sir--

16 DR. OKRENT: Just a minute--the areas where one  
17 has to build up a record, you may make it either very  
18 expensive, more expensive than in fact is warranted, or the  
19 nation can afford, or impossible to build up quote "a  
20 sufficient record," unquote.

21 DR. TRAPP: Let me ask you a question.

22 DR. OKRENT: Yeah.

23 DR. TRAPP: You have been coming across today very  
24 strongly and in some of the previous discussions where you  
25 are questioning conservatism.

1 DR. OKRENT: That's correct.

2 DR. TRAPP: Now, let me have your definition of  
3 what you think in a geologic sense over 10,000 years is  
4 likely or not, or reasonably likely.

5 DR. OKRENT: Well, if you want an off-the-top-of-  
6 the-head answer, I think in ordinary usage it's something as  
7 less than one chance in ten of occurring in the period under  
8 consideration. That's your best guess. One would not say  
9 it's likely.

10 DR. TRAPP: Okay. Then are you saying that what  
11 you would like to see, and I'm trying to put words in your  
12 mouth, is that what we should use for a period of record is  
13 100,000 years?

14 DR. OKRENT: No. That's not the same statement.  
15 Because a period of record serves a different purpose.

16 DR. TRAPP: That's right. The period of record is  
17 to define the process and to understand the process. We  
18 feel that the quaternary is sufficiently long that we can  
19 figure out relatively quote "accurately" and I realize those  
20 are weasel words all the way through--as to what the process  
21 is doing.

22 DR. OKRENT: See, but if you can't--after you  
23 said, let's do all this exploration--

24 DR. TRAPP: Uh-huh.

25 DR. OKRENT: --and prepare a list of things from

1 this, but then cull it down to things that are likely during  
2 10,000 years, I'd have no problem. I don't see that last  
3 phrase.

4 DR. TRAPP: That last phrase you are not going to  
5 see in this rulemaking. Where you need to see that phrase  
6 and that concept is when you get into the discussion of how  
7 do you demonstrate sufficient--I mean--oh, my mind is blank.  
8 Containment? No, sufficient--

9 DR. OKRENT: EPA says the reasonable expectation  
10 is enough.

11 DR. TRAPP: No, wait. These terms, first off, are  
12 meant for the engineered barrier system to start with. We  
13 don't know exactly what the EPA is going to come up with and  
14 very honestly I don't know when the EPA is ever going to  
15 come up with it. We need to have something right now that  
16 we can go ahead and basically give some type of guidance to  
17 DOE as to what we expect out of their site characterization  
18 program. We also need to give some guidance to DOE as to  
19 what we expect them to consider in the design of the  
20 engineered barrier in the waste package, irregardless of  
21 what the EPA finally comes up with.

22 We are trying to give them guidance so that they  
23 have got a sufficient program of characterization and a  
24 sufficient program of design and testing that no matter  
25 where this thing ends up in the EPA standard, they should

1 have the information to go through.

2 Now, how do we define whether they have met the  
3 113 requirements for the waste package and the engineered  
4 barrier system? That is up basically to the people that are  
5 working on those systems to define exactly how you go  
6 through. Now, they may say, hey, reasonable assurance is  
7 after you have taken these things. You design them for the  
8  $10^{-1}$  events, or  $10^{-2}$  or  $10^{-7}$ . I don't care. But that is  
9 not part of the rulemaking.

10 DR. OKRENT: Well, I hear you but I read about  
11 characterization of the site, and in any event, there's a  
12 definition of anticipated events and my understanding is  
13 that the parts of the EPA standard relating to individual  
14 protection and groundwater protection, assuming that they  
15 remain in the standard, have to include anticipated events.

16 And I'll repeat. I really don't have a problem  
17 with your trying to make a long list of anticipated events.  
18 But I don't see the screening of these anticipated events to  
19 be equivalent to the term "undisturbed." I think that's  
20 what's lacking.

21 DR. STEINDLER: Let me see if I can get some  
22 things clarified for me.

23 In the course of the discussion of what  
24 constitutes an unanticipated process or event, you did  
25 discuss that in terms of likelihoods. And I was a little

1 puzzled by that because that doesn't match with your  
2 statement just now.

3 DR. TRAPP: No, what I was trying to get across  
4 and maybe I blew it slightly, was again we are starting from  
5 the unanticipated processes and events and anticipated  
6 processes and events, the total summation. And using that  
7 as a starting point from which you then start conducting the  
8 analysis, et cetera.

9 DR. STEINDLER: Okay.

10 DR. TRAPP: To make sure that you've got a  
11 sufficient database.

12 Now, go to the next step and to switch that into--

13 DR. STEINDLER: Let me inject the question in  
14 there. Is there anywhere in Part 60 that the applicant is  
15 given permission to exclude on the basis of likelihood a  
16 certain kind or quantity of unanticipated events that appear  
17 on Bob Browning's laundry list?

18 DR. TRAPP: At the present time exactly no. Now,  
19 when you get to the point--

20 DR. STEINDLER: My next question then is are you  
21 planning to put into a rule someplace at some time a  
22 statement that says you've provided this laundry list of  
23 anticipated and unanticipated events based on the  
24 deterministic criteria. But the applicant is free in his  
25 analysis to exclude from further consideration those



1 processes and events believed to be unlikely or whatever?

2 DR. TRAPP: The terminology would be--let's again  
3 assume that the EPA standard comes out exactly the way it is  
4 right now. Yes, there will be something that says that  
5 philosophy, and it's basically, look, you've considered this  
6 whole thing. You've gone through the analysis. You've  
7 demonstrated that you know about what's happening with all  
8 of these things to a sufficient degree. Then what you need  
9 to do is carry them from this deterministic basket through  
10 the probabilistic analysis for the EPA standard, which is  
11 why we are saying that this sum is probably going to be  
12 greater than all significant processes and events which are  
13 the processes and events which they have to analyze to get  
14 compliance with the EPA standard.

15 The exact words I can't tell you. But there will  
16 be something which carries that philosophy through.

17 DR. STEINDLER: So I expect to be able to find in  
18 the not too distant future somewhere in Part 60 words to  
19 that effect?

20 DR. TRAPP: Well, you won't see it until after the  
21 EPA standard is finalized.

22 DR. STEINDLER: Well, you've not given me much  
23 comfort there, because you've indicated that you are not  
24 altogether sure when that EPA standard is going to be  
25 finalized.

1 Is it only dependent on the EPA standard?

2 DR. TRAPP: This specific thing, yes. Because  
3 what we are talking about here is trying to provide a  
4 sufficient grouping of processes and events to make sure  
5 that you understand the sites sufficiently to meet the  
6 requirements of 60.122(a) and therefore provide reasonable  
7 assurance that you can demonstrate compliance with 60.112.

8 It is trying to tie this whole process into one  
9 logical--

10 DR. STEINDLER: Yeah. My problem is that I see a  
11 rope that seems to have more than two ends that are loose.

12 DR. BROWNING: Maybe it would help if we  
13 disconnect it from the EPA standard and only dealt with it  
14 in the context of something that Part 60 requires in  
15 totality.

16 DR. TRAPP: The only thing Part 60 requires in  
17 totality right now is that as far as the EPA standard. And  
18 there's--

19 DR. BROWNING: I am thinking in terms of the  
20 requirements on the waste package, which is the engineered  
21 barrier piece. The process that Dr. Trapp is talking about  
22 is a precursor to reaching a final design for their waste  
23 package. The anticipated events piece.

24 I think the question you are raising is how do you  
25 go from this complete thorough--your best list of everything

1 that's ever happened in the past. And winnow it down to  
2 those things that are reasonable to invoke on the waste  
3 package design.

4 DR. MOELLER: That's correct.

5 DR. BROWNING: That's something we could take  
6 under advisement and lay out a process or philosophy, if you  
7 will, for how you do that.

8 DR. STEINDLER: I am aware of the fact that you've  
9 been trying to limit the scope of this rulemaking discussion  
10 because the scope of the rulemaking is limited. And that  
11 the question I asked doesn't exactly--

12 DR. BROWNING: It leads us into the process to  
13 come to closure on how do you winnow this list down--I think  
14 it's the same thing that's bothering Dr. Okrent.

15 DR. OKRENT: There are two lists and one of them  
16 is sort of winnowed by the EPA  $10^{-4}$  chance and  $10^4$  years.  
17 You could say that there is a guidance there. But I haven't  
18 seen the guidance for the anticipated event list. It's not  
19 here and I didn't know if you planned any. And that I think  
20 was presumably what you were getting at.

21 DR. TRAPP: And, again, that is going into  
22 substantially complete containment. The engineered barrier.  
23 How you demonstrate compliance with that. And--

24 DR. BROWNING: That's another rulemaking that's on  
25 the plate that you haven't seen yet. Basically you guys

1 need to see how all this stuff fits together. You are  
2 getting a bite at a time and it's not coming out clear how  
3 the whole thing fits into the continuity of eventually  
4 getting to making a case that you meet EPA standards. That's  
5 what I sense is bothering you.

6 And you are not going to see it by focusing in on  
7 individual rules.

8 DR. MOELLER: Dr. Okrent, earlier you had said you  
9 had three points and you made two of them. The anticipated  
10 processes and events being the primary design basis. And  
11 then the record of the quaternary period being sufficient,  
12 et cetera. And then you didn't do the third one. Or I  
13 missed it if you did.

14 DR. OKRENT: I think I probably mentally decided I  
15 would be still more repetitive--

16 DR. MOELLER: All right.

17 DR. OKRENT: I've repeated some point today. And  
18 so I think I raised the questions that I thought I wanted  
19 the committee to have in mind.

20 DR. MOELLER: Okay. We are at the end of the  
21 time. That doesn't mean we need to terminate the  
22 discussion. This might be though a good time to take a  
23 break and come back to this same topic.

24 Dr. Trapp, how much more did you have that you  
25 wanted to say?

1 DR. TRAPP: Let's put it this way. I am available  
2 for discussion on this subject as far as I know most of the  
3 day.

4 DR. MOELLER: Fine.

5 DR. TRAPP: If you want to carry it through most  
6 of the day, fine.

7 I want to somehow get across the philosophical  
8 points we are trying to get to. The problem that we are  
9 having, it's one people separated by a common language. We  
10 have got these words and each person reads them slightly  
11 different. And we are never quite sure exactly what the  
12 other person is saying and it's obvious right now that the  
13 paper that you've got in front of you is not getting across  
14 some of the concepts that we are trying to get across.

15 DR. MOELLER: And that's particularly troubling,  
16 of course, because the whole purpose of the statement is to  
17 clarify the terms.

18 DR. TRAPP: Yes. If we are not clarifying, we are  
19 not succeeding.

20 DR. MOELLER: Okay. Let me get back then. We  
21 will take a break. We will begin though after the break  
22 with a presentation for a few minutes by Mr. Kimball from  
23 DOE. He has been here and listened to the discussion and  
24 wants to offer a few comments. And I think we should  
25 provide them that opportunity.

1           So let's take a break and we'll resume with Mr.  
2 Kimball and then go on from there.

3           (Recess.)

4           DR. MOELLER: The meeting will resume and we'll  
5 turn the floor over to Jeff Kimball from DOE to offer a few  
6 comments.

7           MR. KIMBALL: Thank you. I'll just take really  
8 five minutes to try to give kind of our perspective up until  
9 this point. I have two things to point out. We have not  
10 seen the rulemaking that you have seen or the draft  
11 rulemaking that you have seen, so I don't have the benefit  
12 of what--

13           But I think in listening to what has taken place  
14 here, it reflects our concerns in the past that we've had  
15 with trying to resolve the terms "anticipated" and  
16 "unanticipated."

17           I just jotted this down really off the top of my  
18 head. And I guess if we could summarize our concerns in  
19 terms of bottom lines, is that we may be going away from the  
20 original intent of the Rule Part 60, and we see that as the  
21 performance objectives for what I call the subsystem  
22 performance objectives which are the engineered barrier  
23 system, groundwater travel time objectives--were meant to  
24 basically add confidence in being able to meet the EPA  
25 standard. Defense in depth. Whatever terms you want to

1 use.

2 So that's kind of our bottom line on where we are  
3 looking at it from is when we look back at the rule. That  
4 that's kind of where we see those performance objectives  
5 fitting in.

6 What I just jotted down is it seems like there are  
7 various points in the process that we are worried about.  
8 The first is maybe what I'd say is what processes should be  
9 considered and evaluated? Eventually though we have to come  
10 up with design and performance decisions, like we do with  
11 Appendix A, for example, with the reactor.

12 In this case, 10CFR 60 sets those out as the EPA  
13 standard for the subsystem standards. And these tend to be  
14 quantitative.

15 Somehow in translating between these two, whether  
16 again it's the reactor or the repository, we have to come  
17 through some kind of screen. And somehow we have to pick  
18 from these the events which we consider in the design. The  
19 same in the reactor. No one says that earthquakes larger  
20 than the design won't occur. But somehow you have to come  
21 up with a reasonable design basis earthquake.

22 In the regulations, the terms we have discussed  
23 and argued about for years in the reactor tend to be trying  
24 to define that filter. And the way the DDE has viewed the  
25 terms "anticipated" and "unanticipated" in the past is again

1        somehow trying to quantify or somehow come up with some way  
2        of reaching this filter.

3                It seems like in trying to read into where John or  
4        the NRC has come from, it's their concern about the scope of  
5        the processes and events. In particular, 60.122(a) comes up  
6        and it's the potentially adverse condition and it's brought  
7        up that those defined--they try to set out kind of a  
8        philosophy of what processes and events should be considered  
9        and evaluated, including those that you don't readily see at  
10       the site.

11               I think given that we are in site  
12       characterization, as has been pointed out, and trying to  
13       make sure that the scope of this is adequate or correct, and  
14       that nothing is left out, you know, I think DOE is receptive  
15       to hearing if the site characterization program is  
16       incomplete in that respect.

17               I don't believe that if we are worried about this  
18       box only at this point that we need to bring in the term  
19       such as "anticipated" and "unanticipated" here. I think we  
20       view them as more important here to somehow in the screen to  
21       come up with the design.

22               The truth is this has to be complete enough to  
23       evaluate all of these anyway. So we viewed the term as  
24       being important to coming up with the EBS design basis. And  
25       that's kind of our philosophy behind our comments in the



1 past. We've put forth some ideas on how to try to define  
2 that screen. I think there is probably a lot more  
3 discussion that has to go on back and forth between the two  
4 groups of whether that's adequate or not. Ours was--we put  
5 forth a probabilistic concept basically.

6 But I think we believed the terms themselves fit  
7 more appropriately in here than they would up here. And the  
8 last correspondence we really had, we did miss, I think when  
9 the draft technical position was put out, I don't think we  
10 met the date for coming up with responses. However, we did  
11 prepare responses and they were transmitted to the NRC and I  
12 think it was in about August of 1988. I can get the exact  
13 date.

14 DR. MOELLER: Thank you.

15 Dr. Okrent.

16 DR. OKRENT: Well, it's just that EPA has more  
17 than a CCDS in its regulation.

18 MR. KIMBALL: That's true.

19 DR. OKRENT: And the point I was trying to get at  
20 in fact was the individual protection and groundwater  
21 protection part which is related to the undisturbed state,  
22 using their words.

23 MR. KIMBALL: Yes.

24 DR. OKRENT: And one was missing there or screen.

25 DR. MOELLER: Dr. Steindler?

1 DR. STEINDLER: Do I assume correctly that you  
2 don't really see any need to take that box called what  
3 processes should be considered and subdivide it into two  
4 categories that NRC's currently using in the anticipated and  
5 unanticipated?

6 MR. KIMBALL: I think the subdivision would occur  
7 here.

8 DR. STEINDLER: So the answer to my question is  
9 yes?

10 MR. KIMBALL: Yes. We do eventually. And I think  
11 we do--I think off the top of my head. I am not speaking  
12 for the total DOE, but my guess is they'd probably say the  
13 same thing. I think we do need probably rulemaking on the  
14 terms. But I think we first have to agree on kind of where  
15 they fit in. And then worry about the next step which will  
16 be trying to define them in a way that can aid the licensing  
17 process.

18 DR. STEINDLER: Then if that follows, then how  
19 would you structure a rule that ensures that that box that  
20 you've written up there labeled 60.122(a) is completely  
21 filled?

22 MR. KIMBALL: I think the first--

23 DR. STEINDLER: Or is adequately filled.

24 MR. KIMBALL: Yes. I think the first question, if  
25 there is a concern about that, I think you have to go back

1 and look at Part 60 in total to try to see what is in there  
2 in terms of the scope of characterization, in a sense. Or  
3 what other things related to Part 60 are involved in that.

4 60.122 is just one piece of Part 60 that gives  
5 insight or guidance in terms of how large a site  
6 characterization program. Terms such as quaternary come  
7 into that too. That kind of hones you in on a certain scope  
8 that you should be looking for.

9 I have not heard, at least on the DOE side, that  
10 Part 60 needs clarification to define the scope of this box.  
11 I think the site characterization plan requires discussion  
12 and debate about whether it's complete enough but I haven't  
13 heard that the regulation is inadequate.

14 DR. STEINDLER: So your view is that the  
15 clarification that seems to be inherent in this revision  
16 that we've been discussing that you haven't seen is not  
17 necessary?

18 MR. KIMBALL: Not necessary at this step.

19 DR. STEINDLER: Yes.

20 MR. KIMBALL: I think we believe--

21 DR. STEINDLER: Yes, I don't want to talk about  
22 the sieve that you've got there.

23 MR. KIMBALL: Right.

24 DR. STEINDLER: I understand that. But the prior  
25 discussion that we've had from NRC explicitly excluded

1 consideration of that thing that you call that sieve.

2 MR. KIMBALL: Yes.

3 DR. STEINDLER: Okay.

4 MR. KIMBALL: That draft technical position, the  
5 way we read it, to be honest with you, was that they were  
6 trying to get at the sieve. And we are just going by what  
7 we hear now that they've transferred it in a sense up here.  
8 Or that we've incorrectly interpreted that that's what they  
9 were trying to do, which could be also.

10 DR. STEINDLER: Yes.

11 DR. MOELLER: What would be the difference in  
12 terms of time if you move it from where NRC proposes down to  
13 where you propose? Is it a matter of time or what?

14 MR. KIMBALL: Well, I think since there may be  
15 some philosophical differences in terms of, you know, how  
16 large a set of events or what magnitude of events should go  
17 in that sieve for anticipated, that it still needed fairly  
18 early. In terms of trying to develop the proper design of  
19 the waste package, for example, or trying to figure out the  
20 scope of calculations for some of the EPA requirements and  
21 things like that. I think they are important to know up  
22 front.

23 As John correctly points out, and I believe  
24 myself, the site characterization plan addresses this,  
25 faulting is an issue at Yucca Mountain. And I think you

1 have to make--there's going to be a point in time where you  
2 have to make a decision whether faulting is so likely that  
3 it impedes your ability to predict performance of waste  
4 package. Whether it's 300-year life, 100-year life, or  
5 whatever. You have to make that decision. And we agree you  
6 have to make that decision. We try to lay out kind of a  
7 program to come up with the ability to make the decision.  
8 But you still have to define that number, that quantitative,  
9 just like we have to do in a reactor or any other facility.

10 DR. MOELLER: Gene Voiland.

11 DR. VOILAND: I guess I tend to look at it a  
12 little differently and perhaps it's just my lack of  
13 familiarity for this, but the box that has the processes  
14 which could be considered, it seems to me that those are the  
15 anticipated and unanticipated events. And then the filter  
16 looks at those as what is the significance, what is the  
17 probability that they are occurring, what is the consequence  
18 of that? And eventually coming out of that then is you have  
19 a limited population which has to be considered in the  
20 design activity.

21 MR. KIMBALL: I was trying to basically say the  
22 same thing. I don't know if you need to define the terms  
23 though since what you are trying to get at here is the total  
24 set in a sense. So coming up with the exact boundary  
25 between these two, for example, may not be needed to come up

1 with the total set.

2 DR. VOILAND: Okay.

3 DR. MOELLER: Any other questions for Mr. Kimball?

4 Well, thank you.

5 Excuse me. Go ahead, John.

6 DR. TRAPP: I think this is a point of  
7 clarification which seems to be, again, a point that is not  
8 getting across. What we are talking about on APES and UPES  
9 is basically a core sieve. It's a core sieve that the  
10 summation gets you into the EPA standard whatever the final  
11 EPA standard is will be the fine sieve that carries you  
12 through.

13 What we are also doing is giving you a core sieve  
14 for the EBS design. Now, this would be, if you want to use  
15 it, a quote "bounding number" this type of thing. But we  
16 are not at this time giving you any fine sieve values to  
17 carry through. So it's a starting point. It's in many  
18 ways, if you want to describe it, almost a worst case  
19 scenario to see if you can get through this step.

20 And I think having not seen the words again, but  
21 in the past I think we would feel for the EBS design that  
22 that is--I'm not sure of the right word--but too severe, far  
23 too severe probably, in terms of the low likelihood of  
24 events that would be considered in that.

25 DR. TRAPP: Well, I can show you that if you

1 divide through, you basically come up with a worse case of  
2 approximately  $10^{-2}$  over the lifetime of the event which  
3 really doesn't strike me as that bad. And if you start  
4 throwing in the rest of it, you probably are going to end up  
5 1 in 100 over whatever time period is likely. We believe  
6 that's across the boundary.

7 DR. STEINDLER: On the basis of the current  
8 definitions I see in this draft it isn't all clear to me  
9 what stays behind in this core sieve that you were talking  
10 about, John. Can you give me a couple of examples?

11 DR. TRAPP: On the APE or on the UPE or what?

12 DR. STEINDLER: Either.

13 DR. TRAPP: Again, if you are taking a look which  
14 stays behind on the core sieve as far as anticipated, it's  
15 as a starting point. It's a repeat of the quaternary event  
16 where the events basically occurred. And it's the quote  
17 "best projection" of the process. It's the combination of  
18 the two and as you understand the process more and more, you  
19 can get to the point where you can better define which event  
20 belongs in the sieve.

21 It's basically throwing the onus again on DOE to  
22 demonstrate understanding of the processes which are  
23 operating in the geologic setting to a sufficient degree  
24 that they can narrow the things down.

25 DR. BROWNING: I think there's an iterative aspect

1 of this whole process too that ties in with the iterative  
2 aspect of the performance assessment and the iterative  
3 aspect of characterizing the site. And that flavor doesn't  
4 come out when you read the rule, the proposed piece of a  
5 rule that we are talking about here.

6 I guess one way to describe it is as you start  
7 your iteration, we would like to start conservative, and  
8 then as you gain more knowledge, you can back off. Rather  
9 than taking a very optimistic approach of what the site is  
10 going to be and reacting to surprises as you find them when  
11 you characterize the site. That's the philosophical  
12 difference between us and DOE.

13 DR. OKRENT: It's hard, isn't it, for a regulatory  
14 agency to become less conservative in a rule. I am not  
15 talking about a branch position or something like this.  
16 There is something about a rule that involves a deliberative  
17 process and all of this.

18 DR. BROWNING: That's why the rule still has a  
19 great deal of freedom in the winnowing process. Eventually  
20 if this thing were to work the way we envision it, when you  
21 walk into the hearing there would be no debate about what  
22 the events and processes are that went into the package  
23 design. That would be over and done with.

24 DR. OKRENT: But right now as it's worded, if I  
25 read it correctly, 1 over 165 sort of is the borderline or



1 over 200 is the borderline of likely and unlikely. And I  
2 think this is what we heard DOE feels is too severe and I  
3 would argue myself it's not my understanding of undisturbed  
4 or likely.

5 MR. KIMBALL: Maybe from our perspective on it, we  
6 have a site we have to live with at this point. And there  
7 are conditions there which are pretty obvious to everyone  
8 who looks at it that exists in the environment. They won't  
9 define what that is but that's some area around Yuuca  
10 Mountain. But it includes volcanism, faulting, and other  
11 issues.

12 I think we look at the intent of the design of the  
13 EBS, for example, and say, well, can you design for  
14 faulting? And it seems to us I guess at first cut a little  
15 pointless. So the real question on faulting, for example on  
16 that, is faulting so likely at this site that it degrades  
17 your confidence in meeting the regulatory requirements that  
18 you'd really want to look at an alternate site.

19 It doesn't mean, you know--but I think that's kind  
20 of how we are approaching it at the site. Design the right  
21 material to take on the hydrologic, mechanical, geochemical  
22 environment, it seems at first cut to be of primary  
23 importance. If faulting is so likely that it, you know, as  
24 I say, it degrades across the board your ability to meet the  
25 regulations, then I think we have to take a hard look at the

1 site itself.

2 DR. TRAPP: And, Jeff, this brings up a very good  
3 point because you brought faulting in there and you are  
4 sitting with a site that's got a stress field which is shown  
5 in the literature to be in the state of incipient failure.

6 So, yes, because of the process understanding  
7 right now is such that faulting is something that you cannot  
8 disregard. What we are saying is, yes, faulting is  
9 something you had better consider in the design of the waste  
10 package unless you can show a much better understanding of  
11 the process that will demonstrate that it can't happen.

12 MR. KIMBALL: We have more confidence than you on  
13 that. I mean I don't know if we need to debate specific  
14 technical issues. Faults in Minnesota are in the state of  
15 incipient failure also.

16 DR. OKRENT: Isn't that a situation that one finds  
17 all around the country? That is, there is some stress  
18 field. I assume there is no area free of stress. And then  
19 if one looks hard enough or one finds some old faults which  
20 have the proper orientation. Assuming you are able to find  
21 the fault under the sediment and so forth.

22 DR. TRAPP: There is a tremendous difference in  
23 the stress field throughout the United States. What you are  
24 talking about right here is a site which is an active  
25 tectonic site which I don't think was ever envisioned by

1 anybody who ever started looking at trying to license one of  
2 these things.

3 I am serious. From my point of view, and I  
4 realize I am reflecting my point of view, is don't tell me  
5 that the site is so bad that we've got to change the  
6 regulation. If the site is bad and there are things that  
7 appear that they are going to happen, then that's a problem  
8 with the site, not the regulation.

9 DR. OKRENT: If the likelihood of an earthquake--  
10 let's say, faulting at the site is such that you would call  
11 it a likely event in 10,000 years, then it would come into  
12 meeting the part of the EPA standard that relates to an  
13 undisturbed site. And I'm not saying that should be  
14 changed. It's whether 1 in 200 in 10,000 years is a good  
15 definition of a good--

16 DR. TRAPP: The 1 in 200, again, is only a  
17 bounding number that you come out through there. If you  
18 start going through the processes and the cyclicities of the  
19 processes, you'll find out, especially in faulting, et  
20 cetera, and this type of thing, that it doesn't come  
21 anywhere near that. What you are normally talking about are  
22 recurrence intervals of 10 to 100,000 years. Something like  
23 this.

24 So you start understanding the process and you  
25 come out with a probability that's an awful lot different

1 than the one that you are quoting. But you have to  
2 understand the process.

3 DR. OKRENT: No. I am looking at what seems to be  
4 that the NRC is asking. I am not arguing at all whether or  
5 not faulting is likely or unlikely. Please. I am not  
6 arguing that this is a good site or a bad site. But I am  
7 just looking at these words and trying to see what they  
8 imply that the NRC is asking. And to me they imply this  
9 roughly 1 in 200 in 10,000 years which--

10 DR. TRAPP: They roughly imply that if you  
11 understand absolutely nothing about the site. I won't argue  
12 that. If you sit and start talking about climatic  
13 conditions or all of that, you can take a look at embry and  
14 embry and all the rest and you can start looking at  
15 climatic, et cetera, and there have been many cycles in the  
16 last 400,000 years. This shows that a cycle here has a much  
17 greater range and the events, et cetera, are such that the  
18 final probability would be a lot different than the 1 in  
19 200.

20 You take a look at the tectonic events. And you  
21 find out that the cycles are different once you understand  
22 the process. If you start taking a look at, quote,  
23 "volcanism," you'll find that there were many, many volcanic  
24 events, but do you understand the process, the location,  
25 where it's going to occur, how it's going to happen?

1           Again, understand the process. Make the best  
2 projection. And tie the event to it. This is really what  
3 we are trying to do and we are saying if you can't  
4 understand the process, if you don't understand how they tie  
5 together, then, yes, you may end up with a conservative  
6 number. We are not arguing that point.

7           But we are also not saying what the second screen  
8 is on the design of the waste package. That is another  
9 rulemaking.

10           DR. MOELLER: Okay. For the remaining time, I  
11 believe the staff has said several times that you  
12 contemplate certain changes in this draft and could we hear  
13 a summary of the more important changes that you propose?

14           DR. BROWNING: I think the best way to describe it  
15 is the basic philosophy and approach isn't going to be  
16 changed. It really translates into a debate between the  
17 technical community and the lawyers as to how prescriptive  
18 you can get. So I think in terms of the basic thrust, if  
19 you focus your comments on that, you won't be far off. It's  
20 mainly a matter of word engineering around those basic  
21 concepts.

22           Is that specific enough for you?

23           DR. MOELLER: Well, it's--

24           DR. BROWNING: I tried to bound it in general  
25 terms. We clearly owe you another version, but I would like

1 to get your comments on the one you've got because the basic  
2 thrust of the rule that we are going to be pushing with our  
3 lawyers is exactly what you've got in front of you.

4 DR. MOELLER: Okay. Any other questions or  
5 comments?

6 I hear none so I gather that wraps up this subject  
7 and we will try to provide you with comments.

8 And we will then at this time move on to the next  
9 subject on our agenda which is the NRC staff position and  
10 draft proposed rule for low-level waste manifest.

11 And let me thank Dr. Trapp and the entire staff  
12 for coming in as a pinch hitter I suppose is what you would  
13 be called in this era of the world series. Thank you.

14 Just a moment for the change in presenters to take  
15 place.

16 Okay. Let's move ahead then. We will be hearing  
17 now about the technical position in rulemaking on low-level  
18 waste shipment manifest information and reporting. And Dr.  
19 Michael Bell will introduce this subject.

20 DR. BELL: Good morning, Dr. Moeller. It's time  
21 to shift gears now from low-probability events to high-level  
22 waste program to deal with something of very everyday in the  
23 low-level waste area.

24 You may recall when the advisory committee went  
25 down to visit the disposal site in South Carolina about a

1 year ago, the state people mentioned to you the need for  
2 better information on a national basis for the quantities  
3 and kinds of material that are being disposed of in the low-  
4 level commercial and low-level waste sites. And shortly  
5 after that you raised that to the attention of the  
6 Commission.

7 Now, last spring the Executive Director for  
8 Operations approved the staff to begin a rulemaking to  
9 require better waste manifest information and require this  
10 material to be reported to the NRC staff with the idea to  
11 move toward this national information base.

12 The schedule that we are working on is to develop  
13 a proposed rule by about May of next year and then a final  
14 rule the following year. So our intent today is to get down  
15 to you fairly early to give you a feel for the directions we  
16 are going to get any early comments that you have so that we  
17 don't find ourselves in the position where we are near the  
18 time when we are scheduled to go out with a proposed rule  
19 and still haven't coordinated with the ACNW.

20 The presentation today will be given by Gary  
21 Roles, a member of my staff who put together the package for  
22 the EDO approval of the rulemaking and has been working on a  
23 branch technical position that would form the basis for what  
24 would be in the proposed rule.

25 Like most rulemakings in NRC though, the

1 rulemaking wouldn't be done by the program office. It would  
2 be done by our Office of Research. And with Mr. Roles is  
3 Mark Haysfield from the Office of Research who will be the  
4 lead in that office for the rulemaking.

5 And now I would like to turn it over to Gary and  
6 Mark.

7 DR. MOELLER: And could I ask just an opening  
8 question.

9 I gather there is a manifest system for toxic  
10 chemical waste. Correct?

11 MR. ROLES: Yes.

12 DR. MOELLER: And were you able to benefit by  
13 that?

14 MR. ROLES: The manifest system used for hazardous  
15 waste is extremely simple. It's the ones that are used in  
16 low-level waste disposal facilities are much broader and  
17 much more detailed.

18 DR. MOELLER: Okay.

19 MR. ROLES: I consider them better.

20 DR. MOELLER: All right.

21 MR. ROLES: So, yes, we are. We have looked at it  
22 and we would have to consider it, particularly if we ever  
23 ship mixed waste. We'll have to use that manifest in  
24 conjunction with our ordinary manifest.

25 DR. MOELLER: So in the sense of mixed waste



1       though, your system would be perhaps more detailed than what  
2       would be needed for the hazardous component.

3               MR. ROLES: Well, what you would have to do if you  
4       shipped mixed waste, is you'd have to send a low-level waste  
5       management manifest that meets the criteria of Part 20 and  
6       Part 172 and couple that, or include that with the hazardous  
7       waste manifest.

8               DR. MOELLER: Well, go ahead.

9               MR. ROLES: Okay. I hope I am mumbling loud  
10       enough.

11              DR. MOELLER: Yes, keep it close to your mouth.  
12       It's working well in that format.

13              MR. ROLES: Okay, Mark, the next one.

14              All right. Well, I've done this talk a couple of  
15       times and I've found that it doesn't really lend itself to a  
16       logical flow and you always seem to have a chicken and the  
17       egg problem. You sort of needed to discuss which things are  
18       downstream in order to get a point across upstream.

19              So what I've done is to try to give you a slight  
20       overview of what I'm going to talk about. Basically five  
21       areas. And the first one is the background and then go into  
22       some of the complexities of the situation. That is to say,  
23       the complexities of the detail on the manifests and the  
24       voluminous nature of the information.

25              I am going to talk about what we see as a need.

1 Basically we need a computer system at each low-level waste  
2 disposal site that keeps track of what has been delivered to  
3 the site. And we believe that we need a national computer  
4 system that has information about waste disposed at all low-  
5 level waste disposal sites.

6 And I will as part of that present some details on  
7 uses of computer systems at these various places.

8 I am going to talk about our existing situation  
9 which is basically a discussion of some of the problems we  
10 have. I am going to go briefly into our staff actions which  
11 is the rulemaking and the TP very briefly, and talk about  
12 some of the principal issues that we see so far in the  
13 rulemaking.

14 Okay, the next one, Mark.

15 DR. MOELLER: And you will comment when you get to  
16 the computer about what size, what requirements you  
17 anticipate being needed? I was just curious. Is this  
18 something they can do with existing--

19 MR. ROLES: Well, both disposal site operators  
20 already have computer systems ongoing. So they can do it.

21 DR. MOELLER: So they have the capability already?

22 MR. ROLES: That's correct.

23 DR. MOELLER: Okay.

24 MR. ROLES: There are problems however, which  
25 we'll get into.

1           In any case, I've drawn a simple little diagram to  
2 show how waste can be delivered to low-level waste disposal  
3 sites and go directly there or it can go through waste  
4 collecting processors. And there's a number of people  
5 involved. We have approximately thirty waste collectors.  
6 This is an approximate number. And the last time I checked  
7 there were four large waste processors in operation. There  
8 might be more now. At the last time I checked there were  
9 some being licensed.

10           Three existing disposal facilities and two  
11 operators. One of these disposal facilities, the Barnwell  
12 facility will close in January of '93. And at the moment  
13 there are nine compacts in nine affiliated states. There's  
14 a lot of parties involved.

15           All low-level waste shipments are accompanied by a  
16 shipping manifest. They meet NRC requirements of Part 20.  
17 And DOT requirements in 49 CFR 172. And license conditions  
18 at disposal sites.

19           Some of the states regulating disposal sites have  
20 basically imposed some additional requirements that you see  
21 in the manifest.

22           Yes.

23           DR. VOILAND: Could you identify roughly the  
24 proportion of waste that goes through the collector and  
25 through the processor in terms of amount of radioactive

1 material?

2 MR. ROLES: Yes. In 1988 collectors and  
3 processors handled 25 percent of the volume. That's the  
4 volume as it was disposed. And about 9 percent of the  
5 activity. So it's getting more and more complicated. More  
6 and more waste is changing hands and it's crossing state  
7 borders in order to be processed. This is, of course,  
8 because the disposal costs are rising very rapidly.

9 Well, there's lots of shipment manifests. They  
10 are very numerous. In 1988--the attachment says 1987--but  
11 this is an '88 number. There's a few more in '87. But  
12 there's 3700 shipments of low-level waste. That means there  
13 are 3700 manifests. And that means that each manifest  
14 contains more than one sheet of paper. As a matter of fact,  
15 there's something like 40,000 sheets of paper that  
16 eventually makes it way to the disposal site or is added by  
17 the disposal facility operators that are connected with all  
18 the shipments. So there's a lot of information.

19 Now, the next one, I have attached this to the  
20 back of your handout. What I've done is attached a typical  
21 low-level waste shipment manifest. This is the one for U.S.  
22 Ecology. I believe it's better than the one for Chem  
23 Nuclear.

24 But as you can see, this has the generator name  
25 and this is information that's required by DOT, shipping

1 name and hazard class. If it's a broker, he has to give the  
2 information, identify himself, et cetera. The carrier--that  
3 would be the truck company that delivers it.

4 We have certain shipment summary information on  
5 the front page. Volumes, total number of packages, source  
6 materials, special nuclear material, and the total activity  
7 of four isotopes. There is a certification.

8 U.S. Ecology adds some more information once it  
9 comes to a disposal site. And assigns what they call a  
10 Bates number. And all this is is a sequential number that  
11 U.S. Ecology adds. It serves to identify each manifest  
12 distinctly.

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1           Each manifest also has what is called a  
2 "Continuation Sheet," and in this sheet, the specific--each  
3 individual waste package, the waste container is described,  
4 somewhat in detail and in this one you would have, for  
5 example:

6           The item number identifies the package. The  
7 container type, whether it's a drum or a box or something  
8 like that.

9           Volume, I believe that's the weight--the physical  
10 form. It says if it's a solid, liquid or gas. The waste  
11 description, what sort of material it is. Is it the resin  
12 or an activated metal or dry active waste.

13           Solidification Agent, chemical form. They use  
14 that space also to describe the chelate agent content where  
15 the nuclide is received from activities, source and  
16 inspection of material content, waste class, stability  
17 class. That is whether it is stable or unstable, pursuant  
18 to 61.56 and the radiation levels and there is some DOT  
19 information off on the end.

20           So you can see these things are real complicated.

21           DR. STEINDLER: Excuse me.

22           What is the "unit" here? Is the unit a shipment?  
23 Is the unit a drum? Is the unit a box?

24           If I see a standard truck comes driving up to my  
25 driveway, does he have 15 separate ones of these because

1 he's got 15 packages on his flat bed or--

2 MR. ROLES: It might come to that. It could very  
3 well come to that.

4 DR. STEINDLER: What is the practice at this  
5 point?

6 MR. ROLES: The practice is if you can get, you  
7 know, if you can get the information on one continuation  
8 page, you know, that is what you use.

9 DR. STEINDLER: Then the "unit" is a shipment?

10 MR. ROLES: Yes.

11 Each shipment has a Shipment Manifest.

12 DR. STEINDLER: Okay.

13 MR. ROLES: And each Shipment Manifest has the  
14 title page, which I just showed you and one or more  
15 continuation pages.

16 DR. STEINDLER: I see.

17 MR. ROLES: And on a continuation page, each  
18 container of waste is described individually and it might be  
19 2 to however many lines there are or 1 to however many lines  
20 there are on the page. It might take several pages to  
21 describe one shipment.

22 DR. STEINDLER: And each shipment is a truck--

23 MR. ROLES: Yes.

24 DR. STEINDLER: Or is it a fleet of trucks?

25 MR. ROLES: It's a truck.

1 DR. STEINDLER: A single truck?

2 MR. ROLES: Yes.

3 DR. STEINDLER: A single vehicle?

4 MR. ROLES: Yes.

5 DR. STEINDLER: Okay.

6 DR. CARTER: Gary, I wonder if you would  
7 distinguish for me the difference now between the  
8 information that is needed at the disposal site and the  
9 information that is needed during the transport phase.

10 Are you trying to distinguish these two?

11 You mentioned the manifest, of course, should  
12 accompany the shipment--

13 MR. ROLES: Yes.

14 So is there a distinction to be made?

15 MR. ROLES: Yes.

16 DR. STEINDLER: I would think that some of this  
17 information or a lot of it is not needed during the shipment  
18 phase. It might be needed at the disposal site.

19 MR. ROLES: Well, what has happened is that  
20 shippers are faced with meeting two regulatory requirements,  
21 the Department of Transportation and also NRC and NRCs  
22 requirements for all shipment manifests are in 10(i) CFR  
23 Part 20.

24 What we said in Part 20 is that you can--that you  
25 have to have the information such as the waste class, the



1 solidification agent, the chelating agent content, things  
2 that are important for disposal, you have to provide with  
3 the shipment documentation.

4 What has happened is that the operators have  
5 combined the requirements so if the manifest has information  
6 that DOT requires, as well as information that NRC requires,

7 So part of this information is for, you know,  
8 transportation safety and part of it is for disposal safety,  
9 and in certain aspects they cross.

10 For example, we want to know what the  
11 radionuclides are for both the shipment purposes and  
12 disposal purposes.

13 DR. CARTER: I don't think for the--you know, the  
14 transport phase you need to know the vender, for example,  
15 the solidification, for example.

16 MR. ROLES: That would be correct. But it is of  
17 interest, of use, during disposal, particularly if something  
18 goes wrong and you want to characterize the problem.

19 Anyway, I guess we can move on to the next one.

20 DR. MOELLER: Well back on a package, I gather you  
21 would never open a package at the disposal site to itemize  
22 what is in it?

23 MR. ROLES: That is done occasionally.

24 DR. MOELLER: Okay.

25 MR. ROLES: I am not--I can't speak to all the

1 procedures, but they will occasionally open packages. They  
2 will punch liners, for example, to see if they have freed  
3 the liquid contents and occasionally they will take core  
4 samples, I believe, of the solidification media.

5 DR. MOELLER: Okay.

6 MR. ROLES: They do not like to open packages. It  
7 gives them the willies for, I guess, obvious reasons.

8 DR. MOELLER: Sure.

9 MR. ROLES: So what we need is--we believe that  
10 each disposal facility. basically can't get along without  
11 some sort of computer system at the site to process and  
12 store this data. There is so much information.

13 And we believe that we also need a national  
14 computer system that contains manifest information from all  
15 the disposal facilities.

16 DR. STEINDLER: Why is it that you believe that  
17 the folks at the site needs a computer system? What do they  
18 with the data?

19 MR. ROLES: Well, if you will turn the page, we  
20 can talk about that.

21 DR. STEINDLER: You going to tell me the reasons  
22 for the requirement for a national system as well?

23 MR. ROLES: Yes.

24 DR. STEINDLER: Okay.

25 MR. ROLES: Okay. Why would you need a computer

1 system at a low waste disposal facility? And, I have listed  
2 some example uses. And, the first four would help you to  
3 comply with specific aspects of Part 61.

4 For example, a Waste Shipment Inspection and  
5 Verification. When the low level waste shipment arrives at  
6 the disposal facility, the operators and also usually the  
7 state representative check the manifest, check the shipment  
8 and they perform various checks to make sure that the  
9 manifest basically coincides with what has been shipped.  
10 They do it to the best they can.

11 Well, there has been a trend, particularly in the  
12 U. S. ecology, and we think it is a good thing to do. You  
13 can use a computer system to help you in these inspection  
14 verification programs.

15 What you do is you plug in the information to your  
16 computer system and that does things like, it helps you  
17 check the addition. You can check for compliance with NRC  
18 waste classification regulations. You can literally do a  
19 classification analysis and see if it has been classified  
20 correctly based on the manifest information.

21 DR. CARTER: But those inspections now, either by  
22 the site operator or by the third party, namely the states,  
23 are pretty rudimentary things. If they're not going to open  
24 the packages, then they can measure for free liquids which,  
25 I suspect, most of them do. The rest of it is just locking

1 at the record and, I presume, making radiation measurements.  
2 There are only about 3 things they do as far as I know.

3 MR. ROLES: Well, yes--

4 DR. CARTER: It's a fairly simple process.

5 MR. ROLES: It's getting more complicated.

6 DR. CARTER: Maybe those people are making it more  
7 complicated.

8 MR. ROLES: The point is there is a lot of  
9 information on the manifests and they are using the computer  
10 systems to help them make these determinations. They can  
11 check, for example, they said the classification, according  
12 to the manifest information, DOT classification, it gives  
13 them a quick way to check to see if there are stable or non  
14 existent nuclide on the manifest and that happens. Every  
15 year we get a couple curies of Cobalt 59 which, as everybody  
16 knows, is stable. We figure it must come from an overweight  
17 shipment.

18 DR. CARTER: Yes, but what I am saying is that a  
19 lot of that, they cannot check without opening the package.

20 MR. ROLES: That's correct.

21 DR. CARTER: They can look at the records, you  
22 know. They pretty well have to accept that. They can look  
23 for labels. They can measure free liquids, but I don't know  
24 what else they do if they're not going to open the package.

25 MR. ROLES: It does help them analyze the records

1 in a quick way.

2 DR. VOILAND: Well, I think the operators do that  
3 simply because it's an efficient way to do it. That is  
4 really--you can do everything you said by hand, but it is  
5 more efficient to do it with a computer, so it is a cost  
6 effective kind of a thing.

7 As far as the inspections are concerned, every  
8 time you inspect something, you get some radiation. If you  
9 look at the label, you get some radiation exposure and so  
10 there is, I think a trend, to avoid those kinds of things  
11 unless there is a real surprise and that surprise you would  
12 learn about by a radiation instrument held 10 feet away.

13 MR. ROLES: Well, it can help you learn about  
14 surprises or avoid surprises. It gives you a way to  
15 systematically, for example, check to see if the radiation  
16 package agree with the contents.

17 I agree with you that these things can be done by  
18 hand, but they are done quicker and more accurately--

19 DR. VOILAND: That's true.

20 MR. ROLES: --using machinery.

21 DR. VOILAND: That's absolutely right. Let me  
22 prod that system a little bit.

23 We've got this multi-page form that you have  
24 indicated and that has got information on Page 1 and 2 and 3  
25 and 4 and most of those are even numeric or alpha-numeric.

1 I assume these things are manually transferred  
2 into a computer or some sort.

3 MR. ROLES: At this time, mostly.

4 DR. VOILAND: So what we have is our first major  
5 problem. 98 percent of the errors that occur are occurred  
6 in data transfer from the written page to the machine.

7 So, in part, really that efficiency aspect of  
8 checking this thing is a bit weak because it has to be done  
9 manually.

10 Is there anybody who, in a sense, done this right  
11 and produced either bar codes or shippable discs, to the guy  
12 who collects the information?

13 MR. ROLES: I believe information such as bar  
14 codes et cetera, are in the works. I believe there are  
15 certain--U. S. Ecology has initiated a procedure where you  
16 can send information by wire, but I agree with you, quality  
17 control, during data transmission is important. It's one of  
18 the issues.

19 If we had requirements, of course, for a computer  
20 system, it would definitely be one of the things we would  
21 want to look at.

22 DR. MOELLER: Back on your example of Cobalt 59.  
23 I missed what you said.

24 My assumption would have been, well someone who  
25 was totally ignorant of radionuclides just put down 59

1       instead of 60, but you were saying, you're assuming the 59  
2       number was correct and that they had put a slug of stable  
3       cobalt.

4               MR. ROLES: No. I just--the point is that someone  
5       is really not paying attention or there was an error in  
6       transmission.

7               DR. MOELLER: Right.

8               MR. ROLES: And you can weed out these problems to  
9       a certain extent. Okay.

10              Assessments for Renewal and Control for Enclosure.  
11       When your license is for oversight, you have to make  
12       projections of what is going to be in the disposal site.  
13       Along comes renewal time, you sort of have to ask the  
14       question, "Are these projections reasonable? Are they  
15       reasonable compared to what the real receipts are?" If not,  
16       maybe you had better change operations.

17              Under Tracking Disclosed Inventories, the 61.7  
18       notes that there may be inventory restrictions or inventory  
19       limitations at a particular disposal site for particular  
20       radionuclides of concern.

21              And, if that is the case, you will need a running  
22       inventory of what is in the site in which case it is going  
23       to be extremely difficult to do this considering the  
24       voluminous amount of information, unless you can store it in  
25       a reasonable way using computer system that can do those

1 sorts of things.

2 Complying with Reporting Requirements. The  
3 operators have found that they basically need a computer  
4 system to comply with 6180(i) which says that each year you  
5 have to summarize by waste class the volumes in nuclide  
6 activities and there are other reporting requirements that  
7 states have imposed.

8 And finally, I have added one that basically says,  
9 Help Assess Significance of Problems."

10 What I mean by that is that if we had a  
11 solidification vender information or if we had--and that was  
12 included in the data base, and there was a problem with a  
13 particular vender or particular formulation, you would have  
14 an idea of the significance of the problem. Otherwise, you  
15 really wouldn't know how much material has gone to the site  
16 et cetera.

17 So I think some months ago we had a discussion on  
18 poly hicks going to disposal sites and we had a difficulty  
19 knowing how many poly hics actually were disposed and if  
20 this was included in the data base, it could be done fairly  
21 easily and we could address that probably a little more  
22 straight forward and easier.

23 DR. CARTER: At least the fundamental parts you  
24 know now. You know what kind of activity and how much once  
25 you get to the site. You may not know some of these



1 peripheral things, but they are probably of lesser  
2 significance, for example, that the number of hics.

3 MR. ROLES: Except that there is a problem. Also  
4 you need, for example, you need to know if a waste is in a  
5 hic just to do performance assessments because  
6 theoretically they will hold a migration of radionuclides  
7 for a certain amount of time, 300 years.

8 Most of that is going to be done by monitoring  
9 assignments, I expect.

10 MR. ROLES: There will be a monitoring program,  
11 but you also have to license the site and do renewals and  
12 closures based upon analysis.

13 DR. CARTER: Well, all I am suggesting is that you  
14 know a lot of information now and you want some additional  
15 information. Some of what I think you're talking about, you  
16 really have now. They might not be in the particular form  
17 that you want and I have no problems with an electronic  
18 system.

19 MR. ROLES: The basic problem is that the  
20 information is scattered over so many thousands of pieces of  
21 paper that it's very difficult to deal with it, very  
22 resource intensive et cetera. So you come down to  
23 practicalities, how do you get at the information in a  
24 reasonable way.

25 DR. STEINDLER: Does the other outfit that

1 generatas manifests like this have a way to identify the  
2 process that was used, for example for solidification?

3 MR. ROLES: No, they don't, not at this time.

4 DR. STEINDLER: So this is the only one, the U. S.  
5 Ecology form is the only one that whereby you can go back  
6 and look to see what kind of process was used to make the  
7 solidified transformation?

8 MR. ROLES: That's correct.

9 DR. STEINDLER: Is there any intent--well I may be  
10 getting ahead of it. But the obvious question is: Is there  
11 any intent to insure that that information is present in all  
12 manifests?

13 MR. ROLES: Yes.

14 DR. STEINDLER: Thank you.

15 MR. ROLES: That is one of the items that we are  
16 considering.

17 DR. MOELLER: And will there be an effort to go  
18 back and add to the computer record in the format that  
19 you're proposing all relevant information that is available  
20 on waste that had been previously buried at that site?

21 MR. ROLES: No. I believe that would be extremely  
22 difficult.

23 DR. CARTER: I think it would be impossible.

24 MR. ROLES: That's probably a better word.

25 DR. HINZE: A related question. How long are they

1 required to maintain these pieces of papers in their files?

2 MR. ROLES: Basically, as long as the site is  
3 operating and after they're closed, they have to be  
4 maintained and eventually they are turned over to the  
5 licensing or the custodial agency, I should say. So they are  
6 required, essentially, to keep permanent records.

7 Anyway I have put some bolts down or ideas for  
8 need for or uses for a national system and in some ways,  
9 the national uses or needs are very similar to what you do  
10 for a licensing for a particular site, only broader. It  
11 encompasses the whole country.

12 One of the aspects that seems to be foremost in my  
13 mind is our responsibility, our regulatory oversight  
14 responsibility.

15 Well, the states have the lead role in all waste  
16 disposal. That was their traditional role and the  
17 Amendments Act encourages that.

18 But NRC also has national responsibility and  
19 authority to issue regulations, guidance, notices et cetera.  
20 And, if you recall, NRC's Part 61 requirements were geared  
21 to the disposal hazard. As the hazard goes up, we have  
22 additional requirements, they're more stringent. We have a  
23 classification system, et cetera.

24 And these requirements were geared to what we  
25 thought, what we believed to be the characteristics of the

1 low level waste at the time. To the extent that the global  
2 characteristics change, then you have a question as whether  
3 the requirements in the rule are still adequate.

4 So I think it behooves us to try and keep track of  
5 what the low level waste characteristics are in as much  
6 detail as we can.

7 The last few years, for example, the volumes of  
8 waste have been dropping extensively. There has been  
9 increased use of decontamination procedures at power plants  
10 so there is probably more chelating agents going to the site  
11 and it is something I think we need to know.

12 We also do various cost analysis, safety,  
13 environmental assessments for rulemaking and other aspects  
14 and we want to have a good data base, so we can do these  
15 analysis in a reasonable and accurate manner.

16 We come to the issue of accountability of radio  
17 active material, this is of concern, I believe, to IMNS and  
18 a specific example they gave was for license termination  
19 reviews. License are terminated pursuant to 30.36 and  
20 licensees give us a Form 314 in which they have to report  
21 the disposition of radio active material.

22 As likely as not, it's being--the waste--the  
23 material has been disposed as waste.

24 IMNS would like a way to check the forms 314 in a  
25 quick manner, in a reasonable manner.

1                   You recall some years ago, we had the J. C. Haines  
2 case in which J. C. Haines claimed to have disposed radio  
3 active material by actually stashing it with a friend of his  
4 at Wright-Patterson Air Force Base.

5                   I think the accountability issue may become even  
6 more of a concern now that waste is being handled by so many  
7 middle men that it's been transferred through brokers and  
8 processors so much.

9                   Of course a low level data base will help us  
10 license new disposal facilities. The same for compacts or  
11 agreement states. You have to make a projection of what is  
12 going to be at the site. You have to perform analysis on  
13 waste transport, ground water migration, et cetera and you  
14 have to have something to base your projections on and  
15 basically those projections have to be based on the history  
16 of what has already been disclosed.

17                   DR. CARTER: Let me ask you a question.

18                   You mentioned, of course, that this essentially is  
19 a state responsibility. You know, you could make a case, I  
20 think for that, or for compacts, for example, groups of  
21 states and obviously Congress has tried to push it in that  
22 direction for a number of years.

23                   Has this sort of thing been run by the Conference  
24 of Radiation Control Program Directors? What is the--

25                   MR. ROLES: Yes.

1 DR. CARTER: What is their position as far as this  
2 is concerned? It's ready, let's go and--

3 MR. ROLES: We have discussed this over the years  
4 extensively with the states and compacts basically through  
5 the low level waste forms and they very much support the  
6 rule making and they are asking for it. And also the  
7 technical position.

8 DR. STEINDLER: Is the term, "Help Assess  
9 Significance of Problems," meant to include, for example,  
10 problems with solidification processes or methods?

11 MR. ROLES: Basically--

12 DR. STEINDLER: Or didn't you feel that that was  
13 an issue which needed to be faced?

14 MR. ROLES: Well it's an issue at a site specific  
15 basis and it also could be an issue on a national basis, if  
16 you wanted to have an overall entire country, how much, for  
17 example, if you have a problem with solidification, what the  
18 overall significance of it is as compared to all waste  
19 disposal sites.

20 You're looking at things in more of a national  
21 perspective rather than a site specific perspective.

22 Another alternative might be shipment casks. Waste  
23 is transported quite often in Type B containers. On all  
24 manifests they record what the identification number of the  
25 casks. If the cask--this number was include in the data

1 base and if there is a problem with particular cask, then  
2 we would have a way to determine if it was a big problem or  
3 a small problem.

4 Is a little bit of waste is shipped with it, using  
5 that particular type of cask or a lot? The transportation  
6 people tell me that it would be of assistance to them, as  
7 part of their renewals of the Certificates of Compliance.

8 DR. MOELLER: Did you have a question?

9 DR. VOILAND: Yes. How many waste shipments are  
10 made in Type B casks per year? There are only a relatively  
11 small number of them.

12 MR. ROLES: I can't give you an answer. I don't  
13 know.

14 DR. VOILAND: I mean, does that merit a big  
15 computerized system?

16 MR. ROLES: Well it's certainly something that--  
17 the system is already going to be there and it might be one  
18 of the pieces of information that is transported to the  
19 system.

20 And we perform various technical studies and  
21 analysis which we use data or would, for example, a study  
22 might be mandated by Congress.

23 So there are lots of needs and lots of uses for  
24 the information.

25 DR. VOILAND: May I ask a question on the previous

1 slide?

2 DR. MOELLER: Certainly.

3 DR. VOILAND: "Help NRC Assess Significance of  
4 Problems." Could you give me some examples of those  
5 problems and what the incidents is? Do these happen a lot?  
6 What is the impact on the public health and safety? Are  
7 these essentially violations of license requirements or  
8 what?

9 MR. ROLES: The only thing that comes to mind.  
10 The Poly Hics was the one and single incident.

11 DR. VOILAND: That essentially had to do with the  
12 degree of solidification of the material in the containers?

13 MR. ROLES: I believe it had to do with--it was a  
14 problem of buckling, whether or not it would survive 300  
15 years.

16 DR. VOILAND: Thank you.

17 DR. STEINDLER: Would you have uncovered that on  
18 the basis of information that is found on the manifest?

19 MR. ROLES: If we had a data base, if the manifest  
20 included a hic manufacturer, and we knew that there was a  
21 problem, we could tell, fairly quickly, the significance of  
22 the problem.

23 That is to say, is it a wad of radio active  
24 material or is it a little radio active material and what is  
25 the health and safety significance of having a problem with



1 this particular container?

2 DR. VOILAND: But that material is on the manifest  
3 anyway, that information is on the manifest. The data are  
4 there. It's just there on a piece of paper rather than in  
5 an electronics system.

6 If the Hic manufacturers are not on the manifest the  
7 manifest will, however, indicate if it is in a high  
8 integrity container.

9 MR. ROLES: Okay, the existing situation is this.  
10 Even though we found that you can't really operate a stoll  
11 facility without using a computer system to keep track and  
12 process data. There are no requirements for such in Part  
13 61.

14 What has happened is that the existing systems are  
15 of uneven capability. They store different amounts of data.  
16 One operator will include some information in their computer  
17 system, the other operator includes additional information  
18 or more information. So they are of unequal consistency.

19 There is stored information in different formats  
20 and what I mean by that is that U. S. Ecology stores  
21 information on a container basis.

22 And what I mean by that is for each container of  
23 waste, they will store information such as the waste form,  
24 the isotopes, et cetera. You can track each individual  
25 container of waste.

1           Now, Chem Nuclear does it differently. It's a  
2 much simpler approach. What they do is summarize the entire  
3 shipment. They will say, this entire shipment contains this  
4 inventory, this suite of nuclide and has the is many  
5 containers and this volume, but they don't track things on a  
6 container basis.

7           What this means is that your ability to perform  
8 technical analysis to get information out of it is really  
9 restricted. So there is a lack of uniformity and to a  
10 certain extent the wastes are described differently.

11          DR. CARTER: You know, there are some inherent  
12 differences in these sites and their methods of operations  
13 and what they will accept and what they don't accept, so you  
14 are going to have some inherent differences between or among  
15 sites anyway, and I presume if we ever have any new ones,  
16 they will be the same way.

17          MR. ROLES: You will have some inherent  
18 differences, but you will have a lot of similarities.

19          For example the waste descriptions are relative--  
20 should be relatively similar. Activated metals are  
21 activated metals and resins are resins.

22          DR. CARTER: Yes, but whether they will accept,  
23 you know, radium or wool, those are fundamental differences  
24 and they are going to continue to exist. Some sites will  
25 now accept radium, some do not.

1 MR. ROLES: Yes, but that still doesn't get to the  
2 problem which is that they way that they store information  
3 is inconsistent.

4 DR. CARTER: I have no problem with that, but I do  
5 have a problem, I think, in fact I want to ask you a  
6 question.

7 How do you expect to sell this program, if that is  
8 the correct word, to a waste disposal site.

9 Now, I would think the NRC can list the data  
10 requirements and information requirement, but I don't know  
11 that it is appropriate for them to dictate whether it is  
12 stored electronically or some other way. And I wish that  
13 somebody would address that for me.

14 MR. ROLES: Well, that is the point of the  
15 rulemaking as to require that they store certain manifest  
16 information--

17 DR. CARTER: In a given format.

18 MR. ROLES: In an electronic format, computer  
19 format and have some minimum requirements on how it is  
20 stored.

21 DR. CARTER: I think that is a strange process.

22 DR. STEINDLER: Mel, I think we're already there.  
23 The Internal Revenue Service has preceded the NRC in this  
24 kind of requirement by several years.

25 DR. HINZE: Well, of course, they can put it in

1 their own formats and you can just have an exchange format  
2 and just have it converted to your format so that you can  
3 use it in your own particular applications.

4 MR. ROLES: That's correct, but the problem is,  
5 not so much whether information is on column 1 or column 5.  
6 In whatever tape that they send us, it's having all the  
7 information that you need in a consistent way.

8 DR. HINZE: And have standards and definitions.

9 MR. ROLES: That's correct.

10 So there is also no Part 61 requirement to report  
11 manifest data in electronic format. So what has happened is  
12 that the operators essentially control the data and they  
13 basically will give it to you under certain conditions. So  
14 there is no direct way that we can access the information.

15 Another problem, of course, is that the disposal  
16 sites are located in agreement states so that since we are  
17 not the licensing organization, we are further removed from  
18 access to information.

19 It appears that Part 20 could be more specific  
20 than it is now. Part 20 requirements are written in a  
21 general way. Therefore the manifests differ in some  
22 details. They don't really specific information that is  
23 provided on a shipment versus a container basis and we think  
24 that there may be some additional information that we would  
25 like to see on manifests.

1 DR. MOELLER: Well now, does the proposed revision  
2 of Part 20 take care of the is?

3 MR. ROLES: Yes.

4 DR. MOELLER: Great.

5 MR. BELL: Doctor Moeller.

6 DR. MOELLER: Yes.

7 MR. BELL: Were you referring to the proposed  
8 revision of Part 20 to Commission now?

9 DR. MOELLER: I was referring to the rewrite,  
10 total rewrite of Part 20.

11 MR. BELL: To implement in ICRP 2063 for Surry?

12 DR. MOELLER: Yes.

13 MR. BELL: No, it does not.

14 DR. MOELLER: That does not.

15 MR. BELL: We would be proposing here additional  
16 changes--

17 DR. MOELLER: That would do it.

18 MR. BELL: --to the waste disposal portions of  
19 Part 20 dealing with content of the manifest.

20 DR. MOELLER: Okay.

21 MR. ROLES: And finally, I might note that there  
22 is somewhat of an inconsistency between Part 20 and the  
23 Amendments Act which would be a good thing to take care of.

24 Part 20 doesn't require that waste be tracked  
25 through processors on manifests.

1           What I mean by that is that if waste goes through  
2 a processor, Part 20 says the processor can come up with a  
3 new manifest and send it to the disposal facility and not  
4 provide information about who the generator is.

5           The states and compacts need this information.  
6 They need it to be able to impose surcharges on waste, at  
7 least the situs states do. And compacts can limit the import  
8 and export of waste in their compacts.

9           So despite the requirements of Part 20, to meet  
10 the provisions of the Amendments Act, the states are  
11 already--you do need to track the materials through  
12 generators--pardon me, through processors.

13           And as a result, we have a relatively limited data  
14 capability. It's rather piece meal and we get bits and  
15 pieces of information from various sources which we put  
16 together.

17           There are some of things that we do, we have  
18 access to a very limited national system that has been put  
19 together based on information that they have purchased from  
20 the operators. They have bought electronic data, a very  
21 limited amount of data. The operators wouldn't sell them  
22 all the information that they had. Particularly they  
23 wouldn't sell them the names of the generators.

24           We buy microfiche copies of manifest information.  
25 That is to say, every year we get a complete set of

1 manifests. We buy some additional summary information from  
2 the operators. We ask them to make some computer runs for  
3 us and we are getting set to--under a contract with UDI, and  
4 I think that is Utility Data Institute.

5 What they do--what UDI does, they have been  
6 granted rights to market access to U. S. Ecology computer  
7 system, and so we are going to dispense the money and access  
8 it and we should have a contract signed in November.

9 We are getting a relatively standard set of source  
10 as well as some additional information that we are doing on  
11 a custom basis, information such as inventories for specific  
12 waste streams.

13 But all in all, the result is, as I said before,  
14 we have really a piece meal mosaic of information. We really  
15 don't have complete information about low level waste  
16 disposal. It would be very difficult to put that  
17 information together, far beyond the resources that we have  
18 at the moment. So it is a problem.

19 DR. STEINDLER: Did you ever make an estimate of  
20 what kind of resource requirements there would be in order  
21 to get what you call a detailed knowledge?

22 MR. ROLES: Assuming that we got the manifests,  
23 put them in ourselves, into a computer system, I think we're  
24 talking about several--well, the last estimate I saw, I  
25 think was on the order of \$300,000 a year in equivalent

1 staff time.

2 DR. STEINDLER: That's people costs or equipment  
3 costs or what does that represent?

4 MR. ROLES: I think that would be the cost  
5 assuming that you had a contract go in and do it.

6 DR. STEINDLER: Okay.

7 MR. ROLES: And that would be--I think there  
8 would, of course, be a charge every year to do the key  
9 punching.

10 DR. VOILAND: What is the distributed cost to the  
11 operators to provide the information as an alternative?

12 MR. ROLES: In electronic format?

13 DR. VOILAND: Well, what you're doing is asking--  
14 you just described a scenario where you would take the paper  
15 manifest and copy all the stuff and put it in the system and  
16 that was at a cost of \$700,000.

17 Now you're going to ask the operators to provide  
18 electronic information. What is the cost of those operators  
19 to do the same thing?

20 ROLES: Well the operators already do it and  
21 they already take information, put it into their computer  
22 systems. So what we would be looking for is to have them  
23 provide us with the electronic information and the  
24 information in their system is in electronic format.

25 DR. VOILAND: But you said that that had to be



1 modified to provide you with the information that you're  
2 interested in getting.

3 I guess the point that I am making is the  
4 electronic systems that are in place right now and the  
5 operators are, for their convenience, and to meet their  
6 business needs, you're asking it to do something else. It's  
7 got to cost something. I guess I would like to know what  
8 that cost is.

9 MR. ROLES: We're planning on making it a  
10 regulatory requirement, that they have such computers.

11 DR. VOILAND: There is still going to be a cost,  
12 whether you make it a regulatory requirement or not.

13 MR. HAPSFIELD: We're doing a regulatory--

14 DR. MOELLER: We can't hear you.

15 MR. HAPSFIELD: We're having Argonne National Lab  
16 do a regulatory analysis for us right now for the rule  
17 making. We don't have any results back, but by the time you  
18 see a draft of the rule, we should have a draft that could  
19 give you that information.

20 DR. VOILAND: I only know that the regulation on  
21 the manifest was supposed to have negligible affect and it  
22 cost the facility I was involved with a fair amount of money  
23 to deal with that.

24 MR. ROLES: It would be very negligible for U. S.  
25 Ecology to change their computer system, to adopt to the new

1 requirements that we have in mind at the moment. It would  
2 cost Chem Nuclear much more money.

3 DR. VOILAND: But you're saying that you need  
4 information from the brokers too because they don't transmit  
5 the source of the radio active materials that they process  
6 and pass on to the site.

7 MR. ROLES: As a matter of fact, that they do.  
8 The information passed through brokers is included on  
9 existing manifests. That is to say if a waste goes through a  
10 broker, the existing manifest must indicate the generators.

11 DR. VOILAND: I thought a little while ago you  
12 said that wasn't the case. I guess I misunderstood that.

13 MR. ROLES: It's not required for waste going  
14 through a processor. The processor is changing the form of  
15 the waste. They perhaps compacted it, for example.

16 DR. VOILAND: Chem Nuclear super compaction, for  
17 example.

18 MR. ROLES: Something like that.

19 DR. VOILAND: Okay.

20 MR. ROLES: What has happened is that even though  
21 there is no requirement in Part 20 for this information to  
22 be tracked through processors it is, in fact, being tracked  
23 through processors because the cited states want the  
24 information in order to be able to impose their surcharges  
25 on the states that are out of compliance with the Memisec

1 milestone and the compacts want that information so that  
2 they can control import and export of radio active material  
3 into their compact,

4 Waste is being transported across state lines and  
5 compact boundaries in order to be processed and they are  
6 very concerned about being able to track waste back to the  
7 original generator so that a compact that has a processor  
8 doesn't get stuck with all of the waste.

9 You could see what could happen if the Northeast  
10 Compact sent all their waste to SEG in Tennessee and  
11 suddenly it's Southeast compact waste.

12 So they are very interested in tracking the  
13 material through the generators and what happens today is  
14 that if waste is processed, for each container of processed  
15 waste, there is another sheet which I haven't shown you, but  
16 I have it with me somewhere.

17 There is another sheet that lists, for each  
18 container of recessed waste, the generators that contributed  
19 to that can of waste, and they will tell you the volumes  
20 that each one contributed and the waste descriptions et  
21 cetera.

22 And, that is routinely done today.

23 DR. MOELLER: Back on the ties where you tied  
24 various data banks together, with the EG&G data bank, which  
25 I gather they compile for DOE be factored into this at all?

1           MR. ROLES: Yes. As a matter of fact that was the  
2 plan to use an updated DOE system. They already have the  
3 capability, et cetera, in the system.

4           So, based on the above, we have discussed--I have  
5 two activities going. One is a rulemaking to amend and  
6 clarify Part 20, which we have discussed. To require  
7 computer systems at Part 61 disposal facilities and to  
8 provide some requirements on minimum levels of development  
9 and use.

10           To consider things like quality assurance and  
11 development of programming and protection against loss of  
12 information and data entry, et cetera.

13           And require that the operators report this  
14 manifest information in electronic format.

15           The idea is that this would--this report  
16 information could be collected and then transferred to a  
17 central organization where you would have a national system  
18 that contains information about all the sites.

19           But the compacts--the states have requested that  
20 we give them some early ideas, some early information and so  
21 what we have done is made a technical position, a draft  
22 technical position which we want to send out, in advance, of  
23 completion of the rulemaking. And they are interested in  
24 this because they want to plan for site operations.

25           For that aspect of the site operations, namely the

1 operation of a computer system to keep track of manifest  
2 data. They don't want to go off in the wrong direction,  
3 basically, so they have asked for some preliminary  
4 information.

5 DR. MOELLER: Now on Part 20, I guess, going back  
6 to my earlier question, I don't understand or maybe I do,  
7 but I don't think I understand why you're not just  
8 incorporating all of your needs relative to Part 20 into the  
9 proposed revision that is under way or are you fearful that  
10 that would upset the progress of that other revision and you  
11 would rather amend it?

12 MR. BELL: Both. The existing part, Dr. Moeller,  
13 the existing part--the changes to Part 20 that are in  
14 progress, that are in a very late stage, the final rule is  
15 at the Commission, and there hasn't been the benefit of  
16 public comment on these proposed revisions.

17 DR. MOELLER: Okay. So you wouldn't do that.

18 One other thing and maybe you plan to cover it  
19 later. Are you going--are the quantities and so forth, in  
20 the packages that are being disposed of, going to be  
21 expressed in SI units and if not, why not?

22 MR. ROLES: SI--yes. I think we're going to get  
23 to SI when we get to it.

24 DR. MOELLER: Well now, we have read the  
25 Commission policy--well probably not a policy statement, but

1 the committee that was set up to make recommendations on SI  
2 units and they said that, in terms of, as I recall, low  
3 level waste, that you move ahead with the transition in  
4 which, you know, you will gradually shift over to the new  
5 units and I just don't understand your reluctance to move to  
6 the new units.

7 MR. ROLES: Well, as a matter of fact, this is the  
8 first time I even considered using the SI units--or the  
9 possibility of incorporating SI units in the requirements.

10 It seems to me that if that is the decision, that  
11 is the policy of NRC, we can do it.

12 MR. BELL: Doctor Moeller, that would probably  
13 have a bigger financial impact on licensees than anything  
14 else we have described here.

15 MR. ROLES: That's probably true.

16 MR. BELL: It will feed back to every waste  
17 generator and shipper in the country.

18 DR. MOELLER: I realize that, but as Dr. Carter  
19 said yesterday, if all Albania can do it, why can't we.

20 DR. VOILAND: Again, that is a conversion that can  
21 be made readily within the computer system.

22 DR. MOELLER: Sure. If it were complex, it's just  
23 a direct linear conversion, sur.

24 DR. CARTER: That's a ready made computer.

25 MR. ROLES: Okay.

1 DR. HINZE: If I may ask you a question. What are  
2 the plans for the availability of this data. You refer to  
3 it as a national data system.

4 The term "national" implies to me that it will be  
5 available to the general public. Is that the plan?

6 MR. ROLES: Basically I think it would be  
7 available to those who subscribe to it or you would have to  
8 get pass words et cetera, have access to it.

9 We were basically thinking of the people that  
10 would have basic access to it. It would be regulatory  
11 agencies, et cetera.

12 I don't see why not it could not be available to  
13 the general public.

14 DR. HINZE: Will this be in direct competition  
15 with data systems that are in the private area at this time.

16 You mentioned already purchasing data. This is a  
17 constant problem in dealing with National Data Centers and  
18 it is something that if before you get too far down the  
19 line, you better have a policy in place that satisfies  
20 everyone.

21 MR. ROLES: I think you put your hands on one of  
22 the issues that is sure to come up, is that this information  
23 is not just information, it's valuable and can be sold and  
24 U. S. Ecology does so. This rulemaking would take away or  
25 limit that market.

1           The problem with going with the--one alternative  
2 would be just to buy it from the operators. The problem is  
3 that they don't have to sell it to you. They don't have to  
4 sell the information that you want.

5           We have been negotiating with them. Had a whole  
6 series of negotiations with them for years and years, going  
7 back to 1985, trying to get data in an electronic format  
8 from the operators. And it was always one more thing.

9           The biggest problem was proprietary aspects of the  
10 generator names. They did not want to still do not want the  
11 generator names to be public.

12           And even though we discussed with them the  
13 provisions in Part 10 regarding safeguarding or proprietary  
14 information, they just weren't convinced.

15           DR. HINZE: That is certainly one problem, but  
16 that isn't the conflict with the personal or with the  
17 private enterprise arena and I am wondering what you are  
18 doing to try to come to some resolution about that.

19           I am also interested in whether the--obviously you  
20 will have derived products from all of this basically raw  
21 data.

22           You will have certain statistics. You will have  
23 certain presentations that come from these data.

24           Will these data be available on a national basis.  
25 Will they be available to the academic community who isn't



1        trying to make a profit off them or students working on a  
2        thesis.

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1 MR. ROLES: The activity making it available can  
2 -- school or whatever can obtain access to the computer  
3 system; then, fine, they can do whatever analysis they want  
4 to.

5 DR. HINZE: So it will be possible for anyone to  
6 go into your data system and interrogate it and to retrieve  
7 data from it?

8 MR. ROLES: Theoretically, yes. However, there  
9 may be proprietary concerns that would limit certain  
10 information. For example, as I discussed before, there may  
11 be situations in which some people can get some information  
12 and a regulatory agency can get additional information.

13 DR. HINZE: Then I must assume from what you're  
14 saying is that you will be in conflict with private  
15 enterprise that is selling these same kinds of data.

16 Is that correct?

17 MR. ROLES: That will be correct.

18 DR. HINZE: I think you may have a problem.

19 MR. ROLES: Okay. Well, as a matter of fact, that  
20 issue I was going to cover.

21 Starting off at the top the data system management  
22 how do you, assuming you get information from all of the  
23 disposal sites how do you process it? And our plans at the  
24 moment is to use the updated DOE system that's in place  
25 pursuant to the Amendment's Act. We've had frequent

1 discussions with DOE on this.

2 Certainly there's the technical information which  
3 involves, how do you get the maximum information on the  
4 minimum manifest base. You know, we don't want to get to a  
5 situation which the volume of paper exceeds the volume of  
6 waste. It has to be reasonable and non-onerous; at the same  
7 time we want it to be detailed.

8 The issue is capability of Agreement State  
9 regulations. And that in order for it to work, in order to  
10 have a relatively uniform set of manifest information,  
11 uniform set of electronic information, it has to be a high  
12 degree of capability with the -- among the Agreement States.

13 Historically reporting requirements have not been  
14 a matter of high capability. So perhaps this might involve  
15 a change in the policy.

16 And finally we get to one that is basically speak  
17 to the one that you have mentioned is, how do we get the  
18 manifest information? Do we have them report in electronic  
19 or paper format?

20 The disposal site operators are not adverse to  
21 giving us information -- any information we want in a paper  
22 format. They know it's very difficult to do anything with  
23 the information. And we would prefer not to have it in a  
24 paper format because if we would then transfer the  
25 information we're going to have two different data bases;

1 our data base is going to be different from theirs, also  
2 cost, et cetera.

3 So you're correct if the main flack from this  
4 rulemaking is that issue. Do we -- how should information  
5 be reported? It's the electronic versus paper question.

6 DR. STEINDLER: I'm surprised that that represents  
7 really the main flack; I would have guessed that the  
8 proprietary aspect would be much more intransigent from my  
9 limited look at the way federal agencies handle proprietary  
10 -- commercially proprietary information and the looseness of  
11 the security in it. I would be somewhat startled that a  
12 commercial organization that really values that as  
13 proprietary information turn anything over to you guys.

14 MR. ROLES: They will sell us -- they do sell us  
15 information in a summary format which does have the  
16 generator names on it, the customer names on it. They will  
17 tell us who the customers are in -- as I said -- a limited  
18 format, which makes it hard to manipulate.

19 DR. HINZE: What do you mean by limited format?

20 MR. ROLES: They will sell us the microfiche  
21 copies themselves. They will sell us the paper copies of  
22 the manifest themselves. For example, that has the  
23 generators on it. They don't mind about that.

24 And we've even, on a few -- pardon me, Chem  
25 Nuclear does sell this information under a proprietary

1 agreement. They consider the names proprietary.

2 U.S. Ecology does not. They do not -- they don't  
3 have proprietary restrictions on disseminating names. Their  
4 problem, I believe, is going to be their market.

5 DR. CARTER: Well, you've got to look at the  
6 history of the transportation industry; they're used to  
7 manifest. They're used to paper manifest. These things go  
8 essentially with every shipment and have for years and years  
9 and years. And, you know, to expect them to change that  
10 procedure, I think is going to be difficult. At least their  
11 reaction to it.

12 And they're still going to have to have some kind  
13 of paperwork when they transport material. This is going to  
14 be a requirement for, you know, emergency response and a  
15 number of other things.

16 MR. ROLES: No, it's not with emergency response.  
17 In fact, as I said before, the operators do have -- they  
18 routinely receive manifest and any changes that we make to  
19 manifest will only be in detail. They already operate  
20 recordkeeping systems at the disposal sites. The  
21 recordkeeping system from one operator is already almost  
22 there. There will be some relatively minor changes.

23 The big issue, I think, is going to be provision  
24 of the electronic information -- electronic format.

25 DR. CARTER: I don't disagree with you, I think

1 that's exactly right. This just runs contrary to the way  
2 they normally operate.

3 DR. HINZE: I also agree with Dr. Steindler that  
4 the commercialization of this is a major concern, because if  
5 I were making a living out of selling these data and a  
6 government agency came in and was going to distribute them  
7 without any cause, I would be to my congressional  
8 representatives and Senators about as fast as you could  
9 blink your eye.

10 DR. CARTER: Well, I don't disagree with the  
11 principle involved. On the other hand, I dare say there has  
12 been no discussion whatsoever of the amounts of money that  
13 are involved here on an annual basis. And I suspect if you  
14 try to make your living at this and had access to all the  
15 information you would probably starve to death.

16 MR. ROLES: To clarify it, as I understand it --

17 DR. HINZE: Excuse me, but people wouldn't be  
18 involved in it in a commercial way unless they were making  
19 money.

20 DR. CARTER: This is a company that's selling  
21 something that's already available to them.

22 DR. HINZE: That's right.

23 DR. CARTER: But I would dare say that there is  
24 very small amounts of money.

25 Maybe Gary has some idea of the --

1 DR. MOELLER: Well, I thought I heard several  
2 hundred thousand dollars.

3 MR. ROLES: That would be the case if we took the  
4 manifest themselves, paper manifest, and tried to keypunch  
5 the information ourselves into the system.

6 DR. CARTER: It's all in the data.

7 DR. MOELLER: Did you -- is it open public  
8 information as to how much you pay Chem Nuclear or U.S.  
9 Ecology annually for their data?

10 MR. ROLES: We pay -- yes, to get the manifests  
11 and summary information we pay one company \$18,000 a year  
12 and the other company approximately \$30,000 a year.

13 DR. MOELLER: Oh, okay.

14 MR. VOILAND: That's for the paper manifest?

15 MR. ROLES: That's correct.

16 DR. HINZE: Is this what you're paying to UDI  
17 then?

18 MR. ROLES: UDI is a relatively same level of  
19 costs. It's somewhat higher; it's in the 30s to 40s.

20 DR. HINZE: Do they have other -- do they supply  
21 this to other people as well?

22 MR. ROLES: Yes. See, the market for information  
23 is not where U.S. Ecology makes their money. They make  
24 their money by disposing of waste and charging whatever the  
25 market will bear, which is quite a lot.

1 DR. HINZE: What about UDI?

2 MR. ROLES: UDI does a number of -- has a number  
3 of activities. They just -- having to do with the data and,  
4 et cetera. This is just one of the aspects of their  
5 business. They basically are just there as a marketing  
6 agent. They're marketing the data for U.S. Ecology. U.S.  
7 Ecology prefers this because they don't want to be pestered,  
8 essentially, with requests for access of information, so  
9 they have UDI do it.

10 DR. MOELLER: Maybe you told us this, but are  
11 there restrictions or what are the restrictions on what NRC  
12 can do with the data after you purchase it?

13 MR. ROLES: The only real restrictions come from  
14 Chem Nuclear; they're worried about disseminating of their  
15 customer names.

16 DR. MOELLER: Well, the proprietary thing is one  
17 thing, but can you -- you're not hampered in any way of  
18 preparing summaries and how much comes from what and what's  
19 in what class and everything?

20 MR. ROLES: No.

21 DR. MOELLER: And publishing that?

22 MR. ROLES: There's no problem with that.

23 DR. MOELLER: Okay.

24 MR. ROLES: As a matter of fact, their concern is  
25 really toward the non-fuel cycle licensees. If it comes



1 from a reactor they're not really that concerned.

2 But I believe that some of their customers are  
3 extremely worried to let the public know that they generate  
4 radioactive waste. An example might be a food company that  
5 uses the source as part of the fill level gauge; they might  
6 be very concerned that it was known that General Mills or  
7 whoever has radioactive material.

8 MR. VOILAND: You listed in the needs a whole  
9 bunch of things: waste shipment inspection; assessments for  
10 license renewal; closure; et cetera. Now, presumably you  
11 have been doing these things in the past without the system.

12 MR. ROLES: No, as a matter of fact, they've been  
13 doing that with their existing systems.

14 MR. VOILAND: With the existing systems.

15 MR. ROLES: They have been doing it.

16 MR. VOILAND: But I say without the electronic  
17 system that you've been doing it -- you've been doing these  
18 activities.

19 MR. ROLES: No, what's happened is that in order  
20 to comply with these requirements, in order to perform these  
21 activities the operators have gone ahead and developed their  
22 own systems independent of requirement to do so. They said,  
23 although there is no specific requirements in Part 61 to  
24 have an onsite computer system, they've both collectively  
25 said, we can't do our job, we can't meet these other

1 requirements in Part 61 without it. So they've gone ahead  
2 and developed it. They also use it for billing purposes.

3 MR. VOILAND: Let me ask my question a different  
4 way. If you do not go through this process and you do not  
5 have the electronic link, electronic data system, how will  
6 that impair your activities? You've been living in the past  
7 without it, what will that mean in terms of your ability --  
8 is this something that's nice to have or necessary to have?  
9 Is it a convenience or just what? I have a hard time  
10 sorting that out.

11 MR. BELL: Can I get in here, because I was going  
12 to make some summary remarks that address these kinds of  
13 issues. I think there are two kinds of changes that we're  
14 looking for.

15 In one case the present manifest don't include all  
16 the information that the staff feels is needed to assess  
17 generator performance or site performance; and we think  
18 there's a direct link to public health and safety for  
19 requesting this additional kind of information and there's  
20 not much difficulty in proceeding with that part and  
21 justifying proceeding with that part of the regulation.

22 The matter of requiring information in the  
23 electronic format or in a uniform format and the changes  
24 that it will impose on the site operators doesn't have as  
25 clear a health and safety basis.

1           Some would argue are strictly for the convenience  
2 of the government and that we ought to continue just to have  
3 to buy the information as we do now.

4           The objective we would like to try to meet in this  
5 rulemaking is to get the information we need with as little  
6 impact as possible on the generators and the site operators.  
7 And one of the reasons we think this is particularly  
8 important to try to move on this now is that we have a  
9 window. There are three existing commercial sites, but two  
10 of these are going to shut down in 1992, both the Barnwell  
11 site and the Beatty site will be shutting down and those  
12 Compacts will be opening new sites.

13           We're looking at a time when over the next five  
14 years or so many as a dozen new sites will be starting up.

15           DR. CARTER: Could I interrupt a second.

16           I wonder if you would comment, if you know, as far  
17 as how far along is the furthest in terms of opening a new  
18 site under the requirements of 10 CFR 61, in terms of a  
19 Compact?

20           MR. BELL: Our understanding right now, the State  
21 of California is the furthest along. The licensee will  
22 probably submit an application to the state, which is an  
23 Agreement State, within the next year. And the California  
24 site might actually be in operation about 1993. Texas and  
25 Illinois are not very far behind that schedule. Most of the

1 other sites are lagging behind by several years.

2 DR. CARTER: Well, I would point out a couple of  
3 things: the whole history of this has been that the states  
4 or the Compacts have not met schedules in the past. There  
5 has been continuing delays in those things.

6 And the other thing is that there's never been a  
7 site thus far licensed under 61. So I think these are, you  
8 know, you've got a history of one thing and you've also got  
9 a lot more rigorous requirements now in terms of the siting  
10 of the next or the next low-level disposal sites.

11 But I'm not too sur', you know, these are the  
12 schedules at the moment, but I'm not too sure how optimistic  
13 those schedules are.

14 MR. BELL: Well, you've got to recall, though,  
15 that the electronic -- the Low-Level Waste Policy Act has  
16 some severe, both economic and political, incentives, you  
17 know, with the escalating surcharges for people who miss  
18 milestones, denial of access. If you miss milestones by  
19 even further dates, we think that there is a large incentive  
20 for states who rely heavily on nuclear power and have  
21 companies within those states who depend on using  
22 radioactive material for their livelihood to make progress.

23 DR. CARTER: Yes, but the bottom line before when  
24 they all dragged their feet was basically to change the law,  
25 and I presume that could happen again.

1           MR. BELL: Presumably, but at the present time  
2 there is no sign of that yet. And it will be much harder  
3 for a state who's dragging his feet and missing milestones  
4 to get much support in Congress for changing the law if one  
5 or two of the other sites have, in fact, filled their  
6 commitments and have some sites operating.

7           I was trying to make a point that, we have a  
8 window here with these new sites not started up yet, that if  
9 we get this rule out on the streets there should be no  
10 backfit kinds of cost. There would only be the one site in  
11 the State of Washington that's continued to be operated by  
12 U.S. Ecology where there would be a backfitting issue at  
13 all.

14           And as Mr. Roles has pointed out, we think U.S.  
15 Ecology's manifest contains nearly all the information that  
16 we're looking for now. They're already storing it on  
17 electronic format.

18           The major issue there would then be any loss of  
19 income by an NRC requirement to turn that information over  
20 in electronic format and make it available as part of a  
21 national data base.

22           DR. CARTER: Let me ask you a specific question,  
23 Mike. In the Southeast Conference, which I'm the most  
24 familiar with, Barnwell presumably will close down in '92,  
25 that's the schedule. I think the Compact members have

1 agreed have North Carolina will be the next site. North  
2 Carolina, I'm not too sure, has yet agreed with that.

3 Now, do you think they can have a site licensed  
4 under the terms of 10 CFR 61 and be in operation when  
5 Barnwell is supposed to close down?

6 MR. BELL: No, I don't expect they will make that.  
7 And it would mean that there would be -- unless there is  
8 some political changes in South Carolina there will be a  
9 period of a couple of years where people in the Southeast  
10 Compact will either be storing waste or having to make  
11 arrangements to ship it out of state to another disposal  
12 site.

13 MR. VOILAND: Could you remind me of the  
14 apportionment of responsibilities between Agreement States,  
15 the NRC, and the whole licensing process?

16 MR. BELL: I'm sorry, what do you mean by  
17 apportionment of responsibility?

18 MR. VOILAND: Well --

19 MR. BELL: In other words, how many of the new  
20 sites would be in Agreement States?

21 MR. VOILAND: No, it's the split in  
22 responsibilities. What is the involvement of the NRC? In  
23 Illinois which I'm fairly familiar with they have passed  
24 legislation which parallels the federal legislation, to NRC  
25 legislation, and they're going ahead in terms of setting up

1 the Compact facility there on a very independent basis.

2 What's the role of NRC in this?

3 MR. BELL: In Illinois which is now an Agreement  
4 State, the State of Illinois would be the primary licensing  
5 body for the new site. NRC would provide technical  
6 assistance and consultation to the state, if requested. If  
7 they, in fact, include in the application a capability to  
8 dispose of special nuclear material above formula quantities  
9 the responsibility for licensing disposal of those waste is  
10 retained by the NRC, it's an Agreement State authorized  
11 activity. So we would be involved in looking at any special  
12 nuclear material disposal.

13 MR. VOILAND: But fundamentally they have a very  
14 large responsibility.

15 MR. BELL: They have responsibility.

16 MR. VOILAND: To the best of my knowledge, they're  
17 gathering all the same kind of information that we're  
18 talking about here.

19 DR. CARTER: Let me ask another question.

20 Historically there's been a few problems -- now,  
21 you can characterize that different ways -- but related to  
22 the operation of the disposal sites, either the ones that  
23 are in current operation or the ones that have been closed  
24 on the commercial basis.

25 And these problems I would categorize: one was a

1 shipment burning at a site.

2 Another was the misuse and abuse of materials that  
3 were supposed to be disposed of, but they were either giving  
4 them away or selling them or lending them to offsite  
5 residents.

6 The other, and probably a little more important,  
7 is the fact that there have been certain radionuclides  
8 detected in low quantities and groundwater and so forth that  
9 have moved away from the disposal site.

10 There also probably been some, perhaps, that have  
11 been below the level of detection in terms of the  
12 monitoring, and that's obviously a matter of conjecture.

13 But with this new system that you're proposing,  
14 how would that have impacted any of these particular things  
15 in terms of their betterment or salutary effects?

16 MR. ROLES: Well, as a matter of fact, there were  
17 additional problems, both at Maxie Flats and Sheffield in  
18 that there is a very, very vague notion of what actually had  
19 been disposed. It was very difficult to go back and  
20 reconstruct what was there.

21 DR. CARTER: Well, that's not necessarily a  
22 problem in terms of health and safety, and I think that's  
23 the prime thing that we're concerned with: what effect, if  
24 any, is this having either on workers at those sites or on  
25 the public. And whether you know what's there or not



1 doesn't necessarily relate to that at all.

2 MR. ROLES: I think if you have -- if you don't  
3 know what is being disposed on the source term you have no  
4 way to judge if it's safe. You have no way to say if  
5 it's --

6 DR. CARTER: All of these sites have had manifests  
7 as far as material is concerned; they've all had monitoring  
8 activities. You're telling me that there are things out  
9 there that nobody has monitored. I don't quite believe  
10 that.

11 MR. ROLES: We have -- some of the old shipment  
12 records were very bad.

13 DR. CARTER: I don't disagree with that.

14 MR. ROLES: The problem is, you don't know what is  
15 at the disposal site. You don't have a good inventory of  
16 what, for example, --

17 DR. CARTER: Are you animating now that people are  
18 being exposed to things and we don't know about it; is that  
19 what you're telling me?

20 MR. ROLES: I'm saying that we don't have a good  
21 handle on what is in some disposal sites. We don't know  
22 what has been disposed there.

23 MR. VOILAND: But current material that's going in  
24 there, we have a very good handle on.

25 MR. ROLES: That's correct.

1 DR. CARTER: Well, I don't agree with you in terms  
2 of that being a major problem, let's put it that way. I  
3 don't disagree with what you're saying, but I don't think  
4 this is going to solve it and I don't think it's a major  
5 problem in terms of the ones that I mentioned, namely, the  
6 movement of radionuclides offsite that have been documented.

7 MR. ROLES: Well, I think that any sort of  
8 judgment you make on safety has to be based on source term.  
9 You are safe compared to what sort of material you are  
10 handling and what you're doing with it. But you have to  
11 know what you're handling.

12 DR. CARTER: You're not necessarily talking about  
13 a source term. To me a source term is something that's  
14 going to produce an effect. You're talking about material  
15 that's in the ground, if that material doesn't get mobilized  
16 and doesn't leave the site, I presume, that it's  
17 satisfactory. That's the purpose of the sites and things.

18 So I think you're making an assumption now in  
19 terms of source term. If that source never becomes  
20 mobilized and moved, then I don't think we have a problem.  
21 Now, it may be a problem in terms of recordkeeping, I don't  
22 disagree. But I certainly would not characterize that as a  
23 major problem.

24 MR. ROLES: In order to license a disposal site  
25 you have to make an assessment of what the safety

1 environmental conditions are. You have to do that. You  
2 can't know that -- you can't do that without starting with  
3 the source of radionuclides. And you go through some  
4 process assuming that they leak, et cetera, and they're  
5 mobile and you look to see what --

6 DR. CARTER: I don't agree with that. Now, that  
7 may be the preferred way to do it. But the proof of the  
8 pudding is in the monitoring that goes with it.

9 DR. MOELLER: Well, Mel, one place this might  
10 help, you know, I hear you, but one place, it would seem to  
11 me that it could help, is where he referred earlier to the  
12 fact that certain sites have limits on the total quantity of  
13 radionuclide X, it can go there.

14 Now, presumably this manifest system will help  
15 raise the flag when you have reached that limit.

16 DR. CARTER: Yes.

17 DR. MOELLER: Now, that might help.

18 DR. CARTER: It's a matter of how you characterize  
19 it.

20 DR. MOELLER: But you're correct, the main thing  
21 on migration is the waste form and the package it's in.

22 DR. MOELLER: And the material and the amount and  
23 so forth. But that can be detected by monitoring. That's  
24 certainly helpful to know what's there to begin with; you  
25 got a leg up on the problem, but it's not absolutely

1 necessary.

2 MR. ROLES: As long as you continue to monitor,  
3 that would be -- you're saying that you would have to  
4 monitor for thousands of years, perhaps. You do have to  
5 make an assessment of what the potential releases will be  
6 long after you're disposed -- the waste is disposed.

7 You have to make a judgment as to the site. You  
8 have to -- you can't do it unless you know something about  
9 what's in the ground. What do you expect to be in the  
10 ground.

11 MR. VOILAND: But the summaries that are provided  
12 on an annual basis give you the long term information that  
13 you need. It's not clear at all to me why you need to know  
14 something about every canister there.

15 MR. BELL: Dr. Moeller.

16 DR. MOELLER: Yes, go ahead, Mike.

17 MR. BELL: I think we've got a good example right  
18 at Maxie Flats of how a manifest system would be useful.  
19 They're trying to decide right now about how far should they  
20 go to clean up that site under super funds. And they're  
21 debating whether the offsite dose standard should be four  
22 millirem per year, 25 millirem per year, 100 millirem per  
23 year.

24 And basically, they have, in fact, the sort of  
25 information that Dr. Voiland just alluded to. They have

1 total curies disposed of in a trench; total kilograms of  
2 special nuclear material; total kilograms of source  
3 material.

4 But to actually do an assessment and look at what  
5 migrate offsite over a period of hundreds of years and make  
6 a decision as to whether or not you could meet a four  
7 millirem per year groundwater limit versus 100 millirem per  
8 year groundwater limit you need more detailed information on  
9 the concentrations of the nuclides, whether or not they were  
10 encapsulated in concrete or some other material to limit the  
11 leach rate.

12 If they get into issues like, is it necessary to  
13 exhume any of the trenches how would they know, for example,  
14 what to expect when they actually dug into a trench.

15 DR. CARTER: Yes, but, Mike, I don't think the  
16 standard is modern. Now, the implication of what you're  
17 saying is that the numbers are going to change. I think the  
18 standards are out there and they've got to meet them.

19 The other thing is, I think whether they meet them  
20 or not primarily is going to be based on monitoring. I  
21 think this is what's going to count when they get to court  
22 and I'm sure that will happen.

23 And right now the prime problem, as far as I know,  
24 is of course tritium.

25 MR. BELL: Well, I think you're faced with a

1 technical question. Because tritium is the most mobile and  
2 we see it down in low concentrations, is that all that's  
3 ever going to come out or is that just the leading edge of  
4 the plume and it's being followed by cesium and strontium  
5 and other materials that are less mobile and are being  
6 delayed by the soil but are eventually going to make it to  
7 groundwater pathways.

8 DR. CARTER: Well, it's certainly a possibility.  
9 But again, I dare say that when that occurs, if indeed it  
10 occurs, it will be monitored.

11 DR. STEINDLER: I'm not sure I understand the  
12 thrust of the argument. If somebody is telling me that  
13 there is no need for additional information I have a  
14 difficulty buying that. If somebody is saying, gee, the  
15 conversion of paper format to electronic format is a  
16 problem, I guess my view is it may be a problem to somebody  
17 but in the current 1989, 1990 time frame that conversion is  
18 effectively on us and I don't see any real big deal about  
19 it.

20 I think the most important issue that's being put  
21 down here is the uniform manifest content. And the thing  
22 I'm looking for in this case is, make sure the thing is  
23 reasonably complete.

24 It will be important at some time in the future to  
25 be able to extract out of the information on a particular

1 site, for example, how much chelating material has been  
2 stored in a particular trench. If there's a single item  
3 that I think is going to cause us grief as time goes on, I  
4 think that's it.

5 If the uniform nature of the manifest is so  
6 arranged as to be able to readily obtain that information,  
7 then I think you have at least an option; to begin  
8 remediation we need to detect the problem somewhere else  
9 rather than have to guess at it. I think there's some  
10 significant advantages to what Mike and Gary are proposing.

11 DR. MOELLER: Other questions or comments?

12 (No response)

13 DR. MOELLER: I hear none.

14 And you have finished your summary, Mike. And  
15 we've heard the presentation by Gary Roles.

16 Let us thank you then for the presentation.

17 Now, what do you need from us or what do you  
18 desire from us?

19 MR. ROLES: While I'm here there's one more issue  
20 I think I should mention.

21 DR. MOELLER: Okay.

22 If you can cover that and then we need to know  
23 specifically what would be helpful to you or what is  
24 necessary.

25 MR. ROLES: The issue is basically one of the

1 uniform low-level waste manifest, whether or not to merely  
2 describe the information you want to see in a manifest; and  
3 then leave it to basically the operators and the states to  
4 come up with the manifest format, which is the way it has  
5 happened today, or to specify a manifest format similar to  
6 what they've done in the hazardous waste field.

7           The Compacts would like to see a uniform manifest  
8 form. The advantages of a uniform manifest form is that,  
9 theoretically you would have a smaller paper trail and that  
10 you would not have to have a new manifest every time the  
11 shipment crossed state lines or contact boundaries, which is  
12 a possibility.

13           The disadvantage of doing such a manifest will  
14 require a joint rulemaking with DOT and it will take extra  
15 time, considerable extra time and resources, et cetera. And  
16 I'm not really sure, in my own mind, that it would really  
17 reduce the amount of paper that's actually being sent.

18           But they have, as I understand it, although we are  
19 not planning at this moment initially to propose a specified  
20 form, it is of concerns to the Compacts as expressed to the  
21 form and they would like to see it.

22           It may be something that can be done later or a  
23 staged approach. Right now we just are in a people in  
24 resources crunch.

25           DR. MOELLER: Dr. Hinze and then Dr. Carter.



1 DR. HINZE: Under the most optimistic situation,  
2 which I presume is with the disposal sites providing you  
3 with electronic data, what is this going to cost in order of  
4 magnitude -- what is this going to cost the NRC per year  
5 under the best possible scenario that you can develop?

6 MR. ROLES: The best possible scenario would be  
7 that, if DOE runs the electronic system it would cost NRC no  
8 money.

9 DR. HINZE: Well, if that's true -- if I  
10 understand your document correctly, that is scheduled to  
11 terminate in what, '92, something like that?

12 MR. ROLES: No.

13 DR. HINZE: Is there a longevity to what DOE is  
14 planning? And if you get yourself into this, will this mean  
15 that NRC will have to pick up what DOE is doing and what  
16 kinds of orders -- what order of magnitude are we talking  
17 about there?

18 MR. ROLES: Assuming that the system already  
19 exists you would have the -- just the operational aspects of  
20 it and it would probably be an FTE a year, if that happens.

21 There are other scenarios. For example, DOE could  
22 -- DOE is doing their computer system based on the  
23 Amendments Act and the idea is to have the system available  
24 so that the Compacts can have a data base that they can use  
25 while they're trying to license the disposal facilities.

1           And as you say, there could be a scenario in the  
2 future in which DOE, because of monetary considerations,  
3 reduces their contribution in which case you have to run the  
4 system by some other means or NRC might have to put up some  
5 money or there might be, you know, a user's charge.

6           So that there is possible that somewhere in the  
7 future it may cost the NRC some money.

8           MR. BELL: The question was asked, though, is how  
9 much and would it be on the same order of magnitude as what  
10 we're already paying to buy microfiche and summary data.  
11 Because if we're getting a much more complete data base for  
12 -- on the order of, you know, \$50 to \$100,000 a year we're  
13 putting out that kind of money already for a very unwieldy  
14 data base.

15           MR. ROLES: You would have to detail someone to  
16 operate the system, et cetera, and respond to request, et  
17 cetera.

18           I imagine it would be something less than an FTE a  
19 year.

20           MR. BELL: We would put it at the Arcon Code  
21 Center.

22           DR. CARTER: Let me mention one other thing.

23           I personally feel that getting a uniform set of  
24 information and data from these folks is a good idea, and  
25 more information has been collected in the past; I think

1 that's very desirable.

2 I guess the problems I have with it: one, it  
3 sounds to me like it's fairly prescriptive, though, when you  
4 tell them exactly how you want the format. I think if you  
5 get the information and data, you know, the onus ought to be  
6 on you to put it in the proper format, for example.

7 Having said those things, though, how do you  
8 counter the argument now, and I suspect if it has not been  
9 brought up it certainly will be. But, you know, you can't  
10 get the information you want now without purchasing it, so  
11 what you're going to do is have a rulemaking and force these  
12 guys to do it. Now, that's -- from some perspective that's  
13 a very logical question.

14 MR. ROLES: I think the question is one of making  
15 sure you get complete data and if there is a continuity.

16 DR. CARTER: Well, they could argue, though, that  
17 you want to get free data. You're the ones that want it,  
18 not them. And all these glorious reasons you've listed for  
19 having it are NRC reasons primarily.

20 MR. ROLES: Well, we believe that we have a need  
21 for the information.

22 MR. VOILAND: Then put the system in place, if you  
23 have the need. I guess my reaction is this in terms of the  
24 cost, when you go back to the user or the utility, the rate  
25 payers are paying for that. If you put the system together

1 it comes out of the tenth of a percent per kilowatt hour out  
2 of the waste plant.

3 DR. CARTER: Not in low-level waste. That would  
4 be a no, no.

5 MR. VOILAND: It seems like a good idea.

6 DR. STEINDLER: It comes out of the 15 cents a  
7 kilowatt hour or whatever.

8 MR. VOILAND: I can see a situation where if you  
9 got the paper information in the appropriate fashion, a  
10 uniform manifest or something of that sort, that the  
11 sophisticated optical character readers could put that into  
12 your computer pretty fast. Maybe I'm wrong about that. But  
13 that technology is getting pretty good. And I'm not sure it  
14 requires a lot --

15 MR. ROLES: It's not quite there yet, because we  
16 have tried it. And the problem is, apparently, there's  
17 vertical lines that totally screws the system up.

18 MR. VOILAND: That's what I said, I think you  
19 maybe have to ask their computers to put it out in the right  
20 way.

21 MR. ROLES: There are a few other problems, too,  
22 but, yes, we have tried that.

23 DR. STEINDLER: What is your current view about  
24 the advisability of having NRC require a specific format;  
25 are you planning on it? Are you thinking about it? Have

1 you decided it's too much trouble?

2 MR. ROLES: We are considering it. The problem is  
3 that it would take a great -- we believe it will take  
4 considerable additional time and resources to do it. You  
5 would have to have a joint --

6 DR. STEINDLER: It also has a certain level of  
7 uncertainty associated with it since you could be reasonably  
8 assured that within a few years you will recognize that the  
9 format you designed in '89 just doesn't quite do the job,  
10 either because the wastes are changing or because the regs  
11 are changing or because something else has changed.

12 MR. ROLES: That's a concern.

13 DR. STEINDLER: And then to go back and reformat  
14 or make it a line saying, we can handle everything from 1989  
15 to '93 and after that all hell breaks loose is not such a  
16 good idea.

17 MR. ROLES: That's another concern and that's one  
18 reason why we -- at this time we are not addressing the  
19 uniform manifest, although we are keeping it open. As I  
20 said, it may be something that could be done on the follow-  
21 on basis.

22 DR. STEINDLER: Let me just make one other comment  
23 and that is, I think the issue of whether or not you have a  
24 uniform manifest is patently trivial, in my judgment,  
25 because the solutions are electro-mechanical and can be done

1 without the intervention of a bunch of error prone people.

2 What is not obviously, however, is that you have  
3 identified the type of information, the breadth of the type  
4 of information that you ought to have extracted out of the  
5 waste generators and the details of that as it might relate  
6 to trying to predict where wastes are going, how fast  
7 they're likely to get there, and what remediation is  
8 possible in the event you run into trouble. That's the  
9 place, it seems to me, you need a great deal more thought.

10 I've looked at that form and, you know, those  
11 forms on the surface look pretty good except that they have  
12 like every other form, almost of necessity has, it has an  
13 "other" category in the area for the sorbants or the  
14 solidification media or the stability media.

15 Now, there are always the 96s and 97s and -- yes,  
16 96s and 7s in their code number which say, other sorbants;  
17 and then you hope like the dickens that this new invention  
18 or wrinkle which is an improvement, according to some,  
19 doesn't sometime down the line give you difficulty. That's  
20 the area that you really got to be careful of.

21 DR. CARTER: The other category, Martin, is the  
22 one that you check, yes, on each of these forms.

23 DR. STEINDLER: Yes, you're right.

24 So I think in that sense, information extraction  
25 in the year 1994 ought to be the target of your thinking as

1 you begin to require some changes in these manifest.

2 MR. ROLES: That has been more our principal  
3 thrust is, what technical information do we need and in what  
4 detail; that's perhaps one of the biggest problems or  
5 technical difficulties with the rule -- with doing the rule.

6 DR. MOELLER: Any other questions or comments?

7 (No response)

8 DR. MOELLER: Well, Mike, what do you need?

9 MR. BELL: Yes, I was waiting to get to that.

10 Well, our principal purpose in coming down today  
11 was information transfer, to let you know what the staff was  
12 thinking.

13 I guess the first feedback I would like from you  
14 is, is this close at all to what you had in mind when you  
15 were talking about it to the State of South Carolina and the  
16 Commission or is your first reaction to all this, you know,  
17 the staff has taken what was a really sound idea and run  
18 them up with it and they're coming back with a two-hump  
19 camel.

20 Then beyond that, as I mentioned, our schedule is:  
21 we've got a branch technical position that's undergoing  
22 internal review within the NRC staff now, that we would then  
23 plan to share with the states.

24 Is there any interest in the committee in looking  
25 at that or, you know, it's possible that your reaction is,

1 well, these aren't really significant health and safety  
2 questions, we don't want to look at it in detail.

3 DR. MOELLER: Well, you would be sending it out to  
4 the states for feedback.

5 MR. BELL: Right. I can send it for you to look  
6 at and you may decide, we have other more important --

7 DR. MOELLER: Well, what we could do though, too,  
8 we could -- and these aren't the right words -- not that we  
9 could have you do it, you could go ahead and send it to the  
10 states, get back their responses and then share with us what  
11 they had to say about it. I think that would be of interest  
12 to us.

13 And if there were some -- as a result of that  
14 feedback -- some controversial areas that we could help you  
15 reach conclusions on, that's our job and that's what we  
16 ought to do.

17 MR. BELL: That be a more efficient use of your  
18 time than reviewing and giving us detailed comments.

19 DR. CARTER: What about sending such a document  
20 not only to states, but perhaps to site operators, the  
21 Compacts, brokers, and these sorts of people. The ones that  
22 have got a legitimate interest in the technology.

23 DR. STEINDLER: Yes, I think I would -- I have  
24 assumed -- Mike says they're sending it out, I assume that  
25 that's the community that they're going to send to.



1 DR. MOELLER: And I assume it would formally go to  
2 the Conference of State Radiation Control Program Directors  
3 and this -- what did they call it, the Low-Level Waste  
4 Forum; sure, and it would go to all of those.

5 Well, then if we agree on that approach, and if we  
6 have any strong statements about what we've heard today, you  
7 know, I think we have made our thoughts known. We've shared  
8 thoughts with you.

9 DR. STEINDLER: Let me just make one comment.

10 The original impetus for the discussion at all, if  
11 you remember, it was raised by incidents that came to  
12 everybody's attention based on the instability of low-level  
13 waste forms and the consequences of that and extended, in a  
14 sense, the compressibility of HICs, but underneath that  
15 whole thing was the issue of, how does the Commission find  
16 out about the problems out there in the field, you know,  
17 other than the fact that there are leakers on occasion which  
18 the disposal facilities catch on their own or have liquid  
19 waste -- free liquid in the containers.

20 There was no -- we were concerned that there was  
21 no feedback on both process upsets as well as inadequate  
22 products.

23 You cannot readily do anything about process  
24 upsets; we've discussed that from time to time and Gene and  
25 I talked to some folks at Commonwealth Edison on that. And

1 that may yet come to another discussions. But you have  
2 apparently begun to look at the question of, the quality of  
3 the product, indirectly to be sure, but at least you've  
4 identified the relationship -- the potential relationship  
5 between a poor product which the disposal operator will  
6 identify and the processes that went into making that  
7 product which you can get out of the manifest.

8 That connection needs to be tight and I think you  
9 have a good shot at being able to make it tight by improving  
10 the kind of information you want on a manifest.

11 That has in the long haul health and safety  
12 implications. And so, you know, we're obviously interested.

13 My view is, for the moment you have gone about as  
14 far as the manifest process will allow you to go. And I  
15 think it's in the right direction.

16 DR. MOELLER: That's an excellent thought, Marty.  
17 And, of course, though I think we need to remember, too, and  
18 I think this is what Mike was saying, one of the original  
19 stimuli for the whole idea was our meetings last summer in  
20 which we learned not only were the mishaps -- that there was  
21 no formal mechanism for reporting mishaps or any requirement  
22 for reporting mishaps. But also, we learned that no one  
23 really knew how much waste was going where, of what type,  
24 and from what generators.

25 And so it's going to help us with both of those

1 things.

2 So I guess the message the committee is saying is,  
3 move along as you are; distribute it; get feedback; and  
4 share the feedback with us and we'll meet with you.

5 What roughly now, time schedule, are we talking  
6 about?

7 MR. BELL: I'd like to hit the window where --  
8 after we get the feedback from the states but before we go  
9 out with the proposed rule, we could say, you know, here's  
10 what the reaction was to our manifest and based on that here  
11 is how we --

12 DR. MOELLER: Well, is that six, nine months; when  
13 is that?

14 MR. BELL: It's about six months.

15 DR. MOELLER: Six months, okay.

16 DR. HINZE: Dr. Moeller, just a very brief comment  
17 regarding this format problem. All of the interchange of  
18 scientific and technical information has this problem, but  
19 the experience has shown that if you get a group together  
20 that is really concerned with that data and the use of that  
21 data that you can develop an exchange format, which makes  
22 everyone's life a lot easier. And you don't have to worry  
23 about the internal formats then. There's a great deal of  
24 experience with this and I presume that the staff is looking  
25 to others with that experience.

1 DR. CARTER: Well, I think we need to keep in  
2 mind, of course, that either the strength or the weakness in  
3 this whole program is going to be on the waste generators  
4 and the brokers. These are the people that put down the  
5 information on the format, and if they do a good job you've  
6 got good information, if they do a poor job you get bad  
7 information. And we're really not talking about checking  
8 that process.

9 DR. MOELLER: Okay.

10 With that then we will thank the staff, Gary Roles  
11 and Mike Bell for meeting with us. And we will recess for  
12 lunch and we'll resume at 2 o'clock.

13 (Whereupon, at 12:50 p.m. the meeting was  
14 adjourned.)

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This is to certify that the attached proceedings before the United States Nuclear Regulatory Commission in the matter of:

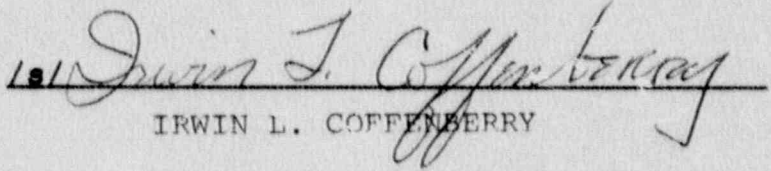
Name: 14th ACNW

Docket Number:

Place: Bethesda, Md.

Date: 10-12-85

were held as herein appears, and that this is the original transcript thereof for the file of the United States Nuclear Regulatory Commission taken stenographically by me and, 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 proceedings.

  
IRWIN L. COFFENBERRY

(Signature typed):

Official Reporter  
Heritage Reporting Corporation

14TH ACNW

SECOND DAY

INTRODUCTORY STATEMENT BY ACNW CHAIRMAN  
13TH MEETING OF THE ADVISORY COMMITTEE ON NUCLEAR WASTE  
OCTOBER 11-13, 1989

THE MEETING WILL NOW COME TO ORDER. THIS IS THE SECOND DAY OF THE 14TH MEETING OF THE ADVISORY COMMITTEE ON NUCLEAR WASTE. DURING TODAY'S MEETING THE COMMITTEE WILL DISCUSS:

1. THE PROPOSED RULE ON ANTICIPATED AND UNANTICIPATED PROCESSES AND EVENTS.
2. LLW MANIFEST PROPOSED RULE

THERE WILL BE A GENERAL ADMINISTRATIVE SESSION WHICH WILL INCLUDE CONSIDERATION AND PREPARATION OF DRAFT LETTERS.

THIS MEETING IS BEING CONDUCTED IN ACCORDANCE WITH THE PROVISIONS OF THE FEDERAL ADVISORY COMMITTEE ACT.

RICHARD MAJOR IS THE DESIGNATED FEDERAL OFFICIAL FOR THE INITIAL PORTION OF THE MEETING.

WE HAVE RECEIVED NO WRITTEN STATEMENTS OR REQUESTS TO MAKE ORAL STATEMENTS FROM MEMBERS OF THE PUBLIC REGARDING TODAY'S SESSIONS.

A TRANSCRIPT OF PORTIONS OF THE MEETING WILL BE KEPT, AND IT IS REQUESTED THAT EACH SPEAKER USE ONE OF THE MICROPHONES, IDENTIFY HIMSELF OR HERSELF, AND SPEAK WITH SUFFICIENT CLARITY AND VOLUME SO THAT HE OR SHE CAN BE READILY HEARD.

WE WILL NOW BEGIN WITH THE FIRST ITEM ON TODAY'S AGENDA,

TECHNICAL POSITION AND RULEMAKING ON LOW-LEVEL WASTE

SHIPMENT MANIFEST INFORMATION AND REPORTING

A BRIEFING TO:

ADVISORY COMMITTEE ON NUCLEAR WASTE

ON

OCTOBER 12, 1989

BY

G.W. ROLES

REGULATORY BRANCH

DIVISION OF LOW-LEVEL WASTE MANAGEMENT AND DECOMMISSIONING

OFFICE OF NUCLEAR MATERIAL SAFETY AND SAFEGUARDS

BRIEFING TOPICS

BACKGROUND

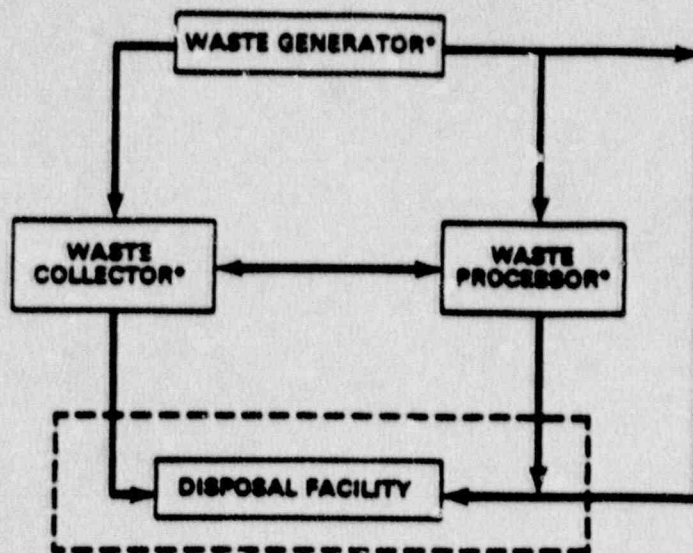
NEED

EXISTING SITUATION

STAFF ACTIONS

PRINCIPAL ISSUES



BACKGROUNDSEVERAL PARTIES INVOLVED

30 WASTE COLLECTORS (BROKERS)

4 LARGE WASTE PROCESSORS

3 EXISTING DISPOSAL FACILITIES AND 2 OPERATORS

9 COMPACTS AND 9 UNAFFILIATED STATES

ALL LLW SHIPMENTS ARE ACCOMPANIED BY SHIPMENT MANIFESTS

SHIPMENT MANIFESTS ARE NUMEROUS AND VERY DETAILED

(3700 SHIPMENTS IN 1987 - SEE ATTACHED MANIFEST)

3

NEED

COMPUTER SYSTEM AT EACH DISPOSAL FACILITY TO  
STORE AND PROCESS MANIFEST DATA

NATIONAL COMPUTER SYSTEM CONTAINING MANIFEST  
DATA FROM ALL DISPOSAL FACILITIES

NEED FOR SYSTEM AT A DISPOSAL FACILITY

WASTE SHIPMENT INSPECTION AND VERIFICATION (61.12 (J))

ASSESSMENTS FOR LICENSE RENEWAL AND CLOSURE (61.27)

TRACK DISPOSED RADIONUCLIDE INVENTORIES (61.7)

COMPLY WITH REPORTING REQUIREMENTS (61.80)

HELP ASSESS SIGNIFICANCE OF PROBLEMS

NEED FOR NATIONAL SYSTEM

NRC'S NATIONAL REGULATORY OVERSIGHT RESPONSIBILITY

ACCOUNTABILITY OF RADIOACTIVE MATERIAL

HELP NRC LICENSE NEW DISPOSAL FACILITIES

HELP NRC INSPECT WASTE GENERATORS

HELP NRC ASSESS SIGNIFICANCE OF PROBLEMS

PERFORM VARIOUS TECHNICAL STUDIES AND ANALYSES

EXISTING SITUATION

NO PART 61 REQUIREMENT FOR A COMPUTER SYSTEM AT A DISPOSAL FACILITY;

THEREFORE, EXISTING SYSTEMS ARE OF UNEVEN CAPABILITY

NO PART 61 REQUIREMENT TO REPORT MANIFEST DATA IN AN ELECTRONIC FORMAT

CURRENT DISPOSAL FACILITIES ARE LOCATED IN AGREEMENT STATES

PART 20 MANIFEST REGULATIONS DON'T GIVE CLEAR GUIDANCE ABOUT

THE INFORMATION TO BE INCLUDED IN MANIFESTS

PART 20 AND THE AMENDMENTS ACT IMPOSE DIFFERENT REQUIREMENTS

EXISTING SITUATION (CONTINUED)NRC HAS LIMITED DATA CAPABILITY

NRC HAS ACCESS TO EXISTING, BUT LIMITED, DOE NATIONAL LLW DATA  
SYSTEM BASED ON DATA BOUGHT FROM DISPOSAL FACILITY OPERATORS

NRC BUYS MICROFICHE COPIES OF MANIFEST INFORMATION FROM OPERATORS

NRC BUYS LIMITED LLW SUMMARY INFORMATION FROM OPERATORS

THRU UDI, NRC BUYS LIMITED ACCESS TO U.S. ECOLOGY COMPUTER SYSTEM

A DETAILED KNOWLEDGE OF THE PHYSICAL, CHEMICAL, AND RADIOLOGICAL  
CHARACTERISTICS OF LLW WOULD REQUIRE LARGE RESOURCE EXPENDITURES

STAFF ACTIONS

A RULEMAKING TO:

AMEND AND CLARIFY PART 20

REQUIRE COMPUTER SYSTEMS AT PART 61 DISPOSAL FACILITIES TO STORE

AND PROCESS MANIFEST INFORMATION

REQUIRE THAT DISPOSAL FACILITY OPERATORS REPORT MANIFEST INFORMATION

IN AN ELECTRONIC FORMAT

MAKE DRAFT TECHNICAL POSITION AVAILABLE

IN ADVANCE OF COMPLETION OF THE RULEMAKING

PRINCIPAL ISSUES

DATA SYSTEM MANAGEMENT

TECHNICAL - E.G., HOW TO GET THE MAXIMUM INFORMATION  
ON THE MINIMUM MANIFEST SPACE

COMPATIBILITY OF AGREEMENT STATE REGULATIONS

REPORT MANIFEST INFORMATION IN AN ELECTRONIC OR PAPER FORMAT?

UNIFORM LLW MANIFEST

EXTEND COMPUTER SYSTEM AND REPORTING REQUIREMENTS TO  
LLW STORAGE FACILITIES OPERATED BY COMPACTS UNDER THE AMENDMENTS ACT?

APPLICATION OF RULEMAKING TO EXISTING DISPOSAL FACILITIES





