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MAY 22, 1997

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2	NUCLEAR REGULATORY COMMISS	ION
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4	92nd MEETING	
5	ADVISORY COMMITTEE ON NUCLEAR WA	STE (ACNW)
6	+ + + + +	
7	THURSDAY	
8	MAY 22, 1997	
9	+ + + + +	
10	ROCKVILLE, MARYLAND	
11		
12	The Advisory Committee met at	the Nuclear
13	Regulatory Commission, Two White Flint No	orth, Room T2B3,
1.4	11545 Rockville Pike, at 8:30 a.m., Paul	W. Pomeroy,
15	Chairman, presiding.	
16		
17	COMMITTEE MEMBERS:	
18	PAUL W. POMEROY	CHAIRMAN
19	B. JOHN GARRICK	VICE CHAIRMAN
20	WILLIAM J. HINZE	MEMBER
21	GEORGE M. HORNBERGER	MEMBER
22		
23		
24		
25		
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	ACNW STAFF PRESENT:		
2	JOHN T. LARKINS	Exec.	Director
3	MICHELE KELTON	Tech.	Secretary
4	RICHARD K. MAJOR		
5	HOWARD J. LARSON		
б	LYNN DEERING		
7	ANDREW C. CAMPBELL		
8	RICHARD P. SAVIO		
9	CAROL A. HARRIS		
10	SAM DURAISWAMY		
11	THERON BROWN		
12	ACNW CONSULTANT PRESENT:		
13	MARTIN J. STEINDLER		
14	ALSO PRESENT:		
15	CHRIS KOUTZ		
16	DAN KANE		
17	B' J EBLE		
18	JUSAN SHANKMAN		
19	MICHAEL RADDATZ		
20	CHARLIE HAUGHNEY		
21	MARGARET FEDERLINE		
22	JOHN GREEVES		
23	KING STABLEIN		
24	MIKE BELL		
25	JOHN AUSTIN		
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P-R-O-C-E-E-D-I-N-G-S

(8:41 a.m.)

299

3 CHAIRMAN POMEROY: The meeting will now come 4 to order. This is the third day of the 92nd meeting of 5 the Advisory Committee on Nuclear Waste.

6 Today the committee will first discuss DOE's 7 non-site-specific Topical Safety Analysis Report for a 8 Central Interim Storage Facility; secondly, discuss NRC's 9 licensing process for centralized interim storage; third, 10 discuss current events with the NRC's Director of the 11 Division of Waste Management, and as time permits, prepare 12 ACNW reports.

Mr. Howard Larson -- who is here someplace -is the designated Federal Official for today's meeting. This meeting is being conducted in accordance with the provisions of the Federal Advisory Committee Act.

We have received no written statements from members of the public regarding today's session. Should anyone wish to address the committee, please make your wishes known to one of the committee staff.

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.

25

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At the expense of keeping you, the first

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speaker's waiting for just a moment. I would like to make two statements. The first is that this -- we are in the process of continuing to develop a replacement for myself and -- this is just addressed particularly to the committee.

We plan to submit a list that we previously prioritized, to the Commission as soon as our third member, replacement for Bill, is finalized. Unless somebody has some objection to that procedure we will continue with that as expeditiously as possible.

The second thing I would like to do is say that this is the last day of the last meeting at which I will have the privilege of serving as Chairman, and I want to take one minute at least, to say thank you, in the first instance to all the staff here.

Whatever we have been able to accomplish in the past two years during my regime, in contrast to Marty, is largely due to the help, assistance, and cooperation of the four people that are on my far right, and it's been a privilege and an honor to work with you, and I deeply appreciate what you've done and I look forward to, at least maintaining this relationship as we proceed into the future.

Equally so, I would like to say the same things to the members of the committee. Whatever we've

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25	forward. Maybe it hasn't been a great deal of distance,	
24	I really believe that we moved the ball	
23	to do.	
22	for the cooperation and the good work that we've been able	
21	thank the staff and my colleagues and my past colleagues,	
20	the committee, and I want to be brief but I do want to	
19	get together, but this is my last meeting as a member of	
18	too, Paul. I don't want to make this a mutual admiration	
17	MEMBER HINZE: Well, I will try to be brief	
16	Bill has a word.	
15	you. So I'd like to thank you very much for that.	
14	it has been both an honor and a privilege to serve with	
13	strong collegiality and personal friendships, and again,	
12	disagreeing sharply and nonetheless, maintaining its	
11	This committee has developed the capability of	
10	want to include Marty, especially, and Dade in this.	
9	present committee and the previous committee, because I	
8	exemplified here. We have the ability somehow, we the	
7	degree of professionalism and collegiality that is	
.6	government that I've ever served on that has the same	
5	I think this is probably the only committee in	
4	worked in a manner that's truly exemplary and unique.	
3	accomplished much of this without you. Everyone has	
2	of your efforts as well. And I could not obviously have	
1	been able to accomplish is to a great extent, the result	
		l

1 but we have moved it forward.

But also, I want to take this opportunity to say something to you, Paul. This is, as you say, your last meeting as Chair of this committee because your limits of terms of office have been completed. Speaking for myself, and I think and hope that I speak for the staff and the committee, in praise of your superb leadership that you have provided to us over the past two years.

You have had an intuitive feel about what is important to the Commission and to moving this committee along towards the completion of what we hope is useful advice to the Commission. Further, for your expertise in seismology, tectonics, expert elicitation, funds assessments, and the whole regulatory arena have served the Commission and this committee very well.

You, too, have -- probably more than any other person -- is responsible, you are responsible for the ACNW being here. At some of its more difficult times you were the person that struck boldly and with assurance, that you were doing the right thing, and have made this committee an important part of the NRC.

As you say, we don't always agree, but I always knew that you had the best interests of the nation and the NRC at heart. With that, I would like to thank

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1 you and I'd like to have the rest of you join me in praise 2 of Paul.

VICE CHAIRMAN GARRICK: As the incoming Chairman, I'd like to at least make a comment or two. One of the things that I'm always struck by is that how can the new Chairman be as good as the preceding Chairman, and so far at least, that has been a remarkable trend. That this committee has been blessed with some enormously capable and able leaders, and Paul fits that trend and position in an exemplary fashion as pointed out by Bill.

All that may change now, but I do want to go on record as acknowledging Paul's contribution and thanking him for the training he has provided me, and just hoping that enough of it has rubbed off that the change between his leadership and my leadership is not such a drastic drop. We'll miss you, Bill -- miss you Paul.

17 CHAIRMAN POMEROY: We'll miss Bill and Paul, I 18 hope. Thank you, John.

Let's then proceed to the first item on the agenda this morning, namely, a presentation on DOE's nonsite-specific Topical Safety Analysis Report for a central interim storage facility. I'm the lead member for that. The discussion will be by two members of the DOE staff. I don't know which one of you plans to talk first. But in any case, perhaps you can introduce yourselves and start

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1 off.

But let me say first, that we greatly appreciate your coming and taking the time to share this with us.

MR. KOUTZ: Well, we appreciate the opportunity to present our activities to the committee. My name is Chris Koutz. I'm Director of the Storage and Engineering Technology Division, the Office of Civilian Radioactive Waste Management.

What we hope to accomplish here today is to give you a policy overview and also a technical overview of our activities in relation to the Topical Safety Analysis Report on the centralized interim storage facility that we submitted to the Commission staff for review on May 1st.

If we can have the first slide? I'll be giving some introductory remarks and then my Licensing Team leader, Dan Kane, will provide a technical overview.

I'd like to talk for a moment about why the Department of Energy undertook this activity. As you are probably aware, there have been, over the past two years, proposed legislation that has been working its way through the Congress that is -- but not agreed with by the Administration.

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Nonetheless, the Department has received
 policy guidance from the Administration that we can
 undertake certain activities to deal with the eventuality
 or the potential eventuality, if you will, of interim
 storage.

Just to review the bidding on the present state of the legislation, S104 which is the Senate bill, was passed by the Senate earlier this year. There is a bill now -- I believe it's HR1270 -- the House has already had hearings, the subcommittee on Energy and Power has held hearings on that bill.

There's legislative action ongoing in the House to take that potentially to a vote sometime later this year, which would cause a Conference Committee and potentially a bill to be acted on by the President.

I should mention that the Administration has indicated on numerous indications in the past that they would veto such a bill as the bills are presently constituted now. Nonetheless, we do feel that there is a useful activity to be done to design a non-site-specific facility that could facilitate the licensing of a facility should a site be designated. The centralized interim storage facility, TSAR -- Topical Safety Analysis Report -- are two of these activities.

The technical objectives behind us submitting

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these documents to the NRC staff are basically to
facilitate timely design and licensing once a site is
designated. We hope to move design efforts off the
critical path toward a license application development.
We hope to also expedite the staff review of such a
license application if we are given a site.

7 It allows us to identify and resolve the major 8 design and regulatory issues. It gives us an opportunity 9 to develop our design and operating plans that can be used 10 in a license application. And also very importantly, it 11 provides our cask vendors, or the cask vendors and storage 12 cask vendors out there, with an opportunity to modify 13 their designs to deal with the requirements of our 14 facility.

Over the history of this effort, we started it early last year. We submitted a letter to the NRC staff indicating that we had intent. This letter was dated June 4th, 1996, indicating that we would be submitting the Topical Safety Analysis Report on the interim storage facility on May 1st of this year.

We held four pre-submittal consultations with the staff. We felt that these meetings were very productive. They helped focus us on the major issues associated with the design, and I believe we have very good interaction with the staff. We made some substantial

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changes to the design which we hope will expedite the
 licensing path, and we certainly appreciate the
 involvement of the staff in those meetings.

They started back in August of last year where we began talking about the approach that we were taking and talking about our generic environmental parameters. I should mention -- and Dan might get into it -- Dan Kane of my staff will be getting into this in a little bit more detail -- but this facility can be sited virtually anywhere in the United States. The generic site parameters are very robust.

There are some areas that we could not deal with, such as very, very high snow and ice loadings, which again, the facility could be modified to deal with. That takes out some of the Rocky Mountain range, if you will, if you wanted to site the facility there. Also the coastal plains of the United States where you could have a great deal of flooding. We have not intended to design this facility to deal with those.

But besides those outlying areas, if you will, this facility could be sited almost anywhere in the United States.

23 CHAIRMAN POMEROY: Chris, could I just ask 24 you? This would be licensed under Part 72 --25 MR. KOUTZ: That is correct.

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1	CHAIRMAN POMEROY: for NRC. Do any of the
2	siting criteria such as those in Appendix A, which I
3	understand is attached to Part 72 Appendix A, Part 100,
4	is the siting regulation that is cited in Part 72 did
5	any of the volcanic requirements cause you any difficulty
6	or did you have anybody look at that?
7	MR. KOUTZ: I don't think they would. Again,
8	that's a site-specific issue
9	CHAIRMAN POMEROY: Right.
10	MR. KOUTZ: but we did not design the
11	facility to deal with volcanic eruptions, obviously, but
12	hopefully we would not receive the site where that would
13	be an issue.
14	CHAIRMAN POMEROY: Chris, one of the places
15	that's certainly discussed in rumors is the Nevada Test
16	Site.
17	MR. KOUTZ: Well, both the bills identify Area
18	25 of the Nevada Test Site; it's the site designation.
19	However, we don't feel that that's a major problem, if
20	indeed, the site was designated to be there.
21	CHAIRMAN POMEROY: Okay.
22	MR. KOUTZ: Moving on to our November meeting,
23	we talked about our design approach, our design basis
24	events and some of our nuclear analyses. In February, I
25	think was a very important meeting to us. It talked about
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1 the recovery from design basis events.

We got a very strong message from the staff about their views on our ability to recover from various events, and it was basically at that meeting that we decided we would also add some additional capability at the facility; have some bare fuel handling to deal with an off-normal event. And that's why the dry transfer system is now referenced in the TSAR as being also an additional facility we would have operational at the time of initial waste receipt.

The last meeting we held basically reviewed the overall content of the TSAR. You can see it was two days before submittal, and we went over what we were recommending to the staff to consider for what they might find in some evaluation findings. And again, the TSAR was submitting on May 1st of this year.

17 That was briefly what I had intended on 18 covering. I'll be happy to answer any questions or any 19 policy questions. Of course, I will be available for 20 subsequent discussion. And if there are no questions I'd 21 like to introduce my Licensing Team leader, Dan Kane, who 22 will go over some of the technical aspects of the 23 facility.

24 CHAIRMAN POMEROY: Questions? I think maybe 25 we'll hold them. I presume that Dan may talk some more

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1	about some of the cask issues, for example
2	MR. KOUTZ: Sure.
3	CHAIRMAN POMEROY: and at that point
4	perhaps we'll we'll almost certainly develop more
5	questions there, and perhaps there will be further
6	questions with regard to this later. Thank you very much.
7	MR. KANE: Good morning, Mr. Chairman, and
8	good luck in your future endeavors, wherever they take
9	you.
10	CHAIRMAN POMEROY: Thank you.
11	MR. KANE: Howard and distinguished members,
12	as well as guests and NRC staff, thank you very much for
13	the opportunity to come in here this morning and share
14	with you what we feel is a very exciting and dynamic
15	project that we want to move ahead with.
16	I'd like to just expand a moment on what Chris
17	was talking about in his opening remarks. He talked about
18	some of the prospective legislation that's been out there,
19	and if you've looked at some of it you'll see there are
20	some things that maybe some of us with a little of
21	experience wouldn't have written it quite that way.
22	For example, one of the former bills said
23	and I think 1270 still does it says that after a site
24	is identified, within a year DOE will submit a license
25	application and start construction of that facility.
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1 That's clearly outside 72.40(b), so we're going to get in 2 trouble right off the start.

The other thing it tells the NRC to do is to conform its regulations to the law. That's a 2-year process but it's on a fast-track. So what we would have is, we would be coming in with a license application in an uncertain regulatory framework -- and this would be an invitation to the lawyers of America to come in and see if they couldn't sue us both and stop the process.

10 So one of the things we decided would probably 11 be fairly prudent would be to come up with a non-site-12 specific design of the facility and present that to the 13 NRC staff for their review and evaluation. We know, among 14 other things, that that will save us time when it comes 15 time to prepare the license application.

And we hope that in some way it will possibly save some NRC resources as well. So that's some of the genesis as to why we did what it is that we did.

First of all, we developed the program under an approved QA program -- we developed the design under an approved QA program. The facility is based on the expectation that NRC dual-purpose technologies will be available in the future. Now, that warrants a little bit of discussion here.

Right now, we're fully aware of the fact that

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there are no licensed dual-purpose systems, but we think at the time, when we start operating this facility -- if and when we do get a site and submit a license application and complete the process -- we think by that time there will be dual-purpose systems that have already at that time, been approved by the NRC. And those are the systems that we're going to rely on.

8 Now, those can come about in several ways. I 9 assume that most of you are somewhat familiar with our RSA 10 program. This program says that we are going to allow 11 vendors of these various canister and cask systems, to go 12 out to utilities, develop contracts for pick up of that 13 fuel and deliver it to our facility. So that means that 14 we don't really have that much control on what casks are 15 used, or how many of a certain cask are used.

So that means that I'm going to have to design 16 my facility to accept all of those different systems that 17 want to come in. Now, by putting out this Topical Safety Analysis Report, our belief is that some of the vendors 19 will look at the non-site-specific environmental and 20 design parameters that we've got on the TSAR, they will 21 look at their present systems which are not dual-purpose, 22 and they will probably want to modify those designs and come into the NRC and see if they can get them approved. 24 Some vendors may do that early on, some may 25

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1 wait until after a site has been identified. Because after a site has been identified, the .75g we assume for 2 our non-site-specific site, may or may not be realistic. If a vendor comes in now he would probably be seeking .75. 4 If he waits until after a site is identified and that 6 turns out to be a .45 site, he may want to do it then. 7 But the bottom line is when we come in with a license application, either the vendors or we will be licensing those casks and getting them approved for that specific site, or for the bounding environmental parameters, whichever is the greater. 12 CHAIRMAN POMEROY: Are you going to clarify someplace --14 MR. KANE: Sir? CHAIRMAN POMEROY: At some point in there will you clarify the question of where NRC starts to fall on 17 the critical path? Because it seems to me there are a few 18 places in there that it could fall on the critical path for this whole --MR. KANE: Yes sir. And I think Mike Raddatz 21 of the NRC staff will be addressing that --CHAIRMAN POMEROY: Mike's going to do that 23 too, okay. 24 MR. KANE: - point also. We have what has been dubbed a "clean" facility, in that at least in this NEAL R. GROSS COURT REPORTERS AND TRANSCRIBERS

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phase of the facility we're only accepting canister fuel; fuel that's in NRC-approved cask or canister systems. So we're not going to have routine bare fuel handling. As Chris said, we did make a commitment to 4 have onsite, and up at Operations at the time of the Phase I startup, a drive transfer system. The reason we want to do that is to enhance the NRC's confidence that we can recover. We have developed in the TSAR, methods of 9 recovery from any event that comes up. However, once you add to that the additional layer of the drive transfer system, you certainly have enhanced confidence, because at that point you can take --13 instead of switching the canister to another storage or transport cask, you can take the individual fuel 14 15 assemblies and put them wherever you have to. But that will not be on a routine basis as far 17 as we know. We have an non-site-specific design that uses conservative, environmental, and design factors. Now, I 19 think we're very fortunate with the spent fuel project team because they have a lot of experience in this area. 21 I know when we first started discussing this project with then Director, George Travers -- not George Travers, Bill Travers -- and Deputy Director, Charlie Haughney, they were enthusiastic about the project, as 24 were we, and they said, well one of the things you've got 25

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1 to do is, you've got to make sure that these environmental 2 bounds that you pick are really going to be significant. 3 The other thing they stressed, I think it was 4 Dr. Travers stressed, to make sure that we got the 5 submittal in on time. And as Chris said, we did get it in 6 on time.

7 So we went out and tried to develop, by 8 looking at various standards, an ASHRE Handbook, NOAA 9 Report 52, Reg. Guide 176 for tornados and so forth, Reg. 10 Guide 160 for our seismic. We tried to come up with some 11 very significant environmental parameters that we have 12 great confidence as Chris said, will not find -- when the 13 site is identified -- that those values exceed the 14 parameters we used in the TSAR.

Now, when one comes in with a license near thing. You have the site, you have the facility design, you have the cask that you know you're going to use, and you have your operating procedures.

Now, in this area we're short on a couple of those things, but we didn't want to let that stand in the way of making some significant progress that we feel is going to help our house as well as NRC.

24 So what we had to do, as I mentioned, we 25 assumed environmental parameters, very conservative ones.

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Another thing we had to do was assume what kind of cask
 might be out there in the future that have been approved
 by the NRC as dual-purpose, or would be developed by us as
 dual-purpose if the vendors fail.

5 So we looked at the existing systems, and 6 these are the six that we came up with. And we find that 7 the Westinghouse tends to be pretty much -- the large one 8 -- tends to be pretty much the bounding, physical aspects 9 of any cask.

Another thing we'll do is, since we don't want to reinvent the wheel -- and the NRC staff I'm sure doesn't want to reinvent the wheel any more than they have to -- is we will rely on the vendor-supplied equipment which interfaces with the cask and with our facility.

We also have enough flexibility in our design, we believe, that we can accommodate future needs, future cask designs that may come up. In other words, we didn't go to the exact limit of any physical parameter on a specific cask and say that's the cutoff point. We went somewhat beyond that.

The TSAR of course, imposes additional design criteria on vendors that must be resolved in the CISF license application. And that's what I was saying. If the vendors don't do this before, we do it in the license application. Site-specific design revision or cask vendor

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1 ||re-analysis may be unnecessary.

For example, if somebody doesn't have one that's been evaluated for the seismic criteria, whatever tit may be, then we're going to have to do it.

5 This is an artist's rendering of what the 6 facility looks like. The main building here is the 7 transfer facility. This is of course, storage area on 8 concrete pads. We have three receiving bays. We'll get a 9 little more into some of the interior of what's going on 0 in a moment.

This is a personnel building which is not designed for tornado and earthquake and doesn't need to be. This facility of course, is so designed. This is 18inch thick, reinforced concrete, to withstand the Category 15 1, Reg. Guide 176 tornado, as well as Spectrum 1 of NUREG-0800 tornado missiles.

Here you can see a staging area where we're ready to bring empty storage casks in. The doors are lifted and a rail or heavy haul truck comes in. The processes go on in this building, and after the canister has been transferred, then the cask is moved out by the site transporter and stored out here.

And we have a minimum spacing of 20 feet between each one of those casks. That's based on the SARs of the cask vendor, wherein some cases they had tech spec

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318 limits on the placement of those casks. So when we go 20, 1 we bound them. 2 MEMBER HINZE: Sir, is there any 4 consideration, or has there been any consideration, in placing those in a trench, an open trench? MR. KANE: No sir, not at this point, because we find that we have assumed that we have a large enough site that we really don't need to do that to knock down 8 the direct radiation. 9 10 MEMBER HINZE: There would be other advantages to a trench, I would think, from the standpoint of 11 visibility, from the fence, etc. MR. KANE: I don't know; I think they're 13 beautiful. But you're right, not everybody will 14 necessarily agree with that. CHAIRMAN POMEROY: It's all in the eyes of the beholder. MEMBER HINZE: I think you could develop 18 scenarios that we wouldn't want to think about; that it 19 would be prudent to have them out of sight, out of mind. MR. KANE: Well, one of the problems -- we'll certainly look at that. I don't want to argue that, but just my initial reaction would be that one of the things 24 of course, we have to worry about is flooding, because some of these casks -- the concrete casks have vents on NEAL R. GROSS

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1	the bottom. So if you put this as a trench, you'd have to
2	do an awful lot of grading work.
3	MEMBER HINZE: Good point.
4	MR. KANE: But we'll look at that. We
5	certainly don't want to exclude anything.
6	CHAIRMAN POMEROY: Related question. I'm not
7	aware of what the length of those casks is, but you must
8	have looked at the question of laying them horizontally
9	rather than stacking them vertically as you've done.
10	MR. KANE: Well, we actually get that from the
11	vendors; the vendors come in with the NRC and propose
12	their design. And so some of the casks are for vertical,
13	then you have the NUHOMS, which is horizontal inside a
14	concrete bunker. So we don't want to reinvent that wheel
15	anywhere, either, so we have decided to go with what the
16	NRC has already approved with regard at least, to that
17	aspect.
18	Next slide, please. Okay, this is a layout
19	I'll give you a brief overview of the site. Again, this
20	is non-site-specific. We have about 1500 acres here. A
21	heavy haul truck or rail would come in to the receiving
22	gate here, which is not normally manned and doesn't need
23	to be.
24	It would be processed, connected to the site
25	transporter, de-connected from the offsite transporter.
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It would then come in to the inspection gatehouse which is right here. They will of course, be using the mirrors and so forth, inspecting it.

We will also have an HP man come out with a hand-held device and see whether or not it appears that this cask or the transporter is in any way, contaminated. If it turns out that it's not contaminated it will proceed to the washdown area here, where we have devices that will wash off road dirt from the carrying device; not necessarily the cask, but from the carrying device.

If it turns out that the -- when we do the check here by the HP man that we do have contamination, then we take it directly into the building, the transfer building, to a decontamination booth where we perform decontamination activities.

These are the storage areas. What you see here is, these are vertical casks -- which are concrete and metal -- these are horizontal storage modules, the NUHOMS-type of design. This is the storage area, doublefenced of course. This is the main gatehouse where we receive personnel and deliveries of other than what we receive here.

23 Six is a badging area in side 7, which is a 24 security complex. The transfer building is the little 25 rectangle here. Then the fuel casks are moved outside,

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1	taken over here, and placed accordingly. Now, some casks	
2	will come in, they're direct yard transfers.	
3	So what we'll do is all the same things I	
4	talked about over here, including the HP check, but then	
5	we won't necessarily take them through this building and	
6	out the back door. We may have a transporter pick it up	
7	here and take it directly and place it directly if it's	
8	one of those like a transportable storage cask that	
9	there's no transport for.	
10	VICE CHAIRMAN GARRICK: Dan, this is basically	
11	a material handling facility.	
1.2	MR. KANE: Yes sir.	
13	VICE CHAIRMAN GARRICK: One thing that there's	
14	been a revolution in, in the last decade or so, has been	
15	in the technologies associated with material handling	
16	facilities, particularly in the automation and robotics	
17	area.	
18	Have you been given any specific guidance to	
19	be on the cutting edge of that technology, in the middle	
20	of it, or not even considering it?	
21	MR. KANE: Well, we're I'm going to get to	
22	that in a few moments.	
23	VICE CHAIRMAN GARRICK: Okay.	
24	MR. KANE: We're not on the cutting edge.	
25	Most people think of robotics, they think of something	
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1	they see, you know, on these Saturday afternoon movies or
2	something. If you look and see what's really been done in
3	robotics in the last ten years, it's truly phenomenal, but
4	no longer cutting edge.
5	We plan on using some robots, and I'll get to
- 6	that in a few minutes, but it would be a modified, off-
7	the-shelf-type of design, and we're really talking about
8	something like an arm or a coupled arm.
9	VICE CHAIRMAN GARRICK: Yes, and I'm also
10	thinking though, of the movement of the material. You
11	know, when you talk about trucks and trains you're talking
12	about pretty conventional conveyor systems.
13	MR. KANE: Right.
14	VICE CHAIRMAN GARRICK: I just wondered
15	yes.
16	MR. KANE: No, we have not looked at using the
17	onsite transporter to be fully automated. That we have
18	not looked at because when we did our radiation studies to
19	determine how much time a guy spends there, what his
20	activities are and what his dose would be, it has its own
21	shielding. We have determined that we would not need
22	that. But we do have some robotics, which I'll discuss
23	later, inside the building.
24	Thank you. Next one. Okay, this is a thing
25	of beauty. This is our transfer building over here, this

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1 is our personnel building. This is a relative short 2 building. This building is 250 feet long, 88 foot wide 3 from here to here, except in the receiving area where it's 4 120, and it's 75 foot high.

Now, over in this personnel building we have canteen, we have some radiation protections, some labs, some storerooms. We have a mechanical equipment room in there. We'll have a couple of air compressors and we'll have a couple of receiver tanks and a couple of dryers, because we want instrument-quality air to be used in some of the pneumatic devices we anticipate using out in this area.

Locker rooms and so forth, not particularly interesting. This one's interesting because one of the things we will do for all those concrete casks is, we will use thermocouples or whatever, to monitor the temperature, the delta T, so that we keep an eye on those and we can find out if anything's gore wrong with regard to monitoring that monitor.

Also, the NAC design requires monitoring of the pressure in the inter-lid area. So those things that are out on the site that we saw will be fed in conduit which runs under them, and brought into here so that we can monitor.

25

This is -- the access to getting in this

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building for the most part, is through the personnel building. We have three receiving bays -- two of them 16 foot, one 24 -- and the reason this one is wider than the other two, even though any one of these can receive a truck or a rail delivery, is because as I was saying earlier, what we might want to do is bring that transporter in to pick up a cask that we've already surveyed and found it doesn't have any contamination above the tech spec limits that we set, and then take that straight out to the storage yard. This is a concrete, steel-reinforced building,

12 18 inches thick; roof is a minimum of 14 inches thick.
13 These are tornado missile walls that we have. In this
14 area the cask will be lifted off of its incoming vehicle,
15 set down in this position.

It will be determined whether or not it needs to go into the decontamination booth or not, and if it doesn't it will just be processed. If it does, then we have some robotics use in there of a device that holds a spray wand; devices that can do swipes and so forth.

The tornado missiles, of course, provide protection while the doors -- the six rollup doors here are open. So this wall goes up, I think 28 foot and is high enough to protect against any missile entering. And this area is where we do the transfer for those that

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require transfer. TranStor is a vertical transfer;

2 Westinghouse is a horizontal transfer.

So after the transfer is completed we have 202 225-ton cranes with 25-ton ox hooks on them that we use to accomplish the transfers of the TranStor, and then Westinghouse has its own upender/downender, and it does a 6 horizontal with a hydraulic ram. Then the site transporter would pick up the cask and move it out this 8 door and take it out and put it on the site somewhere. Next slide. With regard to format and 11 content, we started out with Regulatory Guide 3.48 as our F&C guidance. And then about the middle of our effort, I 13 think NRC staff came out with Draft-1567, and they asked us if we would mind being kind of a test case on it. We 14 15 said no, we'd be absolutely delighted. 16 So what we did is, we used the format and content guidance in 1567 as augmented by 3.48, because in some places it completely eliminates 3.48; in other places 18 it augments. So we did follow the format and content

20 guidance of 1567.

As I mentioned a while ago, we're lucky because some of the people in the Spent Fuel Project Office -- I know Bill Kane, the new Director, is one of them -- has experience with this kind of TSAR initiative. I think Mr. Kane was involved, he told me a number of

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years ago when we were going on the Part 50 side, of
 coming in with NSS designs, reactor islands, without
 balance of plant.

And then we were having submitted balance of plant designs without the nuclear island, with the idea that we would one day come in with an application that -select this, select this, put its operating procedure and tech specs on top of it, and that would be a license application.

10 So the TSAR approach that we're using is 11 really nothing that's new. It's familiar to the NRC. 12 What we're seeking is to get the NRC's review and specific 13 approvals for as much of this as we can because later, 14 anything we don't have to revisit I think, is going to 15 save both sides of the house some time, and certainly some 16 confusion, particularly when it comes to the review.

And we feel that the evaluation findings that are presented in the F sections of Draft-1567 -- I hope you're somewhat familiar with that document -- that we think that those are generally applicable to what it is we're doing.

Now in some cases -- I think it wholly is in some cases; obviously they can't do much for some site characteristics -- nearby industrial and military facilities, because we don't know what those are yet.

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We'll have to evaluate those in the specific license application. CHAIRMAN POMEROY: Why are you looking for a chapter-by-chapter approach to that? MR. KANE: Because that is the way safety evaluations are written. CHAIRMAN POMEROY: I know that. MR. KANE: Staff evaluation was also written in a similar way when they did one on the project years 9 ago down at Oak Ridge. A letter that says, we generally 10 11 think that this looks pretty good but we might have some problems later, doesn't really help us a lot. We wanted to go in and look specifically at what we're proposing, and while maybe all the information 14 isn't there -- a good example is the structural analysis in Chapter 7 where we talk about the concrete structure, 16 17 we talk about the steel, we talk about the normal design loads, we talk about the severe environmental and the extreme environmental -- which of course are tornado and 19 seismic. 21 And we say that we have analyzed this thing, the crane rails -- same set of crane rails, two cranes on it, 225-ton capacity -- they're holding what we believe is 24 the heaviest cask we're going to face, which is 195 tons. Now, to do the evaluation of that structural

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analysis, one does not have to know the name of that cask 2 or what type of cask it is. One simply has to, in a safety evaluation or whatever, say that we've analyzed 4 this and put a limit on it which says you can lift no loads greater than 195 tons. Does that make sense? CHAIRMAN POMEROY: Okay. DR. STEINDLER: Excuse me --CHAIRMAN POMEROY: Martin? DR. STEINDLER: Can I pursue that one? CHAIRMAN POMEROY: Yes sir. DR. STEINDLER: I've got a couple of questions 13 on it. Firstoff, are you aware of any Safety Analysis Report that the staff, NRC, has approved on a chapter-by-14 15 chapter basis without looking at the whole system? MR. KANE: I would think with the Topical Safety Analysis Reports that they have done for the 17 18 vendors. DR. STEINDLER: Do you know that? I think it might be worthwhile for you to look --20 21 MR. KANE: I don't know. I'll have to go back 22 and look at that. DR. STEINDLER: From the standpoint of looking 23 24 at the safety as a systems issue, that, you know, is a questionable practice. NEAL R. GROSS

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329 Secondly, the issue -- you happened to bring up the crane rail issue. There are ancillary guestions beyond just, you know, does the crane fall off? For 4 example, how do you recover when it falls off? MR. KANE: Which we addressed. DR. STEINDLER: But that may be in a different 7 chapter is, I guess, what I'm saying. And so when you have addressed the issue of the mechanics, you really 9 haven't done much in the overall safety system to give the staff a comfortable feeling that you're able to function. 11 A couple of other guick points and that is, 12 you indicate this building is what, 18 inches of concrete? MR. KANE: Yes sir; steel bar reinforced. 14 DR. STEINDLER: And a 14-inch ceiling? MR. KANE: Yes. DR. STEINDLER: And your indications are that 17 that will withstand a 360 mile-an-hour telephone pole? MR. KANE: No, we used Spectrum 1 which is a 18 19 different spectrum of missiles. It has the automobile which weighs about 4,000 --20 21 DR. STEINDLER: Using -- well --MR. KANE: -- 126 miles an hour --DR. STEINDLER: Let me just tell you --MR. KANE: -- 256 pound shell --24 DR. STEINDLER: I think you might want to look **NEAL R. GROSS** COURT REPORTERS AND TRANSCRIBERS

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at the Midwest Fuel Reprocessing Facility at Dresden, which was one of the early facilities, shielded facilities 2 -- that had to withstand the then new, tornado criteria. And they used the 360 mile-an-hour telephone pole as the 14 tornado missile, in part because in Illinois we fly telephone poles easier than we do automobiles. MR. KANE: Gene Vorland was a good friend of mine. DR. STEINDLER: Well, Gene will tell you they had to pour out a lot more concrete than 14 inches in 11 order to be able to meet those criteria. MR. KANE: Was that steel-bar reinforced? 12 DR. STEINDLER: You betcha. 13 MR. KANE: Hmmm. 14 15 DR. STEINDLER: In fact, one of the problems 16 they had was that there was so much steel bar reinforcing that we required that you began to wonder whether or not 17 the concrete in fact, would be able to be poured into a 18 sheet of wall that's something like three stories high. MR. KANE: Yes. DR. STEINDLER: But you know, that's just 22 another issue. The final point that I would make is, there was, not too many years -- well, not too many decades ago at least -- a DOE program called SURF, in 24 which a facility which looks an awful lot like the one you NEAL R. GROSS

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331 just drew up, was going to be put up at Hanford. Have you had a look to see what the design and design outline for that thing was? MR. KANE: No sir, we didn't. 4 5 DR. STEINDLER: You can save yourself an awful lot of trouble if you have a look at that one. 7 MR. KANE: Okay. Thank you, we will; we'll check that out. This facility was designed without any 10 specific site in mind. Certainly it was not designed with 11 any previous DOE design in mind, but it was developed 12 independently. With regard to the rails, you raised very good 14 questions and we do address those things. We address how we're going to recover. We also tell you why that crane is not going to fall off; because we're going to follow 0554, we're going to follow 612, we're going to -- ANSI N-17 14.6, NOG 1. So we tell you why this crane is single-19 failure proof; we tell you why the crane is not going to 20 come off the rails. And you're quite right -- if a crane 21 does come off the rails and lands on one of those casks, 22 that we view as a non-credible event, and I think so far the NRC has too. 24 Okay, now, in Chapter 1 of course, we talk

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1	about the purpose of the submittal and the scope of the
2	facility. We say that we think that when we come in for a
3	license we'll request a 40-year license. I know that's up
4	in the fir because some of the NRC staff are looking is
5	this or is this not an MRS?
6	In some ways I would like to tell you it is
7	but when it says you can't start constructing this until
8	you've got a CA for the repository, I want to tell you no,
9	I agree with you. It's not the same thing as an MRS.
10	VICE CHAIRMAN GARRICK: Dan, in that
11	connection, I realize you're talking about a 40-year
12	license. What is the design life criteria that you're
13	employing?
14	MR. KANE: Design life is 100 years.
15	VICE CHAIRMAN GARRICK: Okay.
16	MR. KANE: It's almost difficult to take this
17	much steel and concrete and figure out how you could make
18	something that in 40 years would deteriorate. Now of
19	course we'll have to look at the casks, you know. Monitor
20	those very carefully. In some cases we may bring casks
21	back in that have problems, into the transfer facility,
22	transfer the fuel into a new cask.
23	We also of course, in Chapter 1, provide a
24	high level operations description of what we're doing, the
25	type of things we're employing. We talk somewhat about
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1 the materials to be stored. These will be the same thing, 2 as the cask systems will have been approved by the NRC to 3 store that particular fuel.

In other words, we're not going to take somebody's cask that is designed to hold only a fuel type designated A, and we're not going to take that and put fuel type B in it. It has to be whatever is approved by the NRC already, or else in the license application we will make a case to expand to multiple types.

We also talk about the purpose of the submittal is to get some kind of an evaluation out of the NRC on what kind of a design it is, it looks like we have. Now, one of the other things you're supposed to do in Chapter 1 is identify anything that possibly is new and they're not used to seeing. And that gets back to your guestion about robotics.

We talk in there about, we have a gantry Nobot, dual-arm, that assists us with taking off the personnel barrier, assists us in delatching the impact limiters, assists us in taking the swipe, that kind of thing.

Next slide, please. What we're talking about too, is even though this is a Draft NUREG, it's pretty much in concert with Section A.1.4.2, and you might want to take a look at that sometime, if you get a chance.

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It's a kind of a, don't reinvent the wheel necessarily.
 Look at what the cask vendors have out there. You may
 want to use such a thing at your ISFSI or your MRS. The
 1567 is still written in terms of an MRS.

We make the commitment to use only NRCapproved dual-purpose cask systems for fuels that are specified by the vendor in his analysis that are acceptable. While the submittal is not a license papplication, we provide the information why we feel that a 40-year service life could be achieved with only routine maintenance.

12 Next slide. Chapter 2 is a little sparse. 13 That's the one on Site Characteristics. We do have some 14 generic site meteorology and seismology that we picked up 15 from ASHRE, we picked up from the NOAA Report 52.

For example, the temperature extremes are -40 to a +125. Precipitation we got from a NOAA 52 Report, which is, in one hour you have 19.4 inches of rain. We feel that the NRC can look at these and see whether or not they think we used the appropriate guides. For example, as ASHRE the appropriate standard to use? Is the NOAA 52 Report the appropriate standard? Is Reg. Guide 176 the appropriate standards for tornados, and so forth.

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Next slide.

CHAIRMAN POMEROY: Dan, just in there -- you

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mentioned that this design will not withstand large-scale snow loads, is that correct? MR. KANE: Well, what we did -- yes sir. Let 3 4 me start over -- I'm messing this up bad. CHAIRMAN POMEROY: I'm sorry, I didn't --MR. KANE: That's okay. What we did is, when we looked at -- we got those loads from American Society of Civil Engineers, Publication 795 -- and that puts out these isobars from all over the United States. And what 9 we found is, that if we stuck with 50 pounds per square 11 foot, that that was going to cover most of the U.S., 12 except for areas like Chris was talking about, like in the Rockies -- I think there's some areas of Minnesota, and so 13 forth and so on. 1.4 15 But if we have to go to a higher loading, then what we would do is realize that to see whether or not we're still okay. And if it turns out we have to make 17 design modifications, we would do that in the license 18 19 application. CHAIRMAN POMEROY: Again, in the Northern 20 Great Plains, for example, are there any -- do the temperature problems present any difficulty to you? I 22

3 mean, I can see sustained very low temperatures operating

MR. KANE: They don't appear to. It seems we

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can put this thing anywhere from North Dakota out to the
 Mojave Desert under those temperature ranges. Hopefully
 it's not going to go anyplace.

Next slide. Chapter 3 is the Principal Design
Criteria where we talk about our classification of
structures, systems, and components. We have design
criteria for QA 1 which is those SSCs important to safety
as well as other SSC, and we talk about the design
criteria imposed on the cask vendors.

One of the things we do in there is, we show you what our parameters are and then we show you for each cask vendor, what his parameters are, and we highlight where they're outside of our bound. For example, one of the vendors I think, was good to -20 but not -40. Only one of the vendors was planning on a design that used .75g; the rest of them were somewhat lower.

Now, I understand some of those vendors have gone back to the NRC on either site-specific projects or maybe their TSARs, whatever, and they're talking about raising that g loading.

21 We have seven classification of SSCs. One is 22 important to safety, two is waste isolation -- I'm sure 23 you're familiar with that one -- and then we go all the 24 way down through 7, with 4 being fire protection, 7 being 25 physical security -- or, 7 being radiation protection, 6

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1 || being physical security, and 5 being interface.

And we grade those. In Section 3.5 we talk about what grades are applied to those various ones. For example, if you have something that you call QA 7, that's a high radiation area. You want a piece of equipment in there that has high reliability, a long life, and something that can be changed out quickly. So this is part of our overall, comprehensive approach. It is part of our ALARA program, to keep these radiation exposures down.

The findings we would like for the NRC to come to is that we have adequately identified the SSCs and the classification system we use is acceptable and that the principal design criteria are acceptable.

For example, if they need to tell us that Req. Guide 176, Category 1, which is the biggest, baddest 16 tornado that they looked at, that that ain't good enough, then we would like to hear that. On the other hand, on 18 the Part 50 side of the house, as you know probably from 19 the recent -- I think it was a SECY evaluation they did on 20 21 the non-site-specific advanced lightwater design -- I 22 think they came up with a 300 mile-an-hour tornado. So the Part 50 side of the house was going down but the Part 72 side of the house said, well, we're 24

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used to working with Reg. Guide 176, we'll evaluate

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338 anything you submit, but. So that's all I needed to hear, 1 and we went to Category 1, because we want the design to move smoothly. Chapter 4 is on Operating Systems, so we have 5 the facility layout, the general arrangements I just 6 showed you prior to those --DR. STEINDLER: Before you move off Chapter 3 8 MR. KANE: Yes sir. DR. STEINDLER: You apparently are using Part 11 20 limits for your radiological exposure design criteria. 12 Those are different than what the Department of Energy uses for its own laboratories. Why do you do that? 14 MR. KANE: Because in our DOE orders we have a 15 standard clause in the front of them that says that DOE 16 activities and facilities licensed by the Nuclear 17 Regulatory Commission are exempt from the requirements contained in this order. We don't want double regulation. 18 19 We don't want NRC --DR. STEINDLER: I'm sorry, I'm not asking you about the regulatory aspect, I'm asking as to the levels 21 22 of the design criteria. MR. KANE: I don't know. The --DR. STEINDLER: This is a DOE facility, right? 24 MR. KANE: It has to be a licensed facility.

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The radiation man happens to be here. Bob, do you want to -- Robert Eble.

DR. EBLE: Bob Eble, Duke Engineering and 4 Services. I was the Nuclear Engineering Supervisor for this project and happened to establish the design criteria for dose and assessment for occupational exposures. And of course, Part 20 is an operating procedure, right? DR. STEINDLER: That's right. DR. EBLE: That no personnel at that facility shall receive doses in excess of 5 rem. We established 11 early on in the design criteria, one rem per person as a goal to evaluate for our dose assessment. It just happens to be similar to the goal established in the DOE 13 facilities. 14

But as we went through it and we applied our ALARA techniques as we thought were applicable and feasible, the use of robotics as Dan has mentioned, we ended up with average occupational doses for our operators -- less than 400 milli-person rem per year -- with no expansion in numbers of personnel. It was just based on the minimum number of personnel we thought it would take to do this job.

23 So we satisfied our goal. We don't use Part 24 20 as a limit. We don't design the facility to get 4.9 25 rem per trial period.

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1 DR. STEINDLER: Okay. MR. KANE: Yes, I'm sorry. I didn't realize that's the question you were asking. DR. STEINDLER: That was the question I 5 thought I was asking, yes. MR. KANE: Okay. Now, when we went through 6 this without looking at any mechanization or robotics or whatever you want to call it, we found that we were getting doses of between 6 rem and 20 rem a person for the operator. And of course, that's way outside the 5 rem 10 limit. And so in order to reduce those exposures and get down to a standard that we set which was no greater 14 than one rem a person per year, that got us into the robotics and mechanization area. Sorry I was too stupid to understand what you were talking about. 16 17 DR. STEINDLER: Of course, I didn't want to pursue this too long but -- that includes the design 18 19 criteria for the thickness of the concrete of your storage facilities? And somebody's going to have to go and, I 21 assume, and visually inspect these, at least periodically -- whatever the period is that you think you can get away 22 with. MR. KANE: We're going to have -- you're 24 talking about when they're out on the storage area? NEAL R. GROSS

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DR. STEINDLER: Right.

2	MR. KANE: We're going to have monitors that
3	let us know inside that personnel building, what the
4	temperatures are, what the pressures are. And for that
5	reason we don't think we're going to have to go out there
6	and look at those every day. And if one assumes we're
7	going to have to send somebody out there to look at all
8	those casks every day, it gets into a dose like you can't
9	believe. So we're also going to have cameras set up.
10	Now, after certain specific events,
11	environmental events, we will go out and make a quick
12	inspection of those casks. Or if, for some reason, we
13	have something coming in on our panel in the personnel
14	building, in the monitoring room, that tells us one of
15	these casks is out of sync, we want to go out and see what
16	the problem is.
17	Okay, next slide. Getting back to the
18	Operating System, as I mentioned, we provided the general
19	arrangements in there, the layout. We talk about spent
20	fuel handling systems, we talk about other systems that
21	are support: water, fire protection, a whole lot of
2.2	things like that.
23	We have a fire hazards analysis in there where
24	we've taken the entire facility and divide it down to
25	about eight areas and looked at what we have in the way of

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possible fires. And the only place that we come up, other than low or ordinary on a fire loading, is in the fire building itself, where we have a diesel fire pump as a backup to an electric fire pump. Other than that it's very low.

The findings. And of course we also discuss the security systems. And we think that the evaluations, findings in 1567 are pretty much generally applicable.

9 In Chapter 5 we talk about the operating 10 procedures. Normal operating procedures, we present 11 detailed flow sheets in Section 5.1 for each one of these 12 cask systems. How it comes onsite, how it's processed, 13 how the empty transportation cask is then processed and 14 returned to service, continuing on with how the canister 15 inside a storage cask is ultimately moved out to the site 16 for storage.

In Section 5.2 we have what we call preliminary hazards assessment. That is, we went through and looked at all the SSCs and tried to come up with what could possibly go wrong and do an evaluation on those. As inputs we used 1567, we used other vendor's SARs as you can imagine would well pertain, as well as a number of other inputs.

And then of course, we take that analysis and develop it in Chapter 12, which is Accident Analysis, and

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1 carry over into 14 any LCOs that we feel are important to 2 safety.

Now with regard to the findings, we think that the findings of 1567 again, for that chapter, they do it on a chapter-by-chapter basis, is generally applicable. And we think the TSAR presents a systematic approach for identifying those normal and off-normal events, categorizing them according to 57.9, the four categories there, and we're hoping the NRC will agree with our categorization.

Chapter 6 is Waste Confinement. There's not a whole lot to talk about here because as I said, this is a canister facility. With regard to gaseous, you might find some potential for some limited aerosol on the cask -- on the cutside of the transportation cask, I'm talking about. You might find when the cask comes in, that it has a leak. And of course, one of the things we'll do in our procedure when we first receive it, is go into that inner space there and check it to see what we have.

So we don't really expect to find a whole lot of problems with gas. With regard to liquid, we have, in a decontamination booth, we assumed that -- and we think this is conservative -- about one out of every ten transport casks coming in, or TSCs coming in, will be contaminated over and above our LCO limit.

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1	And we will take that cask and wash it down in
2	a basin. We have a collection system, a tank, gravity
3	flow, and we have the ability to pump that out, we have
4	the ability to go down and grab samples. We would not
5	release that water unless it meets the Part 20 limits of
6	course; then we might outfall the stuff.
7	If it turns out that it is higher than what
8	one would expect, we will arrange for a contractor to come
9	in and take it and dispose of it offsite.
10	With regard to solids, it would be what you
11	would expect except much reduced from any nuclear
12	facility. You have some probably some gloves, some
13	cloths from your swipes, some rubber gloves, contaminated
14	tools, things of that nature. And we expect that that's
15	going to be a very low volume.
16	We don't really expect any radiological impact
17	that's going to get us bumping up against 72.104. The
18	findings, again, we feel 1567 is generally applicable.
19	DR. STEINDLER: Do you plan to handle failed
20	fuel?
21	MR. KANE: Not at first. Failed fuel is
22	something that will come into play later, only after we or
23	the vendors have gone back and worked with the NRC staff
24	on how failed fuel will be addressed in their storage
25	systems.

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DR. STEINDLER: Will you know, or do you plan 2 on some kind of detection system, to determine whether or not fuel has failed in transit? 3 MR. KANE: That we think, if it does fail and there's no seal breach -- these are double-welded canisters in many cases -- then we would not know that those things have failed. 8 DR. STEINDLER: Okay. So you could be in fact, storing a canister that's full of krypton? MR. KANE: Well, I would think that would be -- you could do that. Yes, we would expect krypton-85, 12 iodine-129, and some tritium in any failed fuel. But when 13 we do our analysis we followed the guidance in Reg. Guide 14 125 which talks about percentages of those that you'd 15 expect to be released, that are up in the gap. Okay, Chapter 7, Installation Design and 17 Structural Evaluation. In here -- well, I mentioned this a while ago, talking about the structural analysis, the 18 19 concrete and so forth and so on. It's designed to withstand the tornado missiles. The ones we used were Spectrum 1 which gave you the 4,000 pound car at 126 22 miles-an-hour, 257 pound shell at 126, and the .15 sphere. 23 And with regard to the concrete storage pads, 24 we have our analysis in there on those pads. Each of these vendors uses a specific kind of concrete pad design.

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Ours is 3-foot thick, steel bar reinforced, number 11 1 rebar, about four inches down, goes around the perimeter every 12 inches. We followed 349 -- ACI 349 on there. And we also talk about other SSCs that are not 4 important to safety. For example, we use concrete block 6 to build some of our structures, but certainly not anything in the transfer building; that's not concrete 7 block. Again, we feel that 1567 is generally applicable. 8 Thermal evaluation. We don't really have 9 anything at this facility that deals with thermal 11 considerations. We have an HVAC system that is there to 12 provide comfort to the workers, to control humidity, control temperature, which have operating considerations 13 too, for some of the equipment we'll be using. 14 But since we're not taking these out and doing anything with them, what we have to do is ensure that 16 whatever we do we don't take that canister of fuel and put it in an unanalyzed situation. If we do that we've got 18 problems. And what we intend to do is what they are 20 doing at the nuclear plants where you take it in, you use 21 a transfer cask that will be approved or already has been 22 approved at NRC, and you complete the transfer into a cask that's already been approved by the NRC or will be 24 approved, and you move it out to the storage yard.

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The only thermal considerations we have, have to do with the monitoring that I was telling you about 2 earlier where we will be looking at the inlet and the 3 outlet temperatures and looking for a certain delta T 4 based on the age of the fuel and so forth. Most of the thermal stuff is done under 1536 by the vendors. So again, what we're looking for here is that, what we're planning to do at the interim storage facility 8 9 will not put these canisters or casks in an unanalyzed, thermal situation. 11 Radiation Protection. We've applied ALARA 12 considerations in the design. As I mentioned earlier, a while ago, we got between 6 and 20 rem a person for the 13 14 operators. That was significantly high. We don't even want to go up to five. As you probably know, most of the utilities now I think, have an admin limit of about 2 rem 17 a year. And if you look at radiation exposures over 18 the years, they've been falling, falling, falling, so we 19 don't want to turn that around. So we went to a number of remote-operated systems that we think will help us keep personnel exposures down. We do provide dose assessments 22 in there, and we think again, that the findings of 1567 23 are generally applicable. 24

25

We talk about our ALARA procedures, we talk

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1	about our ALARA training, we talk about the mitigating
2	aspects of design and operation, and we think that that's
3	as good as you find in a license application.
4	DR. STEINDLER: Are there any remote handling
5	or shielding windows and manipulators, or whatnot, in the
6	canister transfer area?
7	MR. KANE: Yes, there are two arms in the
8	canister transfer area, and these help us with doing
9	things such as taking off bolts, lining up slings, things
10	of that nature.
11	DR. STEINDLER: So, I was going to say, all
12	the activities in the canister transfer area are going to
13	be done remotely?
14	MR. KANE: Not all of them. Some of them will
15	be remotely assisted. Will have cameras, will have
16	shield booths that the people can go behind, and they will
17	be assisted by cameras. Some of the things though, are
18	going to have to be definitely, hands-on; there's no
19	getting around it.
20	VICE CHAIRMAN GARRICK: In that connection, do
21	you anticipate having the equivalent of a hot cell in this
22	facility to do any kind of special investigations in
23	somewhat of a works laboratory sense?
24	MR. KANE: No, we do not. You're using the
25	hot cell as opposed to transfer cell
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1	VICE CHAIRMAN GARRICK: Right.
2	MR. KANE: you really mean hot
3	VICE CHAIRMAN GARRICK: Right.
4	MR. KANE: No sir, we don't. We don't have
5	any plans for a hot cell.
6	VICE CHAIRMAN GARRICK: Sounds like an ideal
7	opportunity for the hot
8	MR. KANE: Well, I don't know. We'll see.
9	You're right. That would be interesting, it would be fun.
10	But just finding someplace that will accept this site for
11	what we're going to do, which is all passive, is going to
12	be tough enough. But who knows; they may come to love it.
13	VICE CHAIRMAN GARRICK: In that connection,
14	unless I missed it, you have said nothing about what you
15	are designing towards with respect to man loading
16	requirements of this facility. Can you say something
17	about that? What's the population of this facility?
18	MR. KANE: We think we will have about 30
1.9	operators when we get up to running three shifts
20	somewhere between 30 and 35. And as far as overall, it
21	will probably be about 120. Admin people, you know, non-
22	nuke types. Circ water types.
23	Okay, Criticality Evaluation. There again,
24	most of that is done by the cask vendor. what we have to
25	do is make sure that we don't take this system and somehow
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put it outside the analyzed envelope that the NRC and the
 vendor have performed.

One of the challenges will be to make sure that we don't get water into there at the same time that we manage to rip off two seals. To that end, we have decided, with regard to the fire protection of the transfer facility, that there will be no sprinklers. Those will be hose stands and CO₂ or water extinguishers on the wall.

10 So again, this is pretty much similar to the 11 thermal analysis that I was talking about earlier. Make 12 sure you don't get it outside the design envelope and you 13 should be in pretty good shape.

14 Confinement Evaluation is another one that's 15 similar.

DR. STEINDLER: Excuse me, on the criticality. Did you design for a significant number of full enrichment fuel?

MR. KANE: No. the only thing we're looking
at, at this point in time is commercial, spent, nuclear
fuel that will be in vendor casks, transport and storage,
our dual-purpose -- that have been approved by the NRC.
DR. STEINDLER: So your assumption is that the
stuff that comes in has all been irradiated and there is
no unirradiated or low irradiation exposure of fuel that's

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1 | coming into your facility?

2	MR. KANE: Our assumption is that the only
3	fuel that comes into our facility will be in systems that
4	have already been approved by the Nuclear Regulatory
5	Commission. That will address its enrichment, initial
6	enrichment, its burnup
7	DR. EBLE: analysis you assume you have
8	no burnup for the fuel
9	DR. STEINDLER: They do assume zero burnup?
10	DR. EBLE: Yes. Currently.
11	MR. KANE: For the arrays, for the storage
12	arrays. When the vendors do their analyses they assume no
13	burnup, yes, that the NRC approves.
14	All right, Confinement Evaluation. This
15	again, is something that it comes to us, it's already
16	confined, it's sealed either in canisters or it's in a
17	double-lid mechanical seal, transportable storage cask.
18	What we have do to is make sure that we don't get it into
19	an unanalyzed situation.
20	Now, the vendors of course, have done analysis
21	on loss of confinement, which when you look at ANSI 57.9
22	categories and break this up, loss of confinement is
23	considered an accident situation. And those vendors have
24	come in with parametric charts that show what type of dose
25	one would get out at a certain distance.

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1 And I think they came up -- I think 2 Westinghouse was the one that was the largest one, and it was something like 1.7 rem at 300 meters. Our facility, 3 4 we have 700 meters. Now, that 700 is not based on the 5 accident analysis; that's based on the 72.104 of 25 mr a year or less at the site boundary. So when we come in with a license application we will perform our own analyses to make sure that each of those casks, without 9 site-specific dispersion characteristics, will be acceptable. 10

Chapter 12 is the Accident Analyses. We have nine off-normal events and 13 accidents. Some of the offnormal include things like, some of the vents are plugged on the concrete cask and you don't get enough air through it.

Accident events include all of them being plugged, and it also includes a non-mechanistic breach of confinement in there, and I think the vendors followed the guidance in Regulatory Guide 1.25 with regard to how much krypton and iodine and tritium were released.

The loss of confinement accident of course, is bounding on all these accidents that we looked at. And we think the findings of 1567 are generally applicable.

24 Chapter 13 is Conduct of Operations. We 25 present in there the organization that we're going to be

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1	using, how we we do it on a functional basis. We don't
2	have names and resumes at this time. We discuss pre-
3	operational testing program, the fact that we're going to
4	implement an INPO-type of systematic training program.
5	We talk about normal operations and procedures
6	and record keeping and concerns in any changes, tests or
7	experiments, 72.48. We talk about employee concerns,
8	72.10. And we also talk about emergency planning.
9	Now, one of the things I would like to point
10	out is that while I think this project is very exciting,
11	dynamic, working there is going to be somewhat less.
12	Because what we've done is, we've taken the workstations
13	and the activities, both with regard to the work and the
14	maintenance, and divided those up into a Class A and a
15	Class B, if you will.
16	Class B being non-important to safety and
17	Class A being important to safety. And we want to get
18	people as they move from not important to safety
19	designations, to important. We want to get them used to
20	working with procedures.
21	One of the problems we had in the nuclear
22	industry many years ago is, we had some very sharp coal
23	and oil plant operators who flew those facilities by the
24	seat of their pants. They were very bright. They were
25	brought over to the nuclear side until, ugh, what are

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these regulations, you know, procedures manual we have to follow?

So one of the things we want to do is try to avoid any kind of replication of that problem, so we get everybody used to working by procedures that have been prepared, reviewed, and approved by the Safety Review Committee onsite, which we will have.

8 With regard to emergency planning, one might 9 think that that is so site-specific one can't do a lot 10 with it without a site. And that was our first 11 inclination, but the more we got into looking at it, the 12 mor we found out we could do, particularly because we're 13 going to be able to handle anything that comes up at that 14 site without offsite assistance and without directives for 15 offsite to evacuate or anything else.

The only status we have is a non-status and an alert. So if we have a fire, we can take care of that. If we have -- the only thing we might have to call somebody on is ambulance.

Now, when we come in with a license Application, prior to submitting that part that addresses emergency planning, we will have provided that to certain organizations in that particular area where the site's going to be located and give them an opportunity to comment on the plan. And then we will modify it as

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1 appropriate and then give your modified plan and then the 2 comments to the NRC for their evaluation.

And we think again, that a lot of the stuff in 1567 is applicable. Talked about our training program; like I say, we think that's applicable. And we think that a commitment to the proposed organizations and plans that we've talked about in the TSAR in the license application, should be something that the NRC would save them some time in reviewing -- when we say, this is what we said we were going to do; this is what we've done.

Chapter 14, the Technical Specifications. Of course, a lot off technical specifications will come to us courtesy of the vendors who have tech specs placed on their systems.

For example, the very thing you were mentioning a while ago is a type of fuel. A vendor, when he comes into the NRC, he has to propose a certain type or types of fuel that he can store. He can't just come in and say, I want a cask, and they give you a certificate and then you start throwing any kind of fuel in it.

So we'll have all those fuel limitations that will be placed upon us. And as we get into it later, then we'll go to some of the more exotic types of fuel. Technical specifications will also be based

24 Technical specifications will also be based 25 upon our particular design. I'll give you a couple of

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quick ideas. I've already mentioned that we're going to be monitoring the temperature on some of the designs like the dual-purpose that's not HISTAR. We're going to be -next, we're going to be monitoring the pressure between the seals.

With regard to our crane, we have a load monitor. That is subject to LCO, and also the load lift, the amount of weight that we're lifting. So we will have those kinds of -- we talk about those kinds of things in our technical specifications. And we feel that the information in there is generally applicable to 1567. Chapter 15 is Quality Assurance. We've already submitted a quality assurance program with the NRC so we won't be saying much in Chapter 15 -- or we don't, about Quality Assurance.

16 Last but not least, Decommissioning. We 17 provide an overview of the decommissioning process that we're going to use. We talk about the decommissioning plan and we don't develop a cost estimate. And one of the 20 things of course, that's very important for later decommissioning, is to make sure you've kept records of any spills or leaks or whatever, so that when you go to 22 clean that up you know where the problems are if you 24 haven't cleaned them up already, and if you have, you want to search them again at that time to make sure they 25

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1 haven't resurfaced somehow.

So we talk about how we have procedures and the way we want to run this facility is to minimize the waste and contaminated equipment. We'll be talking about, for example, using certain kinds of coatings that are easily cleanable, and so forth and so on.

We talk about how we facilitate the waste for decommissioning, and how in decommissioning the plant we have already thought of, in the initial design, ALARA measures that would cause us to be able to meet ALARA standards when we go to decommission this facility later on. And we feel the TSAR adequately addresses the recordkeeping that I was talking about, where you have a problem.

Is that it? We did bring a picture of the dry 16 transfer system and I'll just talk about that for a few 17 moments. This is a very small building. You have a receipt door here where the casks are taken in. The 18 19 purpose of DTS is to be able to do a dry transfer among storage, transport, casks, storage to transport, whatever. And behind this there's a 9- to 7-inch thick 21 22 steel rollback door that contains a confinement area. The casks are moved in, the door's shut, the heads are taken off through the top here, and the fuel assemblies are 24 transferred one at a time from one cask into the other.

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Now, this does have an HVAC system on it with Hepa filters and the whole thing because you're handling live fuel, unlike our facility where we're handling canisters. We did put in a Hepa filter after a request of the staff because they said they felt that would enhance their confidence that we really weren't going to be running into the airborne problems there.

8 So this is the type of facility that we have 9 committed to have up and running at the time we start 10 Phase I operations of the Centralized Interim Storage 11 Facility.

12 Thank you, Bob. Any more questions or anything? Be delighted to try and answer them. 13 14 CHAIRMAN POMEROY: Thank you. I'll ask whether there are any from our various folks here, because 16 I suspect there might be. Marty, do you have --DR. STEINDLER: No, just that, I guess an issue which I guess you may have addressed someplace. 18 Have you considered the whole question of sabotage? MR KANE: Yes. DR. STEINDLER: You're 700 meters from the fence. That's not very far. What thickness concrete do you have planned for your mobile system? MR. KANE: My mobil systems? 24 25 DR. STEINDLER: Your containers.

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MR. KANE: Oh. The same thickness that has 1 been approved by the NRC staff for each of those vendors. 2 DR. STEINDLER: Which is how much? 3 MR. KANE: Generally, it's about two-and-ahalf to 3-foot thick concrete. DR. STEINDLER: So somewhere you're going to be able to discuss with the staff the response to the sabotage issue? 8 MR. KANE: Yes, some of that will come with the license application where we'll have the matrix in 10 11 their responses to hypothesized attacks. But that's --DR STEINDLER: The reason I bring the issue 12 up is because you said you're self-contained and you don't 13 14 need external help. If you're in that mode, you will need external help. Every reactor I know makes very careful 16 arrangement. MR. KANE: Yes, if we're --17 18 DR. STEINDLER: You're in the same boat, I 19 assume. MR. KANE: Yes. If we were under attack, we 21 would. And of course, as a part of it anyway, we would make contact with the local hospital -- even though we say 22 we can deal with the thing onsite so that we have an alert only -- what I'm talking about there is, we don't have to 24 go and ask anybody offsite to evacuate people, or to take

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1	other measures. We might ask them to come to our site.
2	But an alert is where we take care of it ourselves.
3	CHAIRMAN POMEROY: Anything else, Marty?
4	DR. STEINDLER: No, I don't think so.
5	CHAIRMAN POMEROY: George?
6	MEMBER HORNBERGER: Just out of curiosity
7	I'm just a poor hydrologist and I'm on the very early part
8	of the learning
9	MR. KANE: You must be feeling very
10	disappointed.
11	MEMBER HORNBERGER: No, I just wanted to
12	apologize in advance for perhaps the naivete of my
13	question. I'm just curious to what extent this whole
14	thing is really driven by regulation and to what extent
15	there's opportunity for a kind of assessment in the
16	decision-making.
17	For example, and perhaps this is a silly
18	example but, if you design for a 300 mile-an-hour
19	telephone pole versus 125 mile-an-hour VW, I would assume
20	that there would be an additional cost to build thicker
21	walls. And my question is, is there a risk analysis
22	that's done to basically get into a cost benefit type
2.3	analysis as to in this design? or is it just strictly
24	driven by, you shall design for a 300 mile-an-hour
25	telephone pole?

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MR. KANE: No, I think your question is very good. What we do is, we propose a design and then we evaluate it against certain of the requirements. We don't do a cost benefit to say, well if we hedge an inch of concrete we save \$10,000. Because when you're looking at a facility with a cost of \$150 million, if you've got anybody who knows anything about accounting, they call that an immaterial item.

9 What we do is, we postulate the design of the 10 facility, then we look at the tornados and the tornado 11 missiles that could be driven. And you actually do an 12 analysis that shows this thing being driven with so many 13 square footage -- like I think the 4,000 pound car is 48 14 square foot -- being driven into the building somewhere 30 15 foot or less -- that's specified in NUREG--0800 under 16 Spectrum 1.

And you do an analysis to see whether or not it will turn it over, whether or not it will puncture through the thing, or whether or not you might get some spalling, such that it hits one side and bam, out the other comes a big chunk of concrete on somebody's head. Or creates a missile, it does something to your equipment or so forth.

24 So the things that we look at are the 25 regulations, rather than saying, okay, let's come up with

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as cheap as we can do it and then try and justify it against this regulation with a bunch of verbiage. We 2 don't do that; we follow the NRC's regulations. 3 4 MR. KOUTZ: Just to add a little bit to Dan's point. We did do a quick cost benefit analysis when we 6 initially proposed the 300 mile-an-hour tornado when the staff felt we ought to look at a more powerful tornado -we did look at the benefits of that from a cost benefit 8 standpoint. Found it to be immaterial and that was not a 9 problem. 11 So when we looked at design changes we did, on occasion, look at some cost benefit analysis for some changes to the design. 13 14 MR. KANE: If it was interesting. I mean, there wasn't any question we were going to change it, but an interesting question is, well what would be the 16 difference? Because you're pretty sure -- you're telling 18 your management it's immaterial, well, we're not sure we 19 know what that means, you do a cost, you find the delta's 21 MR. KOUTZ: It's not worth arguing about. MR. KANE: So the reason we did it was a confirmatory of what we'd already done committing to 24 Category 1, not to see whether or not we should commit to Category 1. 25

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1	VICE CHAIRMAN GARRICK: Just a couple of
2	simple ones. You may have answered them. Senate bill 104
3	and House 1270 notwithstanding, would you comment on the
4	schedule for getting such a facility in operation on
5	for two cases. Case 1, you are provided a site, and Case
6	2, you have to find a site.
7	Considering that this is a one-of-a-kind
8	facility, that the regulatory process is pretty much
9	untested, and you know, what you know about the kind of
10	problems and obstacles you may run into. What is a
11	realistic time for those two cases?
12	MR. KANE: Let me do Case 2 first. Infinity.
13	All right, now on to Case 1.
14	CHAIRMAN POMEROY: Thank you.
15	MR. KANE: We tried that under the Office of
16	the Nuclear Waste Negotiator, tried to find a volunteer,
17	and we found many people that were interested, many
18	communities that were interested. But when you moved up
19	through the governmental structure, it became not today,
20	not tomorrow, not ever. So infinity for the second one.
21	For the first one, we believe that after a
22	site is designated, we can go out and do the requisite
23	studies that we need to come up with the site data, and
24	start working on our license application because we'll
25	have much to build on from what we've done in the TSAR and

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1 the evaluation the NRC's done, so we'll know where there
2 are problems and we'll know where there are no problems.

And we believe we could put that license application together from the date a site is identified and we're allowed to go on it. If it's identified but says you can't go on it for six months, then you realize a problem there. But from the date we're allowed to get on it, until the time we submit the license application, we estimate it will be on the order of a year.

Now, we have come up with a schedule in our heads for the NRC's review of this, and the conclusion of the hearing, and that came to 32 months. It came to, all right, 12 months we submit it; 18 months the NRC performs its technical review and does what I think will be the real critical path item there, is the Environmental Impact Statement, which I don't think they can get done in much less than 18 months anyway.

Now, when we substit it, they started the
adjudicatory procedure by forming an Atomic Safety and
Licensing Board, a panel of three, and blah-blah-blah. So
they will go through all their preliminary motions, their
scoping and so forth, admitting contentions, etc.
What we assumed is that we would probably
petition the Board to break this up into environmental
issues and safety issues and see if we can't get the

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1	environmental issues concluded earlier so we can get a
2	partial initial decision from the Board that would meet
3	72.40(b). That would allow us to start constructing.
4	So the overall schedule, or the schedule from
5	the time we submit it, then the NRC's review of 18 months
6	for the NRC staff technical review, and then extending
7	past that for some 14 months, would be the hearing and the
8	issuance of the license at the end of that 14 months. So
9	you add 19 and 14 I think you get 32.
10	MR. KOUTZ: Then there's a conception
11	MR. KANE: The hearing schedule of course is -
12	- I'm sorry, Chris.
13	VICE CHAIRMAN GARRICK: So maybe three to five
14	years?
15	MR. KOUTZ: Right. One component Dan left out
16	was the construction of the facility
17	VICE CHAIRMAN GARRICK: Yes, yes.
18	MR. KOUTZ: which we look at as somewhere
19	around 18 months.
20	VICE CHAIRMAN GARRICK: Right. And then
21	finally, what's your preliminary estimates of cost for
22	this facility?
23	MR. KANE: About \$150 million.
24	MR. KOUTZ: I would also want to amplify on
25	Dan's statement that our view of our estimate of how
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366 long the staff will take to go through the process is assuming that we have an approved TSAR when we submit the 3 license application. 4 MR. KANE: Yes. 5 MR. KOUTZ: Without that, I think you're looking at a longer review time. MR. KANE: Yes. Yes, 18 months is clearly 7 based on the NRC having reviewed our TSAR and come to some 8 conclusions on it and so forth. 9 VICE CHAIRMAN GARRICK: Yes, the point being that this is not a solution that's going to come about in a couple of years? 12 MR. KANE: No. But some of those bills that 13 14 have come about, you know. I mean, those things had potential land mines in them, up one side and down the 15 other. Now, 104 got rid of a lot of those problem areas. 16 For example, it uses the same schedule I just talked about 17 -- 12 months, 32 months -- it talks about constructing 18 19 after you've met 72.40(b), rather than when you submit the license application. Because if I do that I'm going to have Charlie Haughney and Mike Raddatz wanting to shoot me if I start constructing. MR. KOUTZ: I would also like to emphasize that we're talking technical aspects of the bill, and I'd 24 like to re-emphasize, the Administration opposes this bill 25

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-- both of those: S104 and 1270 as they're presently 1 drafted. So again, we're only discussing technical 2 aspects, and I don't want to be anywhere inferred that the 4 Department is in favor of these bills in any manner. We're talking about technical implementation of how this would be done, not whether or not the Department is --MR. KANF: Yes, if it should survive. CHAIRMAN POMEROY: Certainly that's clear to us, right. Bill? MEMBER HINZE: Well, a couple of questions out of curiosity. The 40,000 MTUs, what dictated that, and 11 12 is this facility expandable? MR. KANE: This is based on a 15-year 13 operations life. If we were to start operating this on a 14 15 schedule where we took the first two years, 1200 MTUs, the next two years, 2000 MTUs, the fifth year, 2700, and the 16 sixth year and beyond, 6000 MTUs, if you operated on a --17 18 MR. KOUTZ: No, 3,000. MR. KANE: What did I say? MR. KOUTZ: Six thousand. 20 21 MR. KANE: I'm sorry, 3000. MR. KOUTZ: Doubled our capacity. 22 MR. KANE: And if you carry those out for 15 years you'll find you come to about 40,000 metric tons. 24 So that's how we got the 40,000 because we think by that 25 NEAL R. GROSS COURT REPORTERS AND TRANSCRIBERS 1323 RHODE ISLAND AVE., N.W. (202) 234-4433 WASHINGTON, D.C. 20005-3701 (202) 234-4433

point in time, that a repository will be up and operating.
 If it's not then we'll have to do what you're talking
 about and look at expansion.

4 MEMBER HINZE: What facilities are built into 5 this expansion when you consider the size of the area of 6 the fence-line, etc?

7 MR. KANE: Well, we've assumed a large site; 8 there's no question about that. As I said, we have --9 based on 40,000 MTU of storing the canister that gives the 10 greatest contribution at the 700 meter to the 25 millirem 11 a year -- what we would have to do is expand that area out 12 and when we come in with a request for a license 13 amendment, we would make our case about how we want to 14 expand, we would address any of those deltas that would 15 have to be addressed, and then it would be up to the NRC 16 to either give a thumbs up or thumbs down on it.

17 MEMBER HINZE: You mentioned the feed into the 18 plant --

19 MR. KANE: The what?

20 MEMBER HINZE: The feed -- bringing the 21 waste into the facility -- the feed, if you will.

MR. KANE: Oh, okay.

23 MEMBER HINZE: Presumably this would have a 24 certain, on a smaller time scale than an annual, but there 25 would be some kind of consistency arranged for the waste

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1 to arrive at the site.

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MR. KANE: Yes.

MEMBER HINZE: What happens if that doesn't work out? You have an accident and things are stalled and then you get too much coming in at one time. What kind of storage facilities do you have that are of an emergency nature at the fence line or whatever?

8 MR. KANE: What we have, after you come onsite 9 through the receiving gate -- obviously if it's before 10 that out on a rail system there's not a lot we can do. 11 But once it comes on the site we do have holding areas --12 MEMBER HINZE: You do? 13 MR. KANE: -- where in case we're backed up --

MEMBER HINZE: I didn't see those.

DR. EBLE: It's kind of hard to see here, but there's space for ten of each truck and rail casks. Mk. CAMPBELL: You've got to speak to the mic. DR. E3LE: We have a hold-up capacity for ten prail and ten truck trailers in this approximate area here around number 4. We've also done the dose analysis that would look at the distance from that to the restricted

21 would look at the distance from that to the restrict 22 boundary.

23 MEMBER HINZE: I see. Good. Let me ask 24 another question since my colleague has asked about the 25 cost involved. Is there a facility available within the

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1 government that would be able to do this job?

2 MR. KANE: Not under a licensed scenario. The 3 problem you've got with any existing government facility 4 is, they were built years ago with concrete -- who knows 5 what its pedigree is -- with steel, and who knows what its 6 pedigree if it ever had one? Those things were not really 7 built in a licensing environment.

So to try and backfit a license on it that the 8 9 NRC could sign off on, I think you need to ask them this question. I think that would probably be a much more difficult task. Not a bad idea, but in a licensing 11 environment it would probably cost more than \$150 million. MEMBER HINZE: We would want to see a 13 14 repository, we'd want to see it done in the least possible cost, so we're on the team. Thank you very much, Dan. 15 MR. KANE: Thank you, sir. 17 CHAIRMAN POMEROY: Dan, maybe one last question then, just because I'm a seismologist. We talked 18 some about the seismic design spec. I assume, first of 19 all, that the .75g is a horizontal acceleration --20 MR. KANE: Yes sir. CHAIRMAN POMEROY: -- applied at the base of 22 any structure --24

24 MR. KANE: Shallow mat at the base mat, .75, 25 we -- that 160 --

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1	CHAIRMAN POMEROY: And is there any spec on
2	the vertical acceleration?
3	MR. KANE: Yes, two-thirds of that. It's a
4	.5.
5	CHAIRMAN POMEROY: Two-thirds?
6	MR. KANE: Yes sir.
7	CHAIRMAN POMEROY: Okay. I note that, you
8	know, under the situation that you have, you would have a
9	wonderful field of inverted pendulums of course.
10	MR. KANE: Yes.
11	CHAIRMAN POMEROY: Somebody has looked at the
12	question of the if you're stacking them in the vertical
13	mode as you showed in your picture somebody had looked
14	at the motion that would take place at the top of some of
15	those units, I presume? And has somebody looked at the
16	question of what happens when they fall over?
17	MR. KANE: Yes sir. One of the things that
18	one has to do is ensure that these don't tip over, not to
19	be confused by the fact that you also have to look at it
20	when it does tip over and see what the effects are. Those
21	are the NRC's regulations.
22	CHAIRMAN POMEROY: Right, I knew that. Yes.
23	MR. KANE: So we have to look at both of those
24	things to guarantee it won't tip, and if it does tip, what
25	will be the effects? Now, most of the vendors have found
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that when the cask tips over in a very -- obviously this 1 is non-mechanistic -- that that deceleration when it hits 2 the concrete, and even more importantly, the soil that's 3 under the concrete is what takes up a lot of that energy. 4 If it's just a completely hard surface on a 6 completely hard rock, then you might get into some problems, but the analysis they use on these is, you know, the soil is a spring -- the concrete is a spring plate and 8 it falls and you want to see what the soil underlying that 10 concrete plate does.

11 CHAIRMAN POMEROY: And you presumably also 12 looked at the question of, one can envision various kinds 13 of pendulum scenarios while you're moving the canisters 14 out to the storage site and while they're being handled, 15 and I presume those have all been looked at from the 16 viewpoint of .75 acceleration, and two-thirds of that, 17 vertical acceleration?

MR. KANE: Yes. For example, all the transporters are supposed to be -- they're designed so that they don't drop their load when they're moving. You also have tech specs on those that say that you don't pick it up more than six inches off the ground. So these are some of the kind of helpful things.

In our transfer building we have analyzed the situation such that the .75 earthquake occurs and you have

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both cranes fully loaded with 195 tons each -- and we space them this, this, this, this way -- I forget exactly what the structural formula is. I'm sure some of you probably remember -- it has something to do with where you get your maximum bending moment.

And we calculated what the allowable is and what the maximum is, and found out we were under that, and of course divide one into the other and you have the safety factor. So we also say that you can -- we have tech spec limits on that load lift monitor as well as the load lift.

We don't take one of these canisters that's enclosed inside a transfer cask that's sitting on top of a transportation cask and move it like this to put it in a storage cask. We draw it up in there, move it up enough to clear so that the bottom shield doors can shut, then you move it over, line it up, open the shield doors, and insert it. So we're very conscientious of trying to minimize any operational or accident --

20 VICE CHAIRMAN GARRICK: I assume you looked at 21 the domino scenario?

22 MR. KANE: That's why the 20 feet. 23 CHAIRMAN POMEROY: Right. I'm sorry, Andrew. 24 Go ahead.

MR. CAMPBELL: A quick question?

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1	CHAIRMAN POMEROY: Certainly.
2	MR. CAMPBELL: Do you fall under NESHAPS?
3	MR. KANE: I'm sorry, I don't know what you're
4	talking about.
5	MR. CAMPBELL: Emissions from an operational
6	facility?
7	MR. KANE: I think so; I think that's the one
8	that says
9	MR. CAMPBELL: Ten millirem.
10	MR. KANE: Yes, ten millirem in air, yes. And
11	we have no problem meeting that. In fact, our calculation
12	of coming up under 25 at the site perimeter control area
13	is about 22-1/2 I think, something like that, based on
14	direct and air scattered, and about another one millirem a
15	year and that's at the site boundary if someone's
16	staying their full year of one millirem.
17	MR. CAMPBELL: From the emission of
18	MR. KANE: Any aerosols that might come out.
19	The only source I was talking about gases, would be
20	maybe an aerosol that results on the outside of an
21	incoming transportation cask, or possibly if you have a
22	week of some which we expect to be minimal. So that
23	contribution at the site boundary would be one mr a year.
24	DR. STEINDLER: One quick question. What
25	fraction of the dose is due to neutrons at the site
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1 | boundary?

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MR. KANE: I'll defer to Dr. Eble here. DR. EBLE: Less than one percent. DR. STEINDLER: Less than one percent? DR. EBLE: Yes.

6 CHAIRMAN POMEROY: Okay. I'd like to thank 7 you very much, all of you, for taking the time to come and 8 brief us. We are deeply appreciative. It's certainly a 9 timely briefing, and you've made it an extremely 10 interesting one. I'm sure if there's any way. We do 11 appreciate the time.

We know that the committee in the future would like to keep in touch with you and perhaps have you come and visit us periodically to let us know what's happening as the political events develop on the outside and this becomes even more urgent as we suspect it might. Again, thank you very much. MR. KANE: Thank you, and we look forward to coming back.

CHAIRMAN POMEROY: Thank you. We'll now take a 15 minute break and reconvene at 10:30.

22	(Whereupon, the	foregoing matter went	off the
23	record at 11:23	a.m. and went back on	the
24	record at 10:30	a.m.)	

CHAIRMAN POMEROY: Let's return the meeting to

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order. The next item on our agenda this afternoon is a continuation of our discussion. The next portion is NRC's 2 licensing process for a centralized interim storage. And 3 the opening remarks and introduction will be made by Susan 4 Shankman of the NRC. And, as you can see, she has other people with her to help out. 6 7 And I assume they will introduce themselves or you will introduce them as appropriate. 8 9 MS. SHANKMAN: Sure. CHAIRMAN POMEROY: Welcome here. We deeply 11 appreciate your time and effort in coming down, and we look forward to your presentation. Please proceed. 12 MS. SHANKMAN: Thank you very much, gentlemen. 13 I'm glad to be here this morning, NRC staff and visitors. 14 (Slide) NRC'S LICENSING PROCESS FOR CENTRALIZED INTERIM STORAGE 16 17 MS. SHANKMAN: As the Chairman noted, we're 18 going to talk about the staff review of the presentation 19 that was made this morning about the centralized interim storage. Charlie Haughney, who is the Deputy of the 22 Spent Fuel Project Office, will be making some remarks at the end. In the meanwhile, I will make the introductory 23 remarks. 24 I'm the Branch Chief of the Transportation NEAL R. GROSS COURT REPORTERS AND TRANSCRIBERS 1323 RHODE ISLAND AVE., N.W.

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25	And if you can think of it as sort of
24	requirements of Part 72, which is the ISFSI.
23	topical report has, in fact, been crafted against the
22	mentioned this morning is that this review process of a
21	MS. SHANKMAN: One of the things that Mr. Kane
20	(Slide)
19	you have along the way and then at the end.
18	And we'll be glad to answer any questions that
17	site-specific applications and then at the end summarize.
16	we have been using for the licensing of actual
15	spent fuel, storage as well as overview the process that
14	a bit about the different technologies for dry fuel, dry
13	process for the topical safety analysis report and discuss
12	is to present the Spent Fuel Project Office's review
11	MS. SHANKMAN: What we hope to do this morning
10	(Slide)
9	presentation in between myself and Charlie.
8	function in the office. He will be making the
7	Eric Leeds this week, who has the project management
6	very much involved in this for a while and is acting for
5	Project Manager in the Spent Fuel Project Office, has been
4	In addition, Mike Raddatz, who is a Senior
3	relates to facilities and citing.
2	Office. And we have developed most of the guidance that
ı	Safety and Inspection Branch in the Spent Fuel Project
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concentric circles, we're being asked if there's one circle that's the dry cask system. And the second circle would be the site and the facility review and safety considerations. And the third would be the actual site and its environment, a specific site. We're asking to review the middle circle.

For the cask system and the design, we don't have one that's been certified. And we don't have a site that's been identified. So in a sense, we have an open end at one end and an open end at the other. And, as you can imagine, that presents some significant problems. However, we feel, as DOE has presented, that it can move us along in a meaningful way. And we are going to give it our best effort. But Mike will explain to you how we plan to walk through that.

The first step will be an acceptance review, and by that not an acceptance of the actual content but just an acceptance of the application, like: Is there sufficient detail for us to spend the time to review it? And that's a process we go through with every piece of paper that comes through the door because, quite frankly, some of them we don't feel we should dig into the detailed review, that they have to be fleshed out better.

24 So we are in that process. And by the end of 25 this month, we expect to tell DOE whether we're going to

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continue with the review. My guess if I were betting would be that we are, but it's part of our process. (Slide) MS. SHANKMAN: After that, we'll establish a 4 review team. And, as you may know, that will be a different technical expertise that we already have on 6 staff, which we might supplement with contractors or consultants. And we have done that with all of the other applications. The next step in that process would be we would go through it and we would review each, technical 11 expert would review, their particular section and develop 12 a series of questions, which we send out as a request for 13 additional information is what we call it, RAI. And then 14 there's a response to that. 15 Hopefully you would sort of have one request for additional information, but our experience is that there will be a Round 1 and there might be a Round 2. And 1.8 with some licenses, there's been more than that. 19 The issues, the problematic issues, we tried 20 to resolve them. Let me talk a little bit about what we mean by that. And then we do confirmatory calculations, 22 and we'd issue an assessment report. Unlike > specific

24 site application, where we issue a specific evaluation 25 report. a safety evaluation report, in this case we're

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1 going to do an assessment report, which is a little bit 2 different.

(Slide)

MS. SHANKMAN: Topical reports in the NRC. Now, I have been with the NRC since '82, and I have been involved with many topical report reviews. Traditionally, our approach has been that these topical reviews are focused on a particular technical topic.

Years ago, I was very much involved with the 9 emergency operating procedures inspection program. And 10 when we did that at the very beginning, we had generic 11 12 review of the technical bases for each nuclear power type, whether it was a C&E or B&W or GE or Westinghouse. And then we'd look at the technical bases for their emergency 14 operating procedures, and we reviewed those in detail. And then each site would adapt it to its own site. 16 17 Again, it was a technical topic, and it was very focused. It was geared a great deal towards 19 methodology. And the topical reports traditionally are a generic issue that applies to many sites. So you can see 21 that this topical report is very different from the traditional approach that we take. 22

And one of the problems inherent in this particular topical report, as I said, is that we're being asked to review the middle of three concentric circles.

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So I think what we believe we will be able to do successfully is come up with some agreement on the methodology, on the approaches that will be taken to different areas and agree also perhaps on the questions, but not necessarily resolve the answers.

And I think that that is a productive exercise. It certainly moves us forward if we have a clear indication of the questions that will be asked once a site is selected or named or however we get there, shall we say, whether it's legislative assistance or some other process.

So we're going to give it our best efforts. We think we're clear on what we can do and what we can't do. As we get into it, of course, we may find some problems that we don't know about yet. But we'll be left, we hope, with a resolution of the methodology to be used in solving some of the problems, and we'll be left with a clear indication of the guestions that need to be answeed in a site-specific application. So that's where we believe we are.

Now, Mike Raddatz, as I said, will now walk you through the specific process we believe we'll use. He'll talk to you a little bit about the technologies. Clearly, as Dan Kane said, we have not approved any of the systems that they're proposing to use.

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1 We are in the review process. So even the safety analysis reports that DOE is using or used to craft their topical report, we have already moved down the road 3 on those so that we're going to have to maybe review this 4 topical report in a sense on where we have moved in these five systems that were mentioned. So I hope you 6 appreciate that this is a complicated exercise we're going through. Okay, Michael. CHAIRMAN POMEROY: Excuse me, Susan. MS. SHANKMAN: Yes. 11 MR. STEINDLER: Could I ask one quick 12 guestion? 14 MS. SHANKMAN: Sure. 15 MR. STEINDLER: The individual vendor reports or PSARs or whatever they're called, the review that 17 you're currently looking at, were those assembled with a 18 central storage facility such as this one in mind? MS. SHANKMAN: Well, no. MR. STEINDLER: Were they written with that kind of an application? 21 MS. SHANKMAN: Well, the cask systems are written with an ISFS1 in mind. And if you conceive of 23 this as a very large ISFSI, I guess they would be 24 conceived. **NEAL R. GROSS** COURT REPORTERS AND TRANSCRIBERS

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1	I guess Charlie can answer that.
2	MR. STEINDLER: Is that distinction
3	significant? I guess is what I'm asking.
4	MR. HAUGHNEY: I'm not sure the distinction is
5	so significant, but basically only in the most general
6	sense were they viewed, were these vendor applications
7	viewed, with a central storage facility in mind.
8	We had the MRS of the mid '80s, the MRS of the
9	late '80s and early '90s, both of whom died kind of a
10	paper death. And now we have the central interim storage.
11	So I think you really find that most of the
1,2	vendor applications are geared towards the customer base,
13	that small set of utilities that they have at that time.
14	Yet, I think they're going to work at a site like this.
15	Although we have to address the seismic
16	questions, most of them are designed to .25 g and that
17	sort of thing. So there's quite a punch list that's
18	developing as we look at this.
19	CHAIRMAN POMEROY: Susan, there's also a
20	question that came up earlier, and I wanted to find out
21	whether you had any comment on it. Do you foresee any
22	problem about this request to look at this chapter by
23	chapter and review and accept or reject the individual
24	chapters
25	MS. SHANKMAN: No.

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1	CHAIRMAN POMEROY: versus a more systems
2	approach that one might want to apply?
3	MS. SHANKMAN: Mike and Charlie can also add,
4	but I don't think that that is the problem. I mean, the
5	assumption I think in your question is that we will accept
6	the information and approve something within the chapters,
7	as I think I said. I don't think we're going to approve
8	anything that's going to be easily referenced and say,
9	"Okay. All of Chapter X is now incorporated in this."
10	So forming the questions chapter by chapter I
11	think will be useful because that's the way the
12	site-specific application will be framed. So those are
13	the topics that will be addressed.
14	Charlie? Mike, do you want to add something?
15	MR. HAUGHNEY: Yes. I don't think either DOE
16	or we are ready to do a systems approach to this yet. So
17	in the absence of that readiness, the best approach is to
18	try to just keep this sort of binned in a fashion that we
19	can all keep track of what we're doing, which is chapter
20	by chapter.
21	CHAIRMAN POMEROY: Okay. Thank you very much.
22	MS. SHANKMAN: Okay. Any other questions?
23	No?
24	(No response.)
25	MS. SHANKMAN: Okay. Michael.
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1	MR. RADDATZ: Good morning. My name is Mike
2	Raddatz. I
3.	I'm the Senior Project Manager here in the Spent Fuel
4	Project Office. I have worked here for a little over five
5	years. I have been working in spent fuel since I came to
6	the agency, but I spent 13 years in private industry and
7	10 years in the Navy. And, in fact, I was at Surry when
8	they loaded the first of the storage casks under the
9	demonstration program.
10	(Slide)
11	MR. RADDATZ: All of your questions were very
12	good. I want to address what we call a problematic issue,
1.3	which is the: What are we going to do in this assessment
14	report?
15	You'll note that it's not called a safety
16	evaluation report. Safety evaluation reports are normally
17	issued for things, not for facilities. We can get into
18	the Part 52 generic reactor, but this really doesn't
19	apply.
20	So we have elected to go for an assessment
21	report, and these are the goals. One is the
22	VICE CHAIRMAN GARRICK: Excuse me just a
23	minute, Mike.
24	MR. PADDATZ: Yes.
25	VICE CHAIRMAN GARRICK: The term "assessment
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1	report" is not called out anywhere in the regulations?
2	MR. RADDATZ: Correct. And we went through
3	many different titles on our way to this. The High-Level
4	Waste Programs have a pre-licensing easement report as
5	part of the High-Level Waste Program.
6	We could in theory call this a safety
7	evaluation report, but we have chosen not to as not to
8	mislead. We wish to be clear bout what we are going to do
9	and also very clear on what we are not going to do.
10	What we can do is we hope to have yes, sir?
11	MR. HAUGHNEY: There's a procedural issue
12	here, too. We don't want to start a licensing proceeding
13	before we have a licensing proceeding. And even with the
14	terminology and nomenclature, we're intentionally trying
15	to call it something that isn't in the regulations, like
16	an SER. Yes, sir.
17	VICE CHAIRMAN GARRICK: Thank you.
18	MR. RADDATZ: Early identification and
19	resolution of problematic issues prior to a license
20	application. This is the key thing. This may not be
21	critical path and I want to bring this right up front
22	as "Are we going to save any time by doing this?"
23	And the answer is yes and no. Yes, we'll save
24	a lot of staff resources, time. Individual efforts can be
25	taken care of now. But overall time for the review, we

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believe the critical path will be led in other areas.

We have discussed this before. More than likely, the hearing process will be critical path. The environmental impact statement will be critical path. But the review itself will not be.

We do wish to produce a document that is suitable for use in a license application. If the DOE chooses to apply for a license, we wish to have our work suitable that they can easily reference it. But what we're asking of the DOE is not to send an application in that just references this TSAR.

12 What, in fact, we want is a complete 13 application which basically transposes all the information 14 from the accepted TSAR into their app and that we will 15 pick and choose our way through a complete application. 16 We hope to resolve the discrete areas. When

17 you say "chapter by chapter review," we can't accept all 18 the chapters because there is too much of a systematic 19 interface.

There is a synergistic process that involves the casks themselves as simplistic, different cask designs in different arrays. How many different combinations are there? The answer is this is fairly infinite. I don't know until we see the different designs if we can bound them with one. We can try, and that's what we're going to

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1 do. But we won't say this is acceptable until we see the 2 final product.

In some areas, no determinations or conclusions. And that will be important as well to note that we have not made any determinations at all. And I think you've got a pretty good idea that site parameters and cask designs are the two areas that will probably be the most problematic.

Next slide, please.

(Slide)

MR. RADDATZ: The caveat. The DOE is not seeing anything that they didn't know about. All our conclusions will come with a straight caveat that says, "No further questions at this time."

We will look at the complete application when it arrives. Will they be down the road? Yes. We will have doubt with many of the difficult issues of possibly operations or interface requirements, possibly bounding earthquake or seismic analyses. That's good. But will we finish? No. And we're not claiming that we will. But we will get down the road.

At this point I'd like to look at a little bit of the technologies. Just before we go there, I find it's usually helpful to put up the casks that we're talking about. These are the black boxes.

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Ms. Shankman talked about the circles within circles. This is a typical steel storage cask. This is typical of a storage and transport cask. The term they used is dual-purpose. Up until several years ago, this would be a dual-purpose cask. You add impact limiters. You put it on the road. Without impact limiters, it's a cask sitting on a pad.

8 They are all very similar. They have 9 trunnions for handling. These weigh in excess of 125 tons 0 generally. They are large devices. They all have a 1 basket in which the fuel assembly is replaced.

They have shielding -- and it's usually in the form of steel and lead -- and a neutron shielding, which is in the form of a hydrogenous material, such as bizco or concrete even has a certain ability. Anything with a lot of moisture in it will give you your shielding. This is typical.

(Slide)

MR. RADDATZ: Next cask picture, please. What's an ISFSI? Well, an ISFSI, an independent spent fuel storage installation, is this. What is a centralized interim storage installation? This, bigger.

How many different cask designs? Ell, can you put a lot of them on a different pad? The answer is yes, we've got four here. And this is in existence today.

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1 This is at the surry.

You'll see the Caster 10, which looks like the
Caster 5. You've got an MC-10. You've got a TN here.
These are all different casks meeting different solutions.
Now, bounding criteria. As an example, can we
work a facility and bound it? The answer is yes. This is
a Seismic Category 1. That means it has to maintain the
safety functions in an accident. It doesn't mr. nt it
can't crack. But in this case, the casks have to remain
upright.

Someone asked the question of: Well, couldn't they tip over and do a domino effect? It is a good thought except for one thing. That weighs 125 tons, has got a footprint of about 12 fete.

Will the .25 g earthquake knock it over? The answer is probably not. And, in fact, the largest, even the Charleston, earthquake, where we have been looking at what's the maximum we're seeing here, we think the walk a little bit. And we, in fact, don't even like that. We don't want them to walk. We'd rather have them just sit there.

Defense-in-depth. Mike, what happens if they tip over? Defense-in-depth is their design. The bounding structural analysis says they're designed to survive a tip-over. And that's a tip-over with no breach of

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confinement. We're not taking into account a mechanism
 which would mitigate the consequences of a release. There
 is no release.

Site-specific. The tip-over analysis here drove this impact limiter. At the time that this pad was placed here and that these casks were approved, it was brought up very briefly the use of soil as a dual pad on a spring, as an impact limiter.

9 We had not completed our analysis. And that 10 drove us to analyze this surface as an unyielding surface. 11 That's extremely conservative. That drove the cask vendor 12 to design an impact limiter for the top. Since then, we 13 have gotten a little further down that road, but that's 14 beyond the scope of this discussion.

Next slide, please.

(Slide)

MR. RADDATZ: A minute ago I showed you a cask design that was a steel cask. Now let's talk about the concrete designs. This is a canister. Most canister systems are similar. This one happens to be from a NUHOMS, which is the DSC, dry storage canister, has channels that hold the spent fuel, has a support structure, has a steel liner but no gamma shielding. Next slide, please.

(Slide)

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MR. RADDATZ: Now we're back to it. This is a transport package. This is an on-site transporter. But 2 for those of you familiar with the different designs, you 4 may be familiar with the Vectra design, which is the MP-187. From the outside, this looks pretty much the 6 same thing. It's a big cask. That canister I just showed you fit inside this. This provides gamma and neutron 2 shielding for personnel. 9 Next slide, please. (Slide) MR. RADDATZ: But the concrete modules are what provides long-term storage. How does this relate? Well, at the DOE facility, a canister like that steel 14 15 canister with impact limiters would arrive on rail or by heavy haul truck. And these modules would be on the site. 16 They would slip that canister intact into the module and 17 continue to store it in site. 18 Next slide, please. (Slide) MR. RADDATZ: It was asked for a minute: What 21 about the different designs? How is it easier vertically 22 versus horizontally? I just wanted to show you we have 23 24 them both. 25 This is a VSC, a vertical storage cask. This **NEAL R. GROSS** COURT REPORTERS AND TRANSCRIBERS 1323 RHODE ISLAND AVE., N.W. WASHINGTON, D.C. 20005-3701 (202) 234-4433 (202) 234-4433

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1	is the concrete Sierra Nuclear type design. It has a
2	similar style canister inside.
3	Next slide, please.
4	(Slide)
5	MR. RADDATZ: It looks like this. It's got a
6	basket, a steel liner, a place to put spent fuel, the
7	concrete supplies in this case both gamma and neutron
8	shielding. It has vents Air goes in, and the air goes
9	out at the top. All these systems are passive. They're
10	all very straightforward.
11	Next slide, please.
12	(Slide)
13	MR. RADDATZ: And last, but not least, what
14	does a centralized interim storage facility look like? It
15	looks like this. It has a pad with a lot of casks on it
16	and a building that you move cranes in and out of. This
17	is, for all intents and purposes, a huge storage facility
18	with some interesting abilities to move and handle fuel on
19	a non-routine basis.
20	What have we looked at? That's the last
21	slide. What have we looked at? We as the agency if you
22	1140, which is the basis for the rules for Part 72, you'll
23	find we looked at many different designs and many
24	different potential configurations.
25	I want to get into the licensing process now.
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(Slide)

MR. RADDATZ: Most are familiar with that 10 CFR Part 72 has two licensing methods: site-specific and general. I'm going to mention general because I don't want you to confuse it. But then we're not going to talk about it anymore. The site-specific process is what we're going to be dealing with.

An away-from-factor facility, an independent 9 spent fuel storage installation, regardless of the 10 licensee, is a site-specific license. The MRS, monitored 11 retrievable storage, as defined in the Nuclear Waste 12 Policy Act, as placed into 10 CFR Part 72, is an 13 away-from-reactor facility with one licensee: The 14 Department of Energy.

15 Centralized interim storage is not defined. 16 Therefore, anybody could offer to do this. The Committee 17 may be aware that certain Indian tribes have attempted 18 initiatives to store spent fuel privately. That is an 19 away-from-reactor independent spent fuel storage 20 installation. For all intents and purposes, it has to 21 meet the same tests and standards that the DOE is coming 22 forth.

The general license. That license was issued to power reactors under Part 50. You don't have a Part 50 license, you don't have a general license. And that

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395 general licensing process gives you the certified designs. 1 So this facility cannot assume a certified 2 design is automatically acceptable. They have to submit 3 4 an amendment request for ever new certified design, and it has to be added to their licensing base. It's not automatic. 6 There are many different licensing processes that are involved here, not one, but several. So a cask 8 that's okay to be used at Surry under the general license would have to be added to the Department of Energy's license request to use it under their site-specific 11 license. And these are the rules as written. We'd have 12 13 to change them if we want to go into it. 14 Now, again, general license, that's a certified cask. This facility does not have to use certified casks. They could pick their own. They could 17 license them for their own purposes should they choose to do so. 18 You may have heard of the project that was the 19 multi-purpose canister that DOE was trying to pursue. 20 They stopped doing that now. And Westinghouse has just 21 come in. Part of that application is here now. It arrived yesterday. More work. 23 That's the transport side of that application. 24 That has two halves. Remember, Part 71 is the transport

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side. The Part 72, storage side, is the other half. There are two sets of design bases for there. And they get two different certificates. There's no such thing as a one process, one license. 4 Next slide, please. (Slide) MR. RADDATZ: When we issue a site-specific license, there are advantages: flexibility and 8 uniqueness. You can design it any way you want. 9 Someone mentioned a trenching. Is it possible to place them down? That's a potential aspect of a 11 site-specific license that would not be analyzed under a general license process because the cask unless that was 14 proposed would not have been analyzed. Disadvantages: the application process and 15 NRC review time. There is a hearing. It does take time. 16 Next slide, please. 17 (Slide) 18 MR. RADDATZ: What do we do? Direct review of 19 an application, approval of a storage system's topical safety analysis, report or combination of the above? Guess what? We're at the combination of the above. This slide is very old. I've been using it for about four years in discussions, before I ever heard 24 of this. This is the process. It's well-received. 25 NEAL R. GROSS COURT REPORTERS AND TRANSCRIBERS

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1	Next slide, please.
2	(Slide)
3	MR. RADDATZ: What does the site-specific
4	license process consist of: pre-licensing consultations.
5	We have been talking to the DOE for approximately two
6	years. The application, received it November.
7	MR. HAUGHNEY: Mike?
8	MR. RADDATZ: Yes?
9	MR. HAUGHNEY: Let me just point out that,
10	really, with this topical thing, we're still here because
11	the application for the actual license hasn't been filed
12	yet.
13	Now, I know we've got an application for
14	topical and we're considering that, but we're still really
-15	in this phase here. And we're trying to make it really
16	more efficient. That's what this is all about.
17	MR. RADDATZ: Thank you.
13	Not to confuse it because this really follows
19	into the next step. The work we're doing now is in here,
20	but I want to walk through what's going to happen
21	afterwards. When the DOE comes in for their application,
22	let's see where it will go.
23	notice the receipt
24	We have an application review process. When
25	we get that application, we'll notice the receipt. We
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don't put out a notice of receipt for a topical. 1 Opportunity for a hearing? There's no opportunity for a hearing at a topical. And if a hearing 4 were requested, you can't ask for one if one's not offered. Next slide, please. (Slide) MR. RADDATZ: However, the safety review 8 9 process will be the same. We're going to go through a thermal evaluation, shielding, structural, and 11 decommissioning. Each of those casks has had an individual analysis done. What the DOE has asked us to do is treat 13 them as a black box as to treat each individual cask as a 14 discrete unit with a boundary around it which we will bound thermal, shielding, structural, and decommissioning. They've asked us a lot. I don't know how far we're going 17 to go with that. We're going to try and see if we can come up with bounding numbers. 19 In our evaluation process, I said that we 20 would come to certain conclusions and maybe even some 21 findings, but are they going to be definitive? The answer 22 is no. Where possible, we will be providing in our 24 assessment report the technical basis that led us to a conclusion of it appears to work, it appears to be 25

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acceptable.

If it's a thermal evaluation, it may be the site parameters of the maximum temperature of any one 3 site's 125-degree day or -20. These will be listed so 4 that when a site comes in, it will provide the starting point for the DOE to reference what we have done. They would come in and say that, "You said this appeared to be acceptable, the maximum temperature was 100 degrees." 8 We're saying it's 100 degrees. That should shorten our 9 process because we're now not approving 100 degrees. 11 We're verifying it. Structural, decommissioning is the same way. 12 Next slide, please. 13 (Slide) 1.4 MR. RADDATZ: The review process looks at confinement barriers, criticality, testing and 16 maintenance, pre-operational, and operational. This is 17 big these days. Everybody has heard about the unloading 18 1.9 procedures and such. To find the barriers, the analysis and design of every cask that's currently licensed has a leakage rate 21 of 10⁻⁴ cc's per atmosphere. It's pretty low. 22 It was described to me by some gentlemen from 23 Livermore that if the casks were built at the time of the 24 pyramids and loaded, by today approximately one liter of NEAL R. GROSS

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And this is a normal operations.

And, yet, during the accident analysis that we do, the bounding structural analysis is a tip-over. And 4 we assume in our accident analysis that the casks survived. The confinement boundaries are not breached. There are reasons for that that the driving design basis behind the regulations is not the protection 8 of the environment in this case, but it's the protection 9 of the fuel against damage, which protects the environment. And by protecting the fuel, we're basically a first order protection. 12 The odds of failure of a confinement boundary, 13 there's like a safety factor of eight built in. And 14 that's only if you could figure out a way to put that kind 15 of energy into the cask. 16 Next slide, please. 17 (Slide) 18 MR. RADDATZ: Regulations consider natural 19 events. The Department of Energy has mentioned most of 20 these already: earthquakes, high winds, wind-driven missiles, floods, lightning, snow, and ice. They're all in there. We look at all of them. They're all part of our basic analysis of each cask system. 24 Now, the buildings themselves and their 25

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. .

transfer facilities, we will be applying as applicable the same standards to those facilities but always remembering that the safety function of confinement may still be with the cask, not with the building. But we don't want the building falling on the cask because that would be an unanalyzed condition. So we would be looking at them from a different performance function. So the standards would be applied.

9 Many of the standards in Part 72 are 10 performance-based, and thou shalt keep it subcritical. 11 That doesn't say the K effective will never be greater 12 than .95.

While we're here, we have the standard review plans. I know some of you have the 1536s, the one for casks. NUREG-1567 is the one for facilities. A 1567 is out in draft for comment. In 1536, we had over 700 comments. And we had to resolve all of them, considered all of them, and incorporated some that we felt were valid. I was the project manager on this one. So I'm fairly familiar with the bases that were here.

But this is not a dead document. It is not finished by any stretch of the imagination. It is very much alive. These documents will be on the internet. In fact, they already are as a test case within the agency so that people can call up at any one day and read the new

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1 |one, what's it say today.

And we're going to have a place where people can see what changes are being made because standard review plans are staff documents. This is not the regulations. This is our interpretation today or how we think it's going to happen. And we think this is the best to approach it.

8 So as we look at earthquakes, high winds, 9 tornadoes, if there is a change in our philosophy on how 10 we're doing a review, we will immediately make it known to 11 everyone. And they'll know where it is, and we'll be 12 telling them.

13 Next slide, please.

CHAIRMAN POMEROY: Before you leave that, --

MR. RADDATZ: Yes?

16 CHAIRMAN POMEROY: -- let's just spend a 17 minute here. 1 am concerned that the siting 18 characteristics per se that are contained in Part 72 are 19 referenced to 10 CFR 100, Appendix A. I'm not clear

20 quite.

25

14

We're not in the stage where we're looking at a particular site at this point in time. There certainly must be an additional, strong additional, step at some later point in time when the site is identified.

For example, if it were to be on the Nevada

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403 test site, one would have to look at volcanic activity. 1 One would have to look at not only ground motion but also 2 fault displacements. There are many, many things in Part 3 100. And I assume that would happen. 4 So how are you looking at natural events here 5 in contrast to the time when you have a site-specific 6 designation? 7 MR. HAUGHNEY: We really haven't started. We have just gotten this document within the last few working days. So it's being docketed. But your question, I'm almost ready to see if you'd come and be a member of my 11 review team. That's exactly --12 CHAIRMAN POMEROY: Well, I may be without a 13 14 job soon. MR. HAUGHNEY: That's exactly the sort of 15 question that we're trying to I think in most cases 16 17 developing ourselves. And I'm not sure that's one we could bring to closure --18 19 CHAIRMAN POMEROY: No. MR. HAUGHNEY: -- at this stage at all. I think the last time I was here we talked about even our 21 plans to try to look at a rulemaking to tailor-make a 22 seismic criteria, really a siting criteria, for these types of facilities and that Research has agreed to take 24 that abound. But it may miss the train for this one, NEAL R. GROSS

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unfortunately, as so many of our initiatives seem to do.

But in the meantime, that criteria has been around quite a while. And I think people do know how to use it, even though they may argue against its robustness for the relative risk of this type of facility compared to a reactor facility. But you're right.

7 The other thing we can't do right now, we 8 can't prejudge the Congress. This is a big country. They 9 could pick other facilities. We all know what's in the 10 laws, but I think if we took our review, much like if DOE 11 took their application and focused this topical too much 12 towards Area 25, we could all be surprised. Odder things 13 have happened in this town. So I think we just have to go 14 with what we have right now, sir.

15 CHAIRMAN POMEROY: I was also thinking of 16 Appendix B that's been developed to Part 100 also, but 17 that's another thing that would require a rulemaking, of 18 course.

MR. HAUGHNEY: Yes, it would.
CHAIRMAN POMEROY: And that's a long process,
as we all know. I know you have this in mind.
MR. HAUGHNEY: That's right. We do.
MR. RADDATZ: And the seismic events, I'll go
back to that just for a sec.
CHAIRMAN POMEROY: Surely.

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MR. RADDATZ: Just quickly, many seismic events are covered. But remember there are defense-in-depth. Setting aside the buildings for one instance because I could probably look at a probablistic risk approach should we be required to, but setting that aside, let's look at the casks themselves, which provide the primary confinement. Remember the defense-in-depth. They're designed to survive.

9 I look at an earthquake as an initiator of an accident, not an event itself. Now, it's here as an event because that's what the regulations say, and that's what -- I will tow the party line and call it an accident. But an earthquake in itself does not affect a cask that is not close coupled to a pad. What it could do is knock it over. And that's about all that it could do.

16 I've had liquefaction brought up many times 17 left and right on many areas. I went and looked at what's 18 the largest liquefaction failure I could find, and it was 19 on the order of feet. That's a big deal for a building, 20 but for one of these casks, it's less of an issue because 21 all that, again, would do is cause the casks to topple. 22 And a bounding design analysis for it is that. So, as bad 23 as we consider that and we design against it, our 24 defense-in-depth is set to survive it.

Next slide, please.

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(Slide)

2	MR. RADDATZ: I want to bring these up. And
3	we're going to talk just a little bit. The question as
	asked, and I think I have an answer. We talked about
ŝ	accidents, and we talked about explosions, fires, drops,
	tip-overs, airplane events, and sabotage.

Explosions. We look at explosions in the form of -- we have looked at a natural gas C&G facility, neuro power plant, which gives you an over-pressure event. We have looked at a fire, the transporter, or the 20-minute transportation fire. This is again a design basis fire. Drops and tip-overs I beat to death.

Airplane events. There's always the question we'll always be asked in any hearing: What happens if a plane crashes into it? There's an elementary school down the street. What happens if a plane crashes into this?

My usual response is: What happens if the plane crashes into the elementary school? In this case, we talk about tornado missiles. And the tornado missile bounds almost all light plane and commuter events, the 4,000-pound automobile being flung by the tornado.

Anyone that's ever seen a plane wreck site knows that most planes are made out of tissue paper ard balsa wood and we should not fly in them because the only thing that's left is major engine structures.

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Now, that constitutes the mass that's 1 available for an FMA instituted as the engine itself. We 2 look at that. We do, and we have noticed that the tornado 3 missile automobile bounds like commuter aircraft. 4 The next question is: Mike, we're not talking about light commuter aircraft. I'm talking about jumbo 6 jets. There's only one power plant in the United States, one power facility in the United States, that has to worry about that. Now, NUREG-0800 allows a probablistic approach for dealing with airplanes. It's one of the few 11 places we use it today. Now, the facility, as infamous as it is, is 12 Three Mile Island. They're on the flight path of an 13 airport. Their containment structures are designed to 14 survive the impact of that rotor from the 747. 15 If they wish to site an ISFSI Rule 1, the cask 16 would also have to meet that same tested standard. This 17 is the general license doesn't bound everybody. It 18 provides the guidelines which a vendor or a facility has to show that their facility is bounded by the casks. 20 SO it wouldn't be allowed to be used there. 21 I would not attempt to site this facility in 22 the flight path of a major airport. It would probably not 23 be a very good thing because it would be very difficult 24 for us to get over them if there's the possibility that it NEAL R. GROSS COURT REPORTERS AND TRANSCRIBERS

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1 could fall there.

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5	The last issue is sabotage. The agency as a
3	whole has been dealing with this issue. It started with
4	the World Trade Center, and it has continued. We have
5	lots of data going back from before these events. And in
	light of Oklahoma City, we have looked at it again.

I can tell the Committee that a sabotage event is unlikely. The casks are self-protecting. They are massive structures. And Charlie can expand on that.

MR. HAUGHNEY: Well, we got into some questions on sabotage this morning and I think that the last time I was here, a couple of months ago. I think if your interest is at the level that I sense it is, we're going to have to have a closed meeting. And I'm also going to have to bring in the people from Safeguards because to get into any details, we just can't do it, unfortunately.

But it's an ongoing reevaluation because there is concern about the protection and whether you get a situation where you've got a release and how big, how far, and all that sort of stuff. We do have some information on it, but I just can't get into it in open session. CHAIRMAN POMEROY: Right. We understand that certainly. And it there ever is a need for us to go further with it, we certainly will do it in a closed

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l session.

2 MR. RADDATZ: And we'd love to, but this is 3 the wrong forum for that.

4 CHAIRMAN POMEROY: That's correct. Thank you. 5 MR. RADDATZ: The site evaluation factors are 6 driven by the accident analysis. Now, in every accident, 7 we have not been able to postulate an accident where there 8 is a release. Our design basis event is a non-mechanistic 9 failure. We just assume the whole thing falls apart 10 because we cannot postulate a credible accident, and 11 that's important.

12 There is no dispersal mechanism built into the system. Remember this is a passively cooled system. The 13 temperatures are quite low, even under accident analysis, 14 15 which is an adiabatic heat-up event, where there's no heat 16 transfer. The vents have been clogged. This still does not provide any method of -- there's not enough decay heat 17 to provide a huge dispersal mechanism. So it's not a 18 19 major issue.

These are the major factors right out of the rule. The minimum distance to an ISFSI to the controlled area boundary has to be 100 meters, during normal operations 25 millirem to the whole body, dose to an individual at the controlled area boundary is five. That's a real individual you can play with. We usually

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work at the fence, but that's considered a real 1 individual, not hypothetical. So it's five millirem. 2 I want to bring up that the environmental 3 review takes a complete environmental impact statement. I 4 don't believe this Committee needs to go through what! 5 that's involved. The bugs and bunny people are going to be out counting. We're going to be doing the whole groundwater 8 9 analysis. The methodology, hydrology, everything is covered in an environmental impact statement.

The question as to whether we would be a cooperating federal agency is probably a good one, and it has not been answered yet. So I can't answer that for you. I suspect that we would be, but I don't know. And until such time as that's fleshed out at a much high or level than myself, I'll leave that here.

With that, I think I'm on to my summary. And Charlie Haughney would like to summarize where we are today. But did you have any questions?

CHAIRMAN POMEROY: Yes. Before you go, yes.
MR. RADDATZ: I'm running out.
MR. STEINDLER: You postulated an interesting
regulatory target, which perhaps I lost track of when I
was reading the charter of this agency. You indicated
that your focus is the protection of the fuel. What

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happened to the whole question of protection of public 1 health and safety? 2 MR. RADDATZ: I'm sorry. If I overstated that, I'm sorry. By protecting the fuel, we add a huge 4 safety margin into the protection of public health and 5 safety. And, in fact, it becomes not a secondary issue but defense-in-depth to a large measure. By protecting the fuel against damage, what we 8 have done is we have limited the g loading that a fuel 9 element can see in an event. MR. STEINDLER: I know what you're doing. 11 MR. RADDATZ: Right. MR. STEINDLER: But let me continue that 13 little exercise. This huge -- I mean, I think that's an 14 understatement of the week depending on where it is. This 15 huge defense-in-depth conservatism, in fact, may run you 16 out of the reality area if the focus, in fact, is the 17 protection of the fuel. 18 I mean, you could do this in the middle of the desert. Even though you find that you don't have a 20 particularly interesting or useful dispersal mechanism, 21 you could tip one of these silly things over and the fuel can break. And the nearest person living 16 miles downwind or down gradient depending on what you're talking 24 about, it's a non-sequitur. 25

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l	MR. HAUGHNEY: Well, I don't think
2	MR. STEINDLER: Why are you going through this
3	exercise?
4	MR. HAUGHNEY: Well, we aren't going through
5	an exercise. We're implementing a regulation, but I think
6	we're doing it in much
7	MR. STEINDLER: Well, okay.
8	MR. HAUGHNEY: We're doing it in much the same
9	philosophy that we have done in reactor space. There is a
10	great deal of effort that goes on to protecting the fuel
11	in a reactor because if you do, then you are by definition
12	protecting the public health and safety and the
13	occupational workers. So we're really taking that
14	approach here.
15	And we're not just concerned about the
16	transportation workers or the fuel handlers at the reactor
17	or the central interim storage site. We're concerned
18	about fuel handlers at there repository.
19	Certainly if you've got integral fuel as long,
20	as it should be integral, you're in a better shape to
21	handle that.
22	MR. STEINDLER: Well, I don't deny that, but
23	that's not
24	MR. HAUGHNEY: That's what I was trying to do.
25	That's all we're really trying to do. We really only have
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1 one design barrier that we control in this whole process, 2 and that's the confinement barrier of the cask system 3 itself, whatever that is. So from a defense-in-depth 4 standpoint, we're far better off if we can protect the 5 cladding as long as we can.

And we avoided a situation that I think was mentioned a couple of hours ago by having a canister full of krypton-85 and then having to open it and deal with that and not really know whether you've got that when you start to open it. Incidentally, there are seal-welded vent ports on these with drain fittings so that you can get access to them. I don't --

MR. STEINDLER: They said that they weren't planning on doing that.

MR. HAUGHNEY: Of course not. But they might have to. I guess my point is I don't think we're entirely focused on the fuel for the fuel itself. I think we're focused on the fuel cladding as a preliminary step to ensuring that as much as possible we don't challenge the only barrier we really have. We don't have a reactor coolant system boundary plus a containment system boundary.

Now, granted we don't have the heat load. We're down to hundreds of watts maybe per assembly, typically something like that, with ten-year-old fuel.

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But we still have a hell of a big source term. And so
 it's really that philosophy on which the regulation is
 based.

4 It's interesting. When I go to public meetings and talk about this process, I'm completely attacked on the other side that we aren't doing enough. I 6 don't receive any real suggestions of design changes, 7 either honest or bizarre, that might be considered in this 8 thing, but people re not convinced in many cases that we are doing enough, even with this attempt to protect the 11 cladding with helium-covered gas and designing the tip-over accidents so that you don't damage the fuel and 12 all of these sorts of things. But you're right. 13

MR. STEINDLER: My purpose is not to attack 15 you. It might have seemed like that, but it really

MR. HAUGHNEY: No. But I wanted to defend the situation rather strongly because I felt there was a tenor in your statement that we were completely focused on the fuel and not the mission of the agency: protection of the public health and safety. And I just don't agree with that.

23 We're focused on public health and safety, but 24 we do it by concentrating on fuel and confinement 25 barriers.

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wasn't.

CHAIRMAN POMEROY: Maybe we should continue, 1 but I do appreciate the clarification and the discussion, 2 Marty, both. 4 MR. RADDATZ: Are there any other questions on the process or product? CHAIRMAN POMEROY: Can we hold them until 6 maybe we listen to the summary and --MR. RADDATZ: Sure. 8 CHAIRMAN POMEROY: 1 see where we are? 9 I think we'd like to run around the table and see if there 10 are any. Mike? 11 MR. HAUGHNEY: Thank you, Mr. Chairman. 12 I appreciate the fact the Committee continues to take an interest in this matter. And I'm particularly 14 15 pleased that earl - today you mentioned the fact that you would invite the Department back in to give you periodic 16 17 status reports. Somewhat selfishly, I think that's going to help me in my process by your level of interest in this. 19 CHAIRMAN POMEROY: We'd also like to do the same, of course. 21 MR. HAUGHNEY: We will be right behind them if you want us. CHAIRMAN POMEROY: Okay. Thank you. 24 MR. HAUGHNEY: Just to clarify something, add 25 **NEAL R. GROSS**

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to something I said earlier, even though this isn't an application, it's going into the Public Document Room. All of our meetings with DOE have been and will continue to be open to public observation. And we'll certainly welcome public interaction that people might be interested in. But we don't have a proceeding in progress yet. And I think we'll advertise that we have accepted this review under the presumption that we do that in a few weeks.

The second thing, I was pleased to hear DOE mention their 100-year design criteria. The way the law 11 and the rule are presently structured, we're confined to a 12 40-year license term administratively for this 13 application, but we can renew it procedurally any number 14 of times. But if the design is really out to 100 years and we can end up approving that, that will I think be quite helpful in terms of this concept of interim storage. 17 There was a question earlier about burn-up 18 And we're still using the fresh fuel assumption, 19 credit. but we have a topical report in from DOE, just recently revised in response to our earlier questions, that would give credit for the depletion of actinides, which is 22 something like 60 percent of the negative reactivity, I 23 24 think. And eventually that should be amended to include credit for long-term fission product poisons.

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So it's an issue that will help in that you could eventually presumably put more fuel in a canister, although I think we're going to run into weight limits. We're almost there on weight limits. And you've got 4 shielding considerations as well.

This is an important application to us, but I 6 must tell you we are chock full of major applications from operating power plants, from vendors trying to supply 8 casks for operating power plants. 9

Nineteen ninety-seven has been a popular year to come see us with Xerox boxes full of paper. And, in addition, we've got some applications holding over from 12 '95-'96 time frame that had they been in better shape 13 probably would have been done by now. They're not. 14 15 And, thus, the list that Mr. Kane put up earlier today, probably in many respects there should have 16

been a couple of applications finished, and they're not.

We're still actively working them.

So that's kind of my problem, but this still 19 20 rises to the top of the heap because potentially it's 21 extremely important to the National Waste Program, and we're going to treat it that way. We'll do the best we can to communicate effectively to DOE what we like and what we don't like, what we don't understand so that when 24 they give us an application for central interim storage in

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the future, it can be in better shape. So we can have a
 head start on the showstoppers. I think with that, in and
 of itself, it's a useful undertaking.

When I go out in the countryside and talk to people about spent fuel, if you're near a power plant site where storage is controversial, like Palisades or someplace, Point Beach, rairie Island, the focus is on: Get it off my site. We don't trust you, don't know how long it's going to be here. We know the Department is trying, but they keep running into roadblocks.

And there's a concern that the material will remain in the casks literally forever. And they know they're not designed for that. So what do you do now? And who pays for it? And what's the licensing regime 200 years from now?

If you get a little bit away from that type of reactor, the shift is to transportation. We don't want these things coming down our rail lines. You know, there are going to be thousands of shipments, big campaigns going on for decades.

A number of the shipments will have to be trucked because some plant sites can't handle rail. And then, of course, they don't hold as much. We're talking on the order of one to 4 PWR assemblies in a truck cask, as opposed to in the low 20s for a rail cask. So to get

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1 that much fuel off a site takes many more shipments if 2 it's restricted by crane size or rail access, that sort of 3 thing.

So the transportation opposition is just beginning to pick up speed. It's like a huge flywheel, and it's just barely moving. I think that's going to be a terrible burden on the staff and on the Department as we really focus on explicitly what we're going to be doing.

9 The regulations are in place. There's what 10 methods are approving routes and getting emergency 11 planning done. These things have been talked about for 12 years, but actually implementing it, convincing the public 13 that it's safe to move this to Area 25 or wherever, that's 14 going to be an unbelievable job.

The last tring in terms of tidbits, vendor performance. I mentioned to you last time that it's pretty bleak. We had to issue a confirmatory action letter to Sierra Nuclear and three to the licensees that use their VSC-24 cask. We did that a few days ago. And it's involving a real question about the integrity of the seal welds on the lids.

They're cracking at an unacceptable rate during the cool-down after the welding, and there are even questions about whether the cracks could occur days or a few weeks later, not just minutes later, where you're

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liable to catch it with the dye penetrant check that's
 done or the helium leak test.

Inal makes three vendors I've got under
confirmatory action letters because of design-type
problems or design to fabrication interface-type problems:
Nuclear Assurance Corporation, Sierra Nuclear Corporation,
and Vectra. The last two are the most popular among the
utilities for selection.

9 Each of those three, incidentally, does have 10 an application in for a dual-purpose cask system, and they 11 were listed up there.

This vendor performance has got to get turned around or it's just going to drag this whole process down to a screeching halt. We're going to work on it in two ways increased inspection activity; obviously increased enforcement activity, as I have mentioned.

And, finally, we're going to look in more detail at licensing. I'm going to start looking at weld fabrication and ways that I -- I don't have any experience doing that from a licensing standpoint. It looks like we have to, amperage and fit-up and pre-heat and post-heat and moisture content and purging and all of that sort of stuff. I don't think I've got a choice.

24 The S. 104 and H.R. 1270 schedules, we had a 25 slide on those we could put up. I'm not sure it's worth

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it at this stage. I'd like to let you ask the questions. 1 We're more comfortable with the S. 104 schedules that are a little more realistic in terms of our constraints under 3 4 really doing an environmental impact statement, really doing a hearing, that sort of thing. But we'll do the best we can. We have other laws to obey besides these, Administrative Procedures Act, Atomic Energy Act, NEPA, 8 and a few things like that. And I guess if they get in 9 conflict, the lawyers can talk about it for a while. Anyway, I think this is an exciting project. 11 And I hope it's a forbearer of a real one and not just a theoretical application. Thank you, Mr. Chairman. 14 CHAIRMAN POMEROY: "Thank you for a very interesting presentation. I would like to take a few minutes and ask my 17 colleagues if there are any questions, starting with Dr. Hinze, on my right, but I would ask my colleagues to 19 20 remember the schedule. MEMBER HINZE: With that, Charlie, I will say that I question whether my question is germane and perhaps even fair, but let me try it anyhow. There are many drivers for our friends in 24 Congress. And certainly one of the drivers for this 25 NEAL R. GROSS

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422 recent legislation is the fact that there are problems, 1 perceived problems, with the safety associated with dry 2 site storage at reactor sites. What is the NRC doing to make certain that 4 there is an enhancement of this as we move towards a centralized storage? 6 MR. HAUGHNEY: Well, I think your perception is absolutely correct. And we get inquiries from the 8 Congress or the public, particularly the informed public, that watches this situation. They tend to feed back issues like the weld uracking and the hydrogen explosion. 11 What I'll tell you is really replete in what I 12 What we're doing is increasing the enforcement just said. 13 action. The utilities involved in the VSC-24 can't load 14 casks. And a couple of them are running up against refueling outages. So that's pretty big time. 16 MEMBER HINZE: Yes, sir. 17 MR. HAUGHNEY: And we've got a bit of an 18 open-ended question now. We don't have the answers in. The staff has to take a tougher look. I know it's a regulatory ratchet, and we try to avoid that where 21 we can. But I think there have just been too many 22 instances of these kinds of things, and we have got to get 23 in there, at least for a while, until we're confident that 24 the performance is better.

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We have been encouraging the industry to try to do the same. And with some of the cask owners' groups, NEI, I hear things are happening, but I haven't yet seen the performance change at the fabs shop floor. It could be that the time constant to see the effects of that is a big longer, but we can't wait any longer.

Yes, sir?

MEMBER HINZE: The central facility, then, is going to be safer than the storing it at Zion or Prairie Island?

MR. HAUGHNEY: The safety, the basic safety, 11 of either storing at a reactor or storing at a central 12 site we view as being the same. The advantage we see to 13 14 the central storage facility in the absence of a repository for a while is that as reactors shut down and 15 you lose the nuclear infrastructure that you have at these diverse sites, you will consolidate your nuclear activities for these very large sources at one location, where the expertise is more focused. And then we can 19 concentrate our activities. MEMBER HINZE: Thank you very much. 22 MR. HAUGHNEY: Yes, sir. CHAIRMAN POMEROY: John?

24 VICE CHAIRMAN GARRICK: I don't think I have a 25 question, but I have an observation. You and your

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1	predecessors today described this project as an exciting
2	project, and I'm wondering why I'm so depressed.
3	I think that this is just another reminder of
4	something we have known, and that is that, considering the
5	relatively benign risk issue that's involved here, it's
6	just another reminder of how terrible a job we have done
7	in educating the public on the issue of radiation safety.
8	And it's certainly exemplified with respect to the issue
9	of transportation.
10	I think transportation is used as the primary
11	excuse for doing things the most difficult way possible
12	because people just have an absolute fear of moving this
13	relatively benign stuff around.
14	And I don't know what we can do about that,
15	but, again, it is something that we have just dore a
16	terrible job of.
17	CHAIRMAN POMEROY: Let's leave that as a
18	comment, then, John.
19	MEMBER HORNBERGER: I just want to make sure
20	that we all agree with John. That is my question is,
21	Charlie, you mentioned that this would be a chance for you
22	to look at potential showstoppers. Are there potential
23	showstoppers with regard to public health and safety, as
24	opposed to with regard to public opinion?
25	MR. HAUGHNEY: I see no showstoppers with
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storing this fuel in pools or casks or moving it down the highway in public health and safety. The public opposition one is a tougher one, and I share maybe Mr. 3 Garrick's frustration more than depression. But it is a 4 tough problem. I've often told people in the public that I don't know how to convince you. Putting the facts up on the board or explaining what one millirem per year is 8 doesn't seem to work with certain individuals. 9 I think some of them are genuinely very afraid. And once fear takes over, they're into this 11 survival mode. And our intellectual destruction doesn't seem to help much. 13 CHAIRMAN POMEROY: Marty? 14 MR. STEINDLER: Yes. One question and then a semi-question. How do you intent to inject the role of ALARA into the safety-related criteria? 18 MR. HAUGHNEY: Well, fortunately ALARA is now 19 an explicit requirement in Part 20. So I may defer to 20 some of the health physicists in the room, but DOE has to 21 meet it. And I think we saw an example of that in an early design change, when they decided they had to go to more remote handling in their fuel-handling area because 24 the projected doses were simply too high.

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1	MR. STEINDLER: And that's an approach that
2	you are fairly comfortable with?
3	MR. HAUGHNEY: Very much so.
4	MR. STEINDLER. My other comment, and I
5	don't know whether it's couched as a question there is
6	at the moment, as far as I know, no significant experience
7	or even an attempt to determine the behavior of stored,
8	dry stored, fuel for 40 years.
9	So you're going to have to provide some kind
10	of projection as to what you think might happen, going
11	back to your initial commentary about fuel protection and
12	to the integrity of the system.
13	What do you expect from DOE in this regard?
14	MR. HAUGHNEY: Well, to be honest with you, I
15	don't know yet. But let me get a little side bar in
16	there. I've got the problem at the commercial sites, like
17	Surry.
18	That Surry license is going to expire in about
19	ten years. And presumably it's going to need to be
20	renewed. And I'll need and Virginia Power is going to
21	need a technical basis for renewing it, which will look
22	into that question, if not out 40 or 30 years, some value.
23	So I've directed our staff to begin to work
24	with our Office of Research and with the Department as
25	necessary to come up with the framework for a technical
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1	program to develop the understanding needed to renew these
2	licenses beyond 20 years.
3	So it's an excellent question.
4	MR. RADDATZ: If I may, the test facility is
5	Test Area North in Idaho was part of the DOE demonstration
6	program. These casks are out there. The fuel that was
7	placed in them is fully characterized.
8	We have been working, we have been exploring
9	with the Department of Energy the possibility of utilizing
10	the fuel that's out there and doing actual tests and
11	destructive testing of the materials that make up these
12	baskets because the baskets are made out of alloy steels.
13	They have been under the exact same conditions of storage.
14	And if we are going to provide a design basis for life
15	extension, we think we might need that type of
16	information.
17	We have a few years left. As Charlie
18	mentioned we're looking with Research, but this is a money
19	issue. The ability to go out and do basic research at
20	this level could be very hard, and we're looking into it.
21	MEMBER HORNBERGER: Thank you.
22	CHAIRMAN POMEROY: Okay. I guess that's it.
23	We'd like to thank you all, Charlie, Susan, Mike.
24	MR. KANE: May I make just one brief closing
25	statement here?
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1	CHAIRMAN POMEROY: A very brief one if you
2	MR. KANE: It will be very brief.
3	My name is Dan Kane with the Department of
4	Energy.
5	And I just want to confirm that we came in
6	here and asked the NRC to review this submittal. And we
7	had certain expectations. They have addressed those
8	expectations today.
9	And, just for the record, I want the ACNW to
10	know that it appears to me that these are very congruent.
11	We use different words in some cases, but we are satisfied
12	with what the NRC staff has said that they think they will
13	be able to do. We appreciate that.
14	Thank you.
15	CHAIRMAN POMEROY: Thank you for that clarity.
16	Okay. Thank you all very, very much. As I
17	said, we'd like to continue to keep on top of this
1.8	situation, particularly as it develops and perhaps becomes
19	even more timely than it has in the past. We appreciate
20	your effort, though, to come down here.
21	MR. HAUGHNEY: Yes. Thank you. And bon
22	voyage, Mr. Chairman.
2.3	CHAIRMAN POMEROY: Thank you.
24	All right. Moving right along, the next item
25	on our agenda is the discussion with the Director of the
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1	Division of Waste Management, John Greeves. And he's
2	accompanied by Margaret Federline.
3	Welcome to you both. As you know, you're
4	always more than welcome here. We always make guesses as
5	to what we're going to talk about, perhaps educated
6	guesses. But, as always, it remains in your court to
7	decide what you'd like to talk about.
8	And so I'd like to turn the meeting over to
9	you, John, if that's fine.
10	MR. GREEVES: Okay.
11	DISCUSSION WITH THE DIRECTOR,
12	DIVISION OF WASTE MANAGEMENT, NMSS
13	MR. GREEVES: We're going to vary a little bit
14	from your guesses. But I think you will be interested in
15	the topics. They're fresh because I sort of want to keep
16	you up to speed with what's happening and current. Some
17	of them I think you're familiar with, but I find this a
18	good format.
19	Margaret is joining me today and will speak to
2.0	a couple of these issues.
21	First, before we get started, I'd like to
22	probably reintroduce King Stablein to the group. Most of
23	you know King.
24	CHAIRMAN POMEROY: Very well.
25	MR. GREEVES: King, you're in the audience
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1	here?
2	MR. STABLEIN: Yes, I am.
3	MR. GREEVES: Okay. King is back with us for
4	a time. You're familiar with John Austin moving off to
5	DOE oversight activities. And to help with the backfill
6	process, we told you I think in a previous meeting that
7	Mike Bell would move over and act in John Austin's
8	position. And King is going to be working out of Mike
9	Bell's position. So we welcome him back to help us with
10	this project.
11	I'm not quite sure how long we're going to be
12	able to keep him, but I just wanted to make sure you had a
13	good introduction. And, as I said, most of you know him.
14	Those who don't, I encourage King to come around and visit
15	with you and get to know you a little better.
16	CHAIRMAN POMEROY: 1'd like to welcome you
17	back, too, King. It's always good to see somebody with
18	geological expertise.
19	(Laughter.)
20	MEMBER HINZE: Especially that comes from a
21	school that now has a football team.
22	MR. STABLEIN: At long last. Thank you.
23	MR. GREEVES: All right. With that, I'm just
24	going to start through my list of topics, the first of
25	which is the decommissioning rule. I gave you some
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1 background on that in the last meeting. And I'm sure 2 you're aware of it, but I'll repeat it.

The rule was confirmed yesterday. And I think it's been a long road. And many of us are pleased to see that action in terms of getting it out there so that the staff can, in fact, use that rule in terms of all of the decommissioning activities that confront us. So that's the good news.

9 The bad news is we've got to get guidance out 10 now on that particular rule. So I don't know whether 11 you've read the paperwork, but it looks like there's a 12 requirement for us by February of next year to get a slate 13 of guidance out there. And it really does need to be out 14 there.

So we're going to be working quite hard, not 15 that we haven't been already, but we're going to be 16 working quite hard with Research, our own staff, others to 17 get guidance in place to support the decommissioning rule. 18 I think your staff and you are familiar with a 19 lot of effort has gone into the survey process, how do you run surveys, how do you do it efficiently, how much should the NRC staff do, how much should a contractor do, how much should the licensee do. And we have worked very hard 23 on that project. So somewhere along the line, I expect 24 we'll be informing you better as to how that plays out.

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The MARSIM document is one that we are going 1 to be relying on. And it I think has been guite useful 2 that it has been worked on by a number of agencies. So we would look for consistency with that. 4 We have been developing some tools like the D&D pathway analysis-type code. I'm sure you have heard 6 about that. And we would be bringing that forward in 7 terms of guidance to people to evaluate the simple sites. 8 Research is working also with us on a more complete analysis, the SEDS-type executive program. I 10 think you probably heard about that. And we would look 3.1 forward to that being available, both for the staff and 12 licensees that have a more complicated type of site. I would also point out that the DSI 9 that 14 came out a while ago identified a workshop environment to 15 try and help some of the less complicated sites in terms 16 of what kind of tools are available for licensees to 17 decommission this site. So I'm looking forward to making 18 the most of that workshop. I think it's timely with the rule coming out, 20 the guidance being developed that we would look forward to 21 that workshop. And I'm sure your staff and maybe some of you would look to participate in that process. 24 So, anyway, that's the update on the 25 decommissioning rule and --NEAL R. GROSS

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CHAIRMAN POMEROY: John, just to interrupt you there for a second if I might, -- and we can talk about 2 this perhaps carefully -- is there an implication from the 3 past that we might expect, then, some addition of some of 4 these sites to the CERCLA list or is it too early to speculate what that might be? 6 7 MR. GREEVES: That's gotten a lot of play, but my experience looking at all of the sites that we have, to 8 get on a list like that, you have to go through the 9 scoring process. 10 CHAIRMAN POMEROY: Good point. MR. GREEVES: So I think there would be 12 relatively few. We have looked at a couple we thought 13 might be candidates for that process if that were EPA's 14 decision they wanted to exercise that. And one of them 15 would not score, and the other one would. So it's a 16 relatively small number. 17 So I don't see in my crystal ball a lot of 18 them falling into that potential category, but I think we 19 need to all let this confirming the rule kind of gel and see what happens after this. It's received a lot of attention. And I think 22 23 we'll all look over the summer and see how this thing plays out. 24 CHAIRMAN POMEROY: Thank you, John. That's NEAL R. GROSS COURT REPORTERS AND TRANSCRIBERS 1323 RHODE ISLAND AVE., N.W. WASHINGTON, D.C. 20005-3701

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fice. MR. GREEVES: All right. So I'm going to stop lat that poird in terms of the decommissioning rule. At this point I wanted to talk a little bit 4 about work we're doing on high-level waste tank issues. 5 It turns out we have three sites where that's involved. 6 And the Committee I'm sure is quite familiar with these. It's West Valley, Hanford, and Savannah River. 8 Actually, the picture up at West Valley is 9 bigger than just the tanks. In fact, if I could, I was up 11 there --.R. BELL: Do you want the aerial? 12 MR. GREEVES: Yes, the aerial first. 13 Dr. Pomeroy, I know you're quite familiar with 14 it, but just feedback to you. I was up there Tuesday evening speaking to basically one of the site-specific 16 advisory-type groups. They call them the citizens' task 17 force up there. We've got an ongoing dialogue on th' 18 project. It's part of the Demonstration Act. 19 20 So I find it quite helpful that the decommissioning rule is coming on. And this site is going 21 to be a challenge for all of us concerned. I know, as I 22 said, Dr. Pomeroy, you're familiar with it. Maybe others 23 are also. 24 One of the issues at this site will be the NEAL R. GROSS COURT REPORTERS AND TRANSCRIBERS

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1 radioactive waste storage tanks. And we have that issue 2 at the other two sites. So the staff is looking at a 3 consistency approach to make sure we're doing the same 4 types of things at each of the three sites.

5 Most of what I want to talk about here this 6 morning is regarding the high-level waste tanks and how 7 we're treating those. But just to sort of give you some 8 insight as to some of the other problems on the site, I'll 9 show you a slide.

(Slide)

10

MR. GREEVES: Out of the process building, which is what is in the center of that slide, there was leakage back in the '70s. And this shows you a contaminated plume of strontium-90 that -- you've got a hard copy coming around to you -- is one of the waste management areas that this site is going to have to deal with.

I can remember years in the past where Dr. Steindler would ask us: Well, when are we going to start looking at real sites and doing analysis on real sites? This is one that's going to be a challenge for you. And, Marty, this is one that I think we're going to have to take a look at and give us a chance to exercise some of these capabilities we have at a real site. I think all of us wish we didn't have to deal with this, but now that

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436 it's here, how are we going to use these tools? So I just wanted to share a little bit of the topics that are occurring up there at West Valley. And I think it's going to be higher on the radar screen as time 4 goes on within the Commission. So I'm going to move on at that point. CHAIRMAN POMEROY: Can I just ask for my own personal information --8 MR. GREEVES: Sure. 9 CHAIRMAN POMEROY: -- who is sort of working 10 on that below you, John? 11 MR. GREEVES: This is in the decommissioning group. John Hickey is the branch chief. 13 CHAIRMAN POMEROY: Good. Excellent. 14 MR. GREEVES: Tim Johnston is the section leader. And Jack Parrott is the project manager. It 16 moved recently from the Fuel Cycle Division over to the 17 Waste Management Division. They're still manufacturing 18 the logs, but that portion of it has pretty much --19 CHAIRMAN POMEROY: Yes. That's --20 MR. GREEVES: -- come to a steady state. And 21 it's more of a decommissioning activity. So the site has 22 actually been transferred to the Division of Waste 23 Management at this time. And these are experienced people working these issues.

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Tim Johnston, Jack Parrott, myself, and Bill Reamer were up there to explain what NRC is doing, what 2 the issues are from NRC's perspective to the citizens' 3 task force. And it was quite a productive meeting. And 4 when we're not up there, we participate by video 5 conferencing techniques. They meet every two weeks in the 6 evening. So it's been a good exchange. So I thought 8 I'd just share that with you. CHAIRMAN POMEROY: Right. Thank you. I 11 appreciate that. 12 MR. GREEVES: Just about the tanks up there, they have four tanks. And they're doing the same thing 13 everybody else is. They're trying to get the liquids out, 14 get them down to a residual level. And then they'll have 15 to sort out how much is left in the bottom of the tank and 16 does it meet the incidental waste kind of criteria. So 17 these are questions that are ongoing at this site. 18 They are not as far along in terms of the 19 question of "What do I do with the tanks?" as some of the others. But I just wanted to highlight for you that issue is going to be faced here when they've finished with the 22 glass-making process. 23 I'm finished with the slide material unless 24 there was a question you had. I'm going to move on to the

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1	Hanford site and finish up with Savannah River.
2	CHAIRMAN POMEROY: No. Go forward, John.
3.	MR. GREEVES: Okay. The Hanford tank wastes,
4	we have provided a paper to the Commission and giving the
5	Commission a preliminary review of the DOE classification
6	system.
7	Part of this process is: How much of the
8	low-level waste fraction can you separate out and turn the
9	rest of the fraction into glass? So there's, as you know,
10	a number of tanks up there at Hanford. We've done a
11	preliminary analysis to that, and we believe that DOE is
12	on the right track.
13	We used criteria that was developed back in
14	'93 .n a letter from Bob Bernero to Jill Leidel I think
15	you probably are familiar with that that sort of helps
16	define what is incidental waste and what would the
17	high-level waste fraction be. We're using this criteria
18	basically at all three of the sites.
19	DOE has not selected a solidification
20	technology. So so far our activities are preliminary.
21	And the Commission is still considering these
22	recommendations that we have made.
23	I know that you have interest in this. And I
24	understand that we have an agreement that we would meet in
25	October on this particular activity. Is that correct?
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1	CHAIRMAN POMEROY: That's correct.
2	MR. GREEVES: Okay. So that's as much as I
3	wanted to go into on the Hanford tank wastes. Savannah
4	Rivor is a little bit different. It's the same issue.
5	They have tanks. They're trying to decommission them.
6	You may have read some of the news releases
7	lately that they have, in fact, grouted one of their
8	tanks. They're quite large. And they have asked us to
9	get involved in the review there also.
10	We're not budgeted to do the Savannah River
11	tanks. So we have talked to them. And we have developed
12	a draft interagency agreement, a draft interagency
13	agreement, allowing them to pay us to do such a review and
14	also an MOU to conduct this type of work.
15	So we have looked at it briefly and given them
16	some insights. Staff have been down there briefly. But
17	we need to implement this interagency agreement to make
18	sure we've got the proper funding to do this work.
19	In this case, it's a question of leaving the
20	tanks in place. This is their furthest along in terms of
21	the issues. The materials come out. Now the question is:
22	What can you leave there in place, and does it meet the
23	low-level waste-type criteria? So that's what we would
24	continue to work with Savannah River.
25	So we see these three sites knitting together

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in terms of the criteria and how we approach them. 1 They're just in a little bit different phase, each of them. CHAIRMAN POMEROY: I think we applaud that 4 approach to consistency, John. That's very important. 5 MR. GREEVES: And we would certainly expect the Commission in terms of us coming up and taking to them, they wouldn't say, "Okay. Now what are we doing at the other sites?" So we're very mindful of that. 9 And we've got pretty much the same team of 10 people working on the sites in terms of Mike Bell's old 11 branch in terms of the engineering activities. So I think 12 you can look forward to hearing more about that. The third item that I wanted to mention is a 1.4 quick one. It's one we talk about frequently. And I've 15 got the pleasure of handing you an advance copy of the branch technical positions for low-level waste performance assessment. So we're going to stop talking about getting 18 19 it out. It is out. Mike Bell is signing documentation which will 20 put it in the Federal Register notice. So I, as I said, 21 have had the pleasure of handing you an advance copy. And 22 I know others will look forward to this. We had many 23 conversations with Dr. Steindler regarding prior versions 24 of this, and we would look forward to additional comments. 25 NEAL R. GROSS

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As I mentioned the last time, I think some of your comments you provided in letters are early comments 2 in terms of the time frame activities. I'm sure there will be others. I on this topic also understand that we have agreed to address it more formally in the October time rame meeting also if that's correct. 6 CHAIRMAN POMEROY: That's correct if it's 7 acceptable from your standpoint. 8 MR. GREEVES: Good And I think by that point 9 in time we'd have significant comments back and we'd be able to do a pretty good discussion of it. 11 CHAIRMAN POMEROY: I expect some vigorous 12 discussion on the comments as well. 13 MR. GREEVES: We can look forward to it. 14 At this point I'd like to ask Margaret to try 15 and give you a little summary of our Commission meetings. 16 I'm sorry I wasn't able to attend yours yesterday, but I 17 was up at West Valley. And Margaret was able to sit in on 18 it. 19 So, if we could, Margaret will give you a little bit of a summary of a recent, as it was called, 21 waste week. 22 MS. FEDERLINE: Right. We really had a unique 23 opportunity. As you know, the Commission scheduled a 24 briefing by DOE as well as a briefing by staff. And we 25 NEAL R. GROSS

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442 had the opportunity to talk about two subjects. The first 1 was progress in the program with support from the center in that briefing as well as a focus on performance 3 assessment. And I know that's near and dear to your 4 hearts as well. And then, of course, they had an opportunity 6 to hear from ACNW yesterday. So we really got a picture of where we stand with the national program. R And I didn't think that the members had an 9 10 opportunity to attend last week's briefings. Is that 11 correct? CHAIRMAN POMEROY: That's correct. We did 12 13 not. MS. FEDERLINE: I just wanted to mention just 14 a couple of highlights. The staff talked about our 15 progress towards issue resolution. We identified the fact 16 that we have made some significant enhancements in our 17 TSPA code, not only in incorporating new modules, new processes into the code, but also in making the code much 19 more user-friendly so that we can broaden the use of the 20 21 code within the staff. 22 We talked about our need to shift to a comprehensive approach. The nearer we get to licensing, 23 of course, we have been focusing on key technical issues. 24 And we now feel that when we get to the '98-'99 time 25 NEAL R. GROSS COURT REPORTERS AND TRANSCRIBERS

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1 frame, we're going to have to switch to a comprehensive 2 approach and make sure that we're considering all facets 3 because that's what the license application review will 4 require.

Just a little feedback from the Commission that I thought I'd pass along. The Chairman in the Commission seemly generally satisfied with the way the program was being conducted under reduced budget levels. I think everybody agrees that we're not doing what we'd like to be doing, but given the circumstances of the limited funds, that we're probably on the right track.

The Chairman really expressed her concern over the budget reductions. She acknowledged the fact that NRC had been reduced from 22 to 11. And we sort of remain at that low level except for carryover while DOE has sort of bounced back a little bit from their low point of around 250. So she indicated her strong intent to fight for the '98 budget. So we really appreciated the support from the Commission in that regard.

20 the Commission asked us about the priorities 21 of the KTIs. I think everyone is really concerned that 22 three of the KTIs which we acknowledge are very important 23 have been reduced to center support there. And the 24 Commission as interested in what we were going to do. 25 We explained to them that we planned

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444 sensitivity analysis with our improved TAP code and that 1 we will be looking at reprioritizing the key technical 2 issues after that work is complete. 3 The Commission also asked the staff about its 4 PA capability and whether the capability had slipped or not as a result of budget reductions. And we did have to 6 acknowledge that we have had some losses from the center that factor into that. 2 9 I think we have been trying to compensate for that by making the code more user-friendly, by sort of 10 bringing more people into familiarity on the modeling 11 team. So we really feel that we would be much better 13 14 off if we had the budget that we really need, but we're trying to patchwork to make sure that the program doesn't 15 16 suffer too badly. Just a point or to about the performance 17 assessment briefing. We discussed with the Commission the similarities between PRA and performance assessment. We 19 were pleased to hear Dr. Garrick's presentation to the Commission this week. I think we're all pretty much in 21 agreement in that regard. 22 We described the scope and accomplishments, how we're using our performance assessment in the 24 decommissioning and low-level and the high-level areas. I 25 NEAL R. GROSS

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think the Commission expressed some pleasure that we were
able to use the skills of staff and the capabilities among
the various waste programs; in other words, developing a
methodology in high-level waste, some of these skills are
transferable to SDMP and low-level waste. So we were
pleased to see that the Commission agreed to that
approach.

The Commission was very much interested in how 8 we were determining compliance in the performance 9 assessment briefing. You may want to read that section of the briefing because we were discussing our use of the 11 12 mean and the Commission indicated or asked a question about: Had NRR been working with us? because apparently 13 that's a problem that's working for NRR as well. So we're 14 going to be having some discussions with NRR in that regard. 16

And, again, they asked the question about were we able to maintain our PA capability in the face of dwindling resources. So we appreciate the opportunity to get to you in July because I think we'll get some feedback from you folk soon how you think we're doing in that regard.

Anyway, I just wanted to mention those couple of points. I wanted to touch on the points that you raised in your briefing just in a very summary fashion.

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You talked about your concerns in the radionuclide transport area. And I just wanted to emphasize that we have not totally removed -- some of the transport work in dilution in the saturated zone was already being covered in the TSPA key technical issue. And that work is continuing.

7 The work that was in the radionuclide 8 transport KTI primarily related to sorption. And the 9 reason we prioritized it lower was that DOE indicated that 10 they were not going to be taking credit for sorption. But 11 I guess now we have indication otherwise, and we're going 12 to have to reprioritize. So I wanted to assure you that 13 we're not out to lunch on that. We are looking at that 14 with great care.

You had expressed a desire for us to continue to develop coupled process models and to do some colloid work at the Apache Leap site. We have provided you a letter on that.

CHAIRMAN POMEROY: Yes.

MS. FEDERLINE: But we think it might be worth having a little bit of dialogue on that because we are continuing to develop coupled process models, but we have tried to prioritize the significance of the coupled processes and incorporate coupled models in those areas. So we want to make sure we're on the same

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447 wavelength once you've had an opportunity to look at our 1 letter. At some point, maybe we should have some more 2 discussion on that. 3 CHAIRMAN POMEROY: I think we would welcome 4 that, Margaret. MS. FEDERLINE: Okay. The last point I just 6 wanted to make is your comments on the igneous activity KTI, we couldn't agree with your conclusions more. And, 8 as a matter of fact, that's the plan that we have in place. We have identified a plan with the goal of --11 when I say "closing" these issues, what I mean is we would 12 have no more questions at that time and moving on to other 13 issues, where we need to devote some resources. 14 But I can't emphasize enough that we agree with you that we need to maintain the expertise in the 16 igneous area because we going to be doing an SER and a 17 license application. And we need to be prepared for new 18 19 information. So I think we're very much in agreement with 21 where you're coming out on igneous. CHAIRMAN POMEROY: Okay. 22 MR. GREEVES: Let me just finish up here with 23 24 a last couple of items, the first of which wasn't on your list. I know we've talked about it in the past. And NEAL R. GROSS COURT REPORTERS AND TRANSCRIBERS

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that's classification for greater than Class C activities. The decommissioning out at the Trojan project 2 under Pacific Gas and Electric, in March, they submitted 3 an application to ship the reactor vessel in one piece for 4 low-level waste disposal. The proposal is to have it go up the Columbia 6 River on a barge. And it's sort of a precedent-setting-type case. You're talking about over 8 two million curies of activity. And with the internals 9 inside of this vessel, if you cut them out, effectively you'd end up with about 340 cubic feet of greater than 11 Class C waste. So this is '1.4 of the issue that we have been taking a look at. 13 It turns out that about 90 percent of that 14 activity in the vessel comes from cobalt-60 and iron-55. The greater than Class C waste nuclides would be carbon-14, nickel, and niobium. We have requested some information from 18 Pacific Gas and Electric on their classification of this 19 particular package, and we want to discuss this further with the State of Washington. It would go to the U.S. 21 ecology disposal site in the State of Washington. And I think, as you know, we have a technical position out there 23 on classification, and there are some issues associated 24

25 with it that we want to look at closely.

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449 The utility also requested an alternative 1 criteria, essentially an exemption approach, on packaging. 2 This would not, as I understand it, be a Type B package. So they also need to talk to Charlie Haughney, whom you 4 had here before me, about the packaging aspect. So there are a couple of things the NRC would need to be looking 6 at. Kind of as an aside. if you weren't aware, I 8 just would let you know that Yankee Rowe did ship their 9 reactor vessel in one piece down to Barnwell recently. 10 And in this case, Yankee Rowe removed the internals. So 11 they are still on site and would have to be disposed of 12 separately in a separate facility. So I just wanted to give you a heads up that 14 staff is, in fact, also looking at that issue because I know you've shown interest in the waste classification issues in the past. 17 CHAIRMAN POMEROY: Right. I think we are very 18 interested in that, John. As things go on, we welcome --19 and I'm sure you will keep us informed of anything that 20 does come up on that. 21 MR. GREEVES: Okay. At that point, I've run 22 out of issues, but I would like to ask John Austin to give 23 you just a little update. He gave you a good summary I 24 thought last time of his oversight activities in terms of

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1 the DOE process.

John, are you still here with us? 2 MR. AUSTIN: I'm still here. 3 MR. GREEVES: If you would come to the 4 microphone and maybe give them a little bit of an update. MR. AUSTIN: Okay. John Austin, NRC staff. As you know, the task force for DOE oversight was formed about two months ago. We had our second 8 briefing of the steering committee, which is composed of 9 eight office directors. The second briefing was yesterday. Hugh Thompson chairs the steering committee Last week Hugh signed a letter to Tara O'Toole that 13 transmitted a draft of a memorandum of understanding 14 between the two agencies that would outline how the agencies would go forward on the issue of DOE regulation. 16 It also transmitted a staff requirements memorandum from the Commission that had requested a briefing by DOE and 18 NRC of the Commission on June the 30th. 19 We have not heard from the Department of Energy since the March 31 briefing of the Commission. As you know, since that briefing, there is a new Secretary. And Tom Grumbly, who was a deputy secretary, has left. 23 And a replacement has not been confirmed by the Senate. 24 So right now, so far as we understand, they're leaderless

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There is a meeting scheduled between Chairman Jackson and Secretary Peña scheduled for June the 3rd. That is the point where we will get a better understanding of the relative priority of this activity, where it resides within the Department of Energy.

7 The task force is functioning as much as we 8 can internally. We have prepared a list of issues that we 9 think need to be addressed in legislation and in defense 10 of legislation. We have developed a pilot program that we 11 would use to gather information about the DOE facilities. 12 We believe it would require legislation to authorize 13 engaging in this pilot program.

We are developing a plan for stakeholder interactions that may be a very important component of the task force activities. How would we interact with these local advisory committees, the Environmental Protection Agencies, the states that are very interested in regulating the Department of Energy?

We've developed a framework for how the task force is going to operate. This we felt very important to do because we have divided the task force into five groups, which immediately raises the question of integration of activities. There are a lot of related tasks that one group is dependent on another group to

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	any late of that we did douglon this framework for
	complete. So that we did develop this framework for
2	operation.
3	We've also put the entire program into Gantt
4	charts that show the tasks, the schedules, the
5	assignments, and the interrelationships among the tasks,
6	what needs to be done to engage in a pilot program, what
7	needs to be done by way of stakeholder activities before
8	we get into a pilot program, and what issues need to be
9	addressed in the legislation itself.
10	We are preparing weekly status reports that go
11	to office directors, the EDO, and Commissioners' offices,
12	which show the level of interest within this agency on the
13	past forced activities.
14	That's about all I have for now. Again, I
15	think we are making a lot of progress internally; in
16	essence, doing our homework, flushing out some of the
17	issues, and getting prepared to interact with the
18	Department of Energy and others.
19	CHAIRMAN POMEROY: John, before we leave it,
20	let me just ask: Does anybody have any questions for
21	John?
-22	MR. AUSTIN: If you would like, we could put
23	you on the distribution for the weekly status report
24	series, nothing earth-shattering about them, but it is one
25	way to it will become much more important as we
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1	interact with DOE.					
2	VICE CHAIRMAN GARRICK: That sounds like a					
3	real sales pitch.					
4	(Laughter.)					
5	MR. AUSTIN: Well, I like to keep you					
6	informed.					
7	CHAIRMAN POMEROY: Is there any reason why we					
8	wouldn't be on the distribution anyway? So why don't we					
9	make sure that that happens?					
10	I guess back to you, John, cr is that it?					
11	MR. GREEVES: That sort of wraps it up.					
12	Thanks for your time and attention and let's keep up the					
13	interactions.					
14	CHAIRMAN POMEROY: Thank you very much for					
15	coming down.					
16	MR. GREEVES: Good,					
17	CHAIRMAN POMEROY: We always appreciate, and					
18	we know the difficulty in getting the time to do this. So					
19	I enjoyed it. We hope for our continuing edification,					
20	that we					
21	MR. GREEVES: The format works well. I hope					
2.2	you enjoy it.					
23	CHAIRMAN POMEROY: Thank you.					
24	What I'd like to do now is spend a few minutes					
25	on deciding the appropriate course of action on the					
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1	igneous processes issue letter. We don't need you
2	anymore. Thank you very much.
3	(Whereupon, the foregoing matter went off the
- 4	record at 12:27 p.m.)
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CERTIFICATE

This is to certify that the attached proceedings before the United States Nuclear Regulatory Commission in the matter of:

Name of Proceeding: 92ND ACNW

Docket Number: N/A

Place of Proceeding: ROCKVILLE, MARYLAND

were held as herein appears, and that this is the original transcript thereof for the file of the United States Nuclear Regulatory Commission taken 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.

CORBETT RINER Official Reporter Neal R. Gross and Co., Inc.

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ACNW/DOE Meeting #1 Centralized Interim Storage Facility TSAR

May 22, 1997



U.S. Department of Energy Office of Civilian Radioactive Waste Management

ACNW/DOE Meeting #1 Centralized Interim Storage Facility TSAR

May 22, 1997





Office of Civilian Radioactive Waste Management

Agenda

Page 2

- Introduction
 C. Kouts
- CISF & TSAR Overview

51497

D. Kane



Introduction

- Proposed legislation continues to mandate aggressive schedules regarding interim storage for NRC/DOE
- Administration continues to support generic, non-specific work that can facilitate early waste acceptance
- CISF & DTS TSARs will help the implementation process and are consistent with Administration direction

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Objectives Behind CISF TSAR

- Facilitate timely design and licensing of CISF once site is designated
 - Move interim storage design efforts off critical path of license application development
 - » Identify and resolve major design & regulatory issues prior to submittal of a license application
 - » Develop facility design and operating plans that can be referenced in a license application
 - Provide cask vendors with facility design and operating description



CISF TSAR

- DOE submitted letter of intent to submit TSAR to the SFPO on June 4, 1996.
- Four pre-submittal consultations held with NRC Staff
 - August 20, 1996: Non-site-specific approach; scope of TSAR, generic environmental parameters
 - November 20, 1996: Design approach; criteria; design basis events; nuclear analyses

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CISF TSAR (cont'd)

- February 19, 1997: Recovery from DBEs; occupational radiation exposures; conduct of operations
- April 29, 1997: Review content of TSAR and provide suggested evaluation findings
- CISF TSAR submitted on May 1, 1997
 - Transmittal letter requested SER by end of FY 1998

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91497



CISF & TSAR Overview

Dan Kane Licensing Manager

5114/97

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CISF Design Approach

- Developed under approved QA program
- Facility based on expectation that NRCapproved dual-purpose technologies will be available
- "Clean" facility with no routine bare SNF handling
 - DTS can provide additional CISF flexibility & capability
- Non-site specific design that uses conservative environmental & design factors

Paga 8

- 360 mph tornado
- 0.75 g seismic loading



Cask Vendor Interface

- Considered 5 vendor technologies to develop bounding CISF equipment design parameters
 - NAC STC
 - Holtec HISTAR-100
 - Sierra Nuclear TranStor
 - VECTRA MP-187 & NUHOMS
 - Westinghouse MPC System (large & small)

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Cask Vendor Interface (Cont'd)

- CISF design uses vendor supplied equipment
- CISF provides flexibility to accommodate future systems
- TSAR imposes additional design criteria on vendors that must be resolved in CISF license application
 - Site-specific design revision or cask vendor reanalysis/redesign





Centralized Interim Storage Facility -Phase I May 1997

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CISF TSAR

- Format & content
 - Draft NUREG-1567
 - Regulatory Guide 3.48
- Similar to previous industry TSAR initiatives
- TSAR seeks NRC review & specific approvals for each chapter
 - Evaluation findings of NUREG-1567 generally applicable
 Page 14

Chapter 1 - Introduction and General Description

TSAR

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- Purpose / scope of facility
- Capacity 40,000 MTU
- 40 year license
- High level operations description
- Materials to be stored (reference vendor SARs)

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Purpose of submittal (SER)

 $\textcircled{\below}{\below}$

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Chapter 1 - Introduction and General Description (cont)

- Findings
 - Request in concert with guidance contained in Section A.1.4.2 of Draft NUREG-1567
 - Commitment to use only NRC approved dualpurpose cask systems for fuels as specified in vendor analyses is acceptable
 - While the submittal is not a license application, the applicant has provided adequate information to support a 40-year service life with only routine maintenance



Chapter 2 - Site Characteristics

- TSAR
 - Generic site meteorology & seismology
- Findings
 - Generic site characteristics are appropriate
 - NRC guidance documents and industry codes & standards used are appropriate (e.g., design tornado)

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Chapter 3 - Principal Design Criteria

- TSAR
 - Classification of SSCs
 - Design criteria for QA 1 and other SSCs
 - Design criteria imposed on cask vendors
- Findings
 - SSCs important to safety adequately identified
 - SSC classification system acceptable
 - CISF principal design criteria are acceptable



Chapter 4 - Operating Systems

TSAR

- Facility layout and general arrangements
- Spent fuel handling systems
- Other systems
- Fire hazards analysis
- Security systems
- Findings
 - Evaluation findings of Draft NUREG-1567

Page 19

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Chapter 5 - Operating Procedures

- TSAR
 - Normal operating procedures
 - Detailed flow sheets
 - Description of preliminary hazards assessment to identify events for safety analysis
- Findings
 - Evaluation findings of Draft NUREG-1567 applicable
 - The TSAR presents a systematic approach for identifying off-normal & accident events that is comprehensive, and provides reasonable assurance that all events are identified and appropriately considered



Chapter 6 - Waste Confinement & Management

TSAR

- On-site waste sources (gaseous, liquid, solid)
- Transfer facility HVAC system (ALARA)
- Waste collection & treatment
- Radiological impact of normal operations well below 10 CFR 72.104
- Findings
 - Evaluation findings of Draft NUREG-1567 applicable

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Chapter 7 - Installation Design & Structural Evaluation

- TSAR
 - Design, design criteria & analyses for transfer facility
 - » Reinforced concrete structures (QA 1)
 - » Transfer facility steel structures (QA 1)
 - Storage pads
 - Cask systems (Vendor SARs)
 - Other SSCs not important to safety
- Findings
 - Evaluation findings of Draft NUREG-1567 applicable



Chapter 8 - Thermal Evaluation

- TSAR
 - Facility design and operation ensures
 - condiance with vendor cask thermal analyses
 - no degradation of thermal safety function
- Findings
 - If the thermal design & licensing criteria of NRC certified cask systems bound the generic site characteristics & operational limitations described in Chapter 3, then additional sitespecific thermal analyses are not necessary

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Chapter 8 - Thermal Evaluation (Cont'd)

 CISF design, operation, & administrative features are sufficient to ensure cask contents & SSCs ITS remain within their approved operating temperature ranges



Chapter 9 - Radiation Protection Evaluation

- TSAR
 - ALARA considerations
 - Radiation protection design features
 - Radiation protection program
 - Dose assessments
- Findings
 - Evaluation findings of Draft NUREG-1567 applicable

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Chapter 10 - Criticality Evaluation

- TSAR
 - Facility design and operation ensures compliance with vendor cask criticality analyses - no degradation of criticality safety function
- Findings
 - The CISF design, operations, administrative features & use of certified cask systems ensure that
 - » Materials will remain subcritical
 - » Cask criticality control safety functions will not degrade such that site-specific analyses are not necessary
 - Certified cask system design & licensing bases are sufficient to address cask array issues without additional analyses

Chapter 11 - Confinement Evaluation

TSAR

Ø,

- Facility design and operation ensures vendor cask confinement features are adequately protected - no loss of confinement
- Findings
 - The proposed CISF design, operations, and administrative features are sufficient to preclude degradation of the vendor cask confinement features such that additional site-specific analyses are not necessary

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3

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Chapter 12 - Accident Analyses

- TSAR
 - S off-normal and 13 accident events
 - Applicable to CISF and/or vendor systems
 - Loss of confinement is bounding (nonmechanistic)
- Findings
 - Evaluation findings of Draft NUREG-1567 applicable

Chapter 13 - Conduct of Operations

■ TSAR

· S

- DOE & operating contractor organizational structures
- Preoperational testing program
- Systematic training program
- Normal operations (procedures, record keeping, employee concerns program, modifications & 72.48)

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Emergency planning

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Chapter 13 - Conduct of Operations (Cont'd)

- Findings
 - Evaluation findings of Draft NUREG-1567 applicable

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 Commitment to the proposed organizations and plans contained in the TSAR in a site-specific license application will satisfy regulatory requirements

Chapter 14 - Technical Specifications

TSAR

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- Vendor/design-specific technical specifications
- Technical specifications based upon CISF design and operations
- Findings
 - Evaluation findings of Draft NUREG-1567 applicable

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Chapter 15 - Quality Assurance

- TSAR
 - References OCRWM QA Program
 - CISF QA Program will implement QARD requirements
- Findings
 - The OCRWM QA Program as defined in the QARD (DOE/RW-0333P) complies with the requirements of 10 CFR 72, Subpart G.



Chapter 16 - Decommissioning

- TSAR
 - Overview of decommissioning process
 - Decommissioning plan & cost estimate not developed
- Findings
 - The CISF design and use of dual-purpose cask systems
 - » minimizes radioactive waste & contaminated equipment
 - » facilitates removal of waste for decommissioning
 - » maintains occupational & public exposures during decommissioning ALARA
 - The TSAR adequately addresses decommissioning record keeping

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Chapter 16 - Decommissioning

- TSAR
 - Overview of decommissioning process
 - Deco amissioning plan & cost estimate not developed
- Findings
 - The CISF design and use of dual-purpose cask systems
 - » minimizes radioactive waste & contantinated equipment
 - » facilitates removal of waste for decommissioning
 - » maintains occupational & public exposures during decommissioning ALARA
 - The TSAR adequately addresses decommissioning record keeping
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Merim Storage Topical Safety Analysis Report

Charlie Haughney, Deputy Director Susan Shankman, Branch Chief Michael Raddatz, Senior Project Manager Spent Fuel Project Office



chis Presentation

Present the SFPO Review Process for the Topical Safety Analysis Report submitted by the DOE

Review of the Technologies of Dry Spent Fuel Storage

Provide an Overview of the Licensing Process applicable to an Actual Application



Weigh the application against the Requirements of 10 CFR Part 72

Major Unknowns identified so far include

- Cask designs that are not certified

- Site not identified

Issue either an Acceptance or Return the Application in June of 1997





ne Assessment Report

Problematic Issues prior to a License Application

Produce a Document Suitable for Use in a License Application

Where Possible it will Contain Resolutions of Discrete Areas of Review and Identification of the Interface Requirements

In Some Areas it May provide No Determinati Conclusions

- Lack of Specificity

- Site Parameters

- Cask Design

le Assessment Report

However, all conclusions come with a caveat "No Further Questions At This Time" - Should new site specific or technological issues arise in the future the conclusions documented in the Assessment Report will be revisited









osufic Licensing

Pre-Licensing Consultation

Application

Notice of Receipt

Opportunity for Hearing

Hearing if Requested















dation Factors

the MINIMUM distance from ISFSI to Controlled Area Boundary is 100 Meters

During Normal Operations

Annual Dose Equivalent to any Real Individual, located beyond the controlled area boundary must not exceed 25 mrem to the Whole P or 75 mrem to the Thyroid

nder Accident Conditions

Dose to an individual located at the Controlled Area and an not exceed 5 rem to the Whole Body or any organ

16







DLK 94 021 WMSR 90NP DWG



FIGURE 1 Sr-90 Groundwater Plume on the North Plateau