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**NUCLEAR REGULATORY COMMISSION
ADVISORY COMMITTEE ON NUCLEAR WASTE**

**Title: MEETING: 118TH ADVISORY
COMMITTEE ON NUCLEAR WASTE
(ACNW)**

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

MARCH 27, 2000

The contents of this transcript of the proceeding of the United States Nuclear Regulatory Commission Advisory Committee on Nuclear Waste, taken on March 27, 2000, as reported herein, is a record of the discussions recorded at the meeting held on the above date.

This transcript had not been reviewed, corrected and edited and it may contain inaccuracies.

1 UNITED STATES OF AMERICA
2 NUCLEAR REGULATORY COMMISSION

3 ***

4 ADVISORY COMMITTEE ON NUCLEAR WASTE

5 ***

6 118th ACNW MEETING

7
8 U.S. Nuclear Regulatory Commission
9 11545 Rockville Pike
10 Conference Room 2B3
11 White Flint Building 2
12 Rockville, Maryland

13
14
15 Monday, March 27, 2000
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18 The above-entitled proceedings commenced at 1:31
19 p.m., pursuant to notice, the Honorable Dr. B. John Garrick,
20 Chairman, presiding.
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1 PRESENT FOR THE ACNW:

2 Dr. B. John Garrick, Chairman, ACNW

3 Dr. George M. Hornberger, Vice Chairman, ACNW

4 Dr. Raymond G. Wymer, ACNW Member

5 Mr. Milton Levenson, ACNW Consultant

6 Mr. Howard J. Larson, Acting Associate Director, ACNW/ACRS

7 Dr. John T. Larkins, Executive Director, ACRS/ACNW

8 Mr. Richard K. Major, ACNW Staff

9 Mr. John Randall, ACNW Staff

10 Mr. Amarjit Singh, ACRS Staff

11
12 PARTICIPANTS:

13 Mr. Wayne Hodges, Deputy Director, Spent Fuel Program
14 Office, NRC

15 Ms. Janice Owens, EDLOW International

16 Mr. Rob Lewis, Spent Fuel Program office, NRC

17 Mr. Earl Easton, Spent Fuel Program Office, NRC

18 Mr. Richard W. Boyle, Department of Transportation, Research
19 and Special Programs Administration, Hazardous Materials
20 Safety

21 Mr. Keith Brown, EDLOW International

22 Ms. Amy Shollenberger, Public Citizen, Critical Mass Energy
23 Project.

24
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P R O C E E D I N G S

[1:30 p.m.]

1
2
3 DR. GARRICK: The meeting will come to order.
4 This is the first day of the 118th meeting of the Advisory
5 Committee on Nuclear Waste.

6 My name is John Garrick, Chairman of the ACNW.
7 Other members of the Committee include George Hornberger,
8 Raymond Wymer, and Consultant, Milton Levenson.

9 During today's meeting, the Committee will discuss
10 planned ACNW reports on a number of topics such as the NRC's
11 proposed High Level Waste Regulation, 10 CFR Part 63, a
12 Joint Letter with the Advisory Committee on Reactor
13 Safeguards on the Defense-in-Depth philosophy, the ACNW Year
14 2000 Action Plan and Self-Assessment, and comments on site
15 sufficiency strategy.

16 We will also discuss Committee activities and
17 future agenda items, and we'll hear a review of the
18 activities underway in the NRC Spent Fuel Project Office.

19 Richard Major is the Designated Federal Official
20 for today's initial session. As usual, this meeting is
21 being conducted in accordance with the provisions of the
22 Federal Advisory Committee Act. We have received no written
23 statements from members of the public regarding today's
24 session.

25 Should anyone wish to address the Committee,

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1 please make your wishes known to one of the Committee Staff.

2 It is requested that each speaker use one of the
3 microphones, identify himself or herself, and speak clearly.

4 Before proceeding with the agenda items, I would
5 like to cover some brief items of current interest:

6 Number one, a review of risk assessment practices
7 for a Congressional Committee will include the use of risk
8 at the NRC, and may be used to shape federal legislation.
9 Representative Tom Bliley of Virginia, Chairman of the House
10 Commerce Committee, has asked the General Accounting Office
11 to conduct the study for the Committee, which intends to
12 review the strengths and weaknesses of federal risk
13 assessment practices.

14 In his February 2nd request, Bliley asked the GAO
15 to identify and compare general policies and practices
16 across federal agencies on risk assessment, including such
17 details as the treatment of uncertainties and the use of
18 distributions versus point estimates.

19 As a minimum, the GAO study should include EPA,
20 the Food and Drug Administration, the Occupational Safety
21 and Health Administration, the Consumer Product Safety
22 Commission, and the Nuclear Regulatory Commission.

23 Number two: The International Commission on
24 Radiological Protection will soon publish two documents that
25 may be significant because they use the new individual

1 risk-based approach to resolve two of radiation protection's
2 thorniest questions: Addressing issues of long-term
3 protection around solid waste repositories and protection
4 from prolonged exposure to both background and artificial
5 radiation.

6 The documents are said to be a halfway point in
7 the ICRP's transition, uncertain transition to a very
8 different rad protection system than the one in use today.

9 Like the new system recommended by ICRP Chairman,
10 Roger Clark, they emphasize individual dose and/or risk,
11 rather than collective dose and societal risk as the basis
12 for regulatory decisionmaking.

13 I guess there is no reason to get too excited
14 because it is indicated that these recommendations may not
15 be implemented in ICRP recommendations for another five
16 years.

17 But at least it's an attempt to address an issue
18 that has probably been ignored much too long.

19 Third: Energy Secretary Bill Richardson recently
20 assigned a task force to review DOE policies governing the
21 release and recycling of contaminated metals and other
22 materials. At the same time, Richardson also announced he
23 will continue a moratorium on the release of volumetrically
24 contaminated metals at Department facilities, at least until
25 the Nuclear Regulatory Commission decides whether to set a

1 standard for the use of such materials.

2 A fourth item of interest is that a conference on
3 DOE's draft solicitation for its waste program recently
4 attracted more than 150 individuals representing 65
5 companies.

6 The meeting, held in Las Vegas, was to provide
7 potential bidders with information on DOE's plans to hold a
8 competition for a five-year, \$3.1 billion contract to run
9 the Agency's Office of Civilian Radioactive Waste
10 Management.

11 Comments on the draft were due March 6th. DOE
12 plans to post the comments it receives on the Internet.

13 The final RFT is scheduled to be issued March
14 29th, and proposals will be due June 8th.

15 So, with that, I think we will proceed to the item
16 on our agenda that's scheduled for 1:30 to 4:00 p.m. It's
17 Activities of the NRC Spent Fuel Program Office.

18 The Committee's Consultant, Milt Levenson, is
19 going to lead the discussion on this topic. Milt, I turn it
20 over to you.

21 MR. LEVENSON: Okay, thank you, John. While there
22 are probably a number of activities under the Spent Fuel
23 Office, this afternoon's session is primarily focused on
24 some of the issue related to transportation.

25 I think the Committee recognizes that this is a

1 very complex issue, in no small measure due to the fact that
2 various legislation has made it clear that no one agency has
3 complete responsibility. That makes it a little difficult
4 to get at some or all of the details.

5 So this afternoon's presentations are aimed at
6 helping to update us on what some of the players in this
7 complex issue of transportation are up to.

8 Our first presentation was going to be from Bill
9 Brach, who unfortunately couldn't be here today, and Wayne
10 Hodges is filling in for him. Wayne?

11 MR. HODGES: Thank you. I'm Wayne Hodges. I'm
12 the Deputy Director for Technical Review in the Spent Fuel
13 Project Office, and I am filling in for Bill Brach who was
14 called away for a funeral in his family, and so you get me
15 instead.

16 The purpose of the briefing is to provide the
17 Committee with an overview of our activities in the Spent
18 Fuel Project Office. And here we have just an outline of
19 the presentation.

20 I'll be going through the first half of the
21 discussion, talking generally about the activities, and Mr.
22 Rob Lewis will talk about the transportation portion of it.
23 We will be followed then by Rick Boyle, who will be talking
24 about the Department of Transportation activities.

25 Many of our activities are closely coordinated

1 with them, and I suppose that he should speak as well.

2 First, we'll provide a brief summary of the SFPO
3 responsibilities for storage of spent fuel and for the
4 transportation review of all nuclear materials, including
5 spent fuel transportation.

6 I have a couple of slides that give a picture of
7 the U.S. and we show the location and type of currently
8 operating spent fuel storage facilities, and the planned and
9 -- facilities.

10 Then I will discuss initiatives we have taken to
11 improve the cask certification and review process; the
12 status of casework completion over the past year; and
13 initiatives we are currently developing to further improve
14 the certification process.

15 As I say, Rob will talk about an overview of some
16 transportation activities, and two studies we have underway
17 to address spent fuel transportation issues, and then I will
18 conclude with a brief summary of our status of ongoing
19 activities.

20 The first two bullets here summarize the SFPO's
21 primary responsibilities which are to review and to certify
22 packages for the transportation of nuclear materials,
23 including spent fuel, under the requirements of Part 71, and
24 to license spent fuel storage facilities and certify storage
25 casks under Part 72.

1 We additionally have the responsibility to develop
2 and maintain the inspection program for both transportation
3 and for storage; to provide technical support to the
4 Regional Offices on these inspections, and we conduct a
5 limited number of inspections of cask and package vendors
6 from our SFPO headquarters office.

7 The third bullet notes our significant involvement
8 with the U.S. Department of Transportation and the
9 International Atomic Energy Agency on both storage and
10 transportation activities, and a later slide will address
11 our activities in this regard in a bit more detail.

12 We also review and approve licensees' and vendors'
13 QA program for both Part 71 and Part 72 activities.

14 This slide and the next one give a picture of the
15 current and planned independent spent fuel storage facility
16 installations in the U.S.

17 There are currently 15 operating and licensed
18 facilities in 13 states. There are 10-site specific
19 licenses noted by the triangle on this diagram, and five
20 generally-licensed ISFSIs noted by the circles.

21 Basically a site-specific license requires that an
22 applicant for an ISFSI, that an applicant must describe in
23 detail, all aspects of the planned ISFSI, a site
24 description, the cask system design and operations, and the
25 ongoing controls and programs to be in place to ensure safe

1 operations.

2 This process includes opportunities for hearings,
3 and requires NRC licensing decisions and actions. A general
4 license is conveyed to all holders of Part 50 power reactor
5 licenses to use a currently certified cask listed in Part 72
6 without application to the NRC.

7 The reactor licensee must assure that their site,
8 planned use, and programs are all bounded by the cask design
9 parameters. Since the cask design is actually listed in the
10 rulemaking process, the opportunity for public comment on
11 that comes through the rulemaking process, rather than
12 through a hearing process.

13 Also note that the ISFSIs are for dry storage of
14 spent fuel, except for the one at G.E. Morris in Illinois,
15 which has the spent fuel pool for storage.

16 There are also two existing DOE licenses for
17 storage of spent fuel, the TMI II fuel debris ISFSI in
18 Idaho, and the Ft. St. Vrain ISFSI in Colorado.

19 There are approximately planned ISFSIs over the
20 next five years or so in 14 additional states. So that once
21 that's completed, essentially half or more of the states
22 will have ISFSIs in them.

23 The mix of type of ISFSIs is changing as the slide
24 shows, but the most planned ISFSIs will be
25 generally-licensed ISFSIs, not requiring NRC issuance of a

1 license.

2 This shows five site-specific licenses and 15
3 general licenses. Note that this information is based upon
4 meetings with applicants and licensees and general
5 informational future plans.

6 There is also a third DOE site to be licensed by
7 NRC, and this will be another ISFSI located in Idaho to
8 store Peach Bottom shipping port and trigger fuel. The
9 application is expected from DOE later this calendar year.

10 Before we leave this page, I want to note that you
11 will see a number of decommissioning reactors which are
12 trying to have a general license for the storage of spent
13 fuel, for example, Maine Yankee and Connecticut Yankee and
14 Big Rock Point.

15 This will require that these reactor licensees
16 maintain and not terminate the Part 50 license.

17 The matter of how to transition from a general
18 license to a site-specific license is a topic that we have
19 been having discussions with the industry on.

20 In the next several slides, I will briefly cover a
21 recently implemented initiative to improve the process and
22 our current review status and initiatives under development.

23 We have implemented changes to Part 72
24 cask-specific rulemaking process this year, and all of these
25 changes have markedly improved our efficiency and

1 timeliness.

2 Perhaps our biggest changes and gains have been in
3 effectiveness and efficiency and have been due to some of
4 our internal process improvements.

5 Through our rules of engagement, we have developed
6 review schedules with clear identification of dates and
7 expectations for both NRC review activities and for the
8 applicants.

9 We have met these dates and expectations, and in
10 so doing we have brought both stability and predictability
11 in the cask review and certification process.

12 The remaining bullets identify some of the more
13 important tools that we have developed and implemented in
14 this process.

15 Our efforts to standardize our process and provide
16 clear review guidance have assist both the staff and the
17 applicants. Our use of interim staff guidance documents
18 provides a means for us to implement early technical closure
19 on issues.

20 Now I will discuss the use of ISGs a little bit
21 more as we discuss the high priority technical issues.

22 The information on this page covers our fiscal
23 year 1999 and first quarter of fiscal year 2000. Note that
24 there is a shift from the single-purpose storage cask to
25 dual-purpose storage and transportation casks, and we have

1 been extremely busy. We have had four dual-purpose casks
2 and one single-purpose cask specifically in the rulemaking
3 now, and we expect them to be completed in the next few
4 months, and two applications are under review, and a third
5 application is scheduled for later this fiscal year.

6 The transportation statistics include both spent
7 fuel and non-spent fuel casework, and the bulk of the
8 transportation reviews are for non-spent fuel cases, and the
9 bulk of that work is for amendments to currently-certified
10 transportation packages.

11 I have already mentioned the two DOE ISFSIs for
12 TMI and Ft. St. Vrain that were completed last year, and the
13 third was completed also for Trojan.

14 These three ISFSIs under review include Ranch
15 Seco, which is very near to completion now, and Private Fuel
16 Storage, which we report on the status monthly to the
17 Commission and the Congress, and the third review is to
18 support DOE Naval reactors.

19 We are performing a technical review for their
20 planned Naval Reactor Fuel ISFSI in Idaho.

21 The technical support to the Naval reactors is
22 being done under a reimbursable agreement and will not
23 result in an NRC license. I want to draw your attention to
24 the footnote which highlights the shift in casework from
25 reviewing new cask designs to amendments of

1 currently-certified cask designs.

2 You can see that the workload shift and the number
3 of cases, each cask amendment will result in a rulemaking to
4 amend the certificate, and I will discuss this more on the
5 next slide.

6 I want to focus on the NRC Staff activities that
7 are underway to streamline and improve the certificate
8 process. First, we're working to assure that certificates
9 only contain conditions that are required; for example,
10 where the technical basis exists, to support parameters or
11 bounding numbers, we're using the data in the certificate,
12 instead of individual point numbers.

13 And you may have heard a phrase called "smarter
14 certificates," and that generally refers to this effort.

15 Secondly, we are standardizing the technical
16 specifications and building on the reactor initiatives in
17 this area.

18 Again, a goal is to assure that the tech spec
19 contains only what is truly needed, and that other
20 information stays in the safety analysis report.

21 Third, these efforts support the implementation of
22 the changes to 72.48, which will allow licensees and
23 certificate-holders to make changes to the cask systems
24 without NRC prior approval and review, as long as the
25 specific change does not result in a change to specific

1 conditions or technical specification.

2 As noted in the slide, we are working with the
3 industry to develop guidance for the implementation of
4 72.48. I believe that, collectively, these actions will
5 improve the effectiveness of the amendment process.

6 We recognize that alternative approaches to
7 specific amendment rulemaking need to be examined. One
8 suggestion is to revise Part 72 to specifically identify the
9 types of amendments which can be implemented through direct
10 rulemaking.

11 As long as an amendment falls within these
12 limitations, the amendment could be issued as a final
13 certificate change and final rule, and other options are
14 also being examined.

15 Another process area of high SFPO activity is the
16 preparation for license renewal. We have a group that we
17 have formed to develop guidance and the technical basis to
18 support renewal, and we will be ready for the first dry cask
19 license renewal, which will be submitted early fall of this
20 year, and it will be for Surry -- excuse me -- early fall of
21 2001. Excuse me, I got the year wrong. It is for Surry and
22 their actual license expires in 2006, and I think they are
23 required by law to come in two years ahead of that, but
24 since this is the first one, they wanted to come in early
25 enough that there would be no particular problems, and so

1 they are coming in in the fall of 2001.

2 And we, basically, we have a group that we have
3 formed to develop guidance for that and discussing with them
4 this summer what we need to see in an application.

5 We had a meeting or a workshop in mid-December
6 with the industry and the purpose was to identify and
7 discuss the prioritization of technical issues needing
8 resolution to support dry cask reviews, and there were two
9 issues that stood out well above all the others. One was
10 for high burnup fuel, which was the industry's highest
11 priority. Plants have had fuel in reactors up to 62
12 gigawatt days per metric ton.

13 Our current limits have been up to 45 gigawatt
14 days, and we, as a part of the review that has been done
15 just recently for both the westflex design and for the MAC
16 design, we have come to a mechanism for approving for higher
17 burnups, and that will be issued fairly soon in an ISG
18 revision to be used generally by all the applicants. And
19 this is one of our highest priorities that we are working on
20 as well. In addition to the information that can be used in
21 short-term, there is also a long-term research effort, a
22 research effort to get more data in this area, and it is a
23 cooperative program with DOE and EPRI.

24 Now, we will probably point out, the slide here
25 says 60 megawatt days per ton, it should be gigawatt days,

1 not megawatt days.

2 And the other issue, the second highest issue on
3 their list was for high burnup fuel -- high burnup credit,
4 and, traditionally, the cask reviews have proceeding
5 assuming fresh fuel for the purposes of doing criticality
6 analysis, and we have been exploring ways to give some
7 credit for the burnup that actually occurs, and we issued
8 two revisions, first an ISG last May, and then a revision to
9 that ISG in September which gives some credit for the
10 actinides in order to give some credit for the burnup. And
11 there is still work going on, we see other revisions coming
12 down the pike.

13 We think this is a success to be able to do that.
14 We are proceeding towards more realism in what we do and it
15 allows putting more assemblies in the cask. There is still
16 more to be done on both high burnup and burnup credit, and
17 from our meetings with industry, we are working to develop
18 additional revisions to our internal -- interim staff
19 guidance and we think we are making good progress.

20 At this point I will turn it over to Rob Lewis to
21 talk about transportation.

22 MR. LEVENSON: Before we do that, I have two
23 questions about what you have covered so far.

24 MR. HODGES: Sure.

25 MR. LEVENSON: One is a matter of my not

1 understanding, I think, what you said. You said that for
2 operating reactors, or people with a Part 50 license, if
3 they use preapproved casks, et cetera, they did not have to
4 apply specifically for an NRC license, is that right?

5 MR. HODGES: That is correct. They already have a
6 license under Part 50.

7 MR. LEVENSON: But then why do they not show on
8 your chart for existing licenses, if they already all have
9 them? Is there something different about those sites that
10 show on your map?

11 MR. HODGES: Well, it is a Part 50 license as
12 opposed to a Part 72 license.

13 MR. LEVENSON: Okay. So this is not all of the
14 operating spent fuel license sites, this is --

15 MR. HODGES: Well, the ones in triangles are
16 site-specific Part 72 licenses. The ones --

17 MR. LEVENSON: Right. I am talking about the
18 circles.

19 MR. HODGES: The ones in the circles are where
20 they have a Part 50 license, but have an ISFSI to store fuel
21 under a general license.

22 MR. LEVENSON: I thought you said that every site
23 has that general license.

24 MR. HODGES: Well, --

25 MR. LEVENSON: That is what I am trying to clarify

1 is, what is different about these circles from other reactor
2 sites?

3 MR. HODGES: These are ones where they are storing
4 spent fuel.

5 MR. LEVENSON: Yeah.

6 MR. HODGES: The other reactors in dry storage.
7 The other reactors, I mean all reactors have a Part 50
8 license, but if they don't have dry storage of fuel there,
9 then they don't have a circle.

10 MR. LEVENSON: Okay. So this is just ones that
11 are now doing it, not the ones licensed to do it? That is
12 what I am just trying to clarify.

13 MR. HODGES: In a sense, they are all licensed
14 because they all have a Part 50 license.

15 MR. LEVENSON: Right.

16 MR. HODGES: And if they choose a cask it is
17 listed in the Part 72.

18 MR. LEVENSON: So they don't need your approval to
19 add circles to this map.

20 MR. HODGES: That is correct.

21 MR. LEVENSON: Okay. The second question, this is
22 one of ignorance, is on your Figure 5, what is the Owl Creek
23 site in Wyoming?

24 MR. HODGES: That is a private -- I think it is
25 private -- private storage facility that is left from a

1 consortium of utilities.

2 MR. LEVENSON: Oh, okay.

3 MR. LEWIS: Okay. This is slide -- I am Rob
4 Lewis, I am the staff lead for one of the transportation
5 risk studies that you wanted to hear about today, and the
6 other staff lead, John Cook, is in the crowd, so, hopefully,
7 we will be able to answer any questions you have about those
8 studies.

9 But this slide gives an overview of my talk, the
10 transportation part of today's talk, and I will start off
11 with a single slide on our role and activities that SFPO has
12 for transportation, and they will complement the talk that
13 DOT will give later. Then I will have a couple of slides on
14 one of our major activities we have underway, which is
15 revisions to Part 71 for international compliance with the
16 IAEA regulations. And then we will have several detailed
17 slides about the transportation risk studies. Then I will
18 turn it over to Wayne to summarize the SFPO part of the talk
19 and then Rick Boyle will come up to talk about DOT's roles.

20 In SFPO we have the agency lead for all
21 transportation matters, whether it be reactor or materials,
22 and as that, we are the single point of contact with DOE --
23 DOE, excuse me, and we support DOT in the activities at the
24 International Atomic Energy Agency with respect to their
25 periodic revision of their transportation standards.

1 We have -- one major part of our role is to assist
2 other NRC offices. As an example of that, we recently
3 participated in the review of the Yucca Mountain EIS, the
4 Draft EIS from the Department of Energy, and we also
5 participated in the Environmental Statement that was
6 prepared in support of the nuclear power plant license
7 extension rule, which were changes to 10 CFR Part 51.

8 We daily receive calls from inspectors or regional
9 offices that may be out in the field and see something they
10 are not to sure of, and they call us to find out what the
11 transportation requirements should be.

12 One of our major roles is to certify
13 transportation packaging designs for large quantity packages
14 and for fissile packages. And, as Wayne mentioned, we have
15 50 transportation casks in-house under review.

16 We issue quality assurance program approvals and
17 instructions -- inspections in support of the transportation
18 program, as well as the storage program for spent fuel. And
19 we do reviews of the routes that are selected. With respect
20 to those routes, physical security, physical protection
21 aspects. We look at the routes to see where the safe havens
22 have been identified and, in some cases, we actually have
23 regional staff that drive the routes.

24 And we also are the agency lead for resolving
25 generic issues. Wayne mentioned high burnup and burnup

1 credit. Burnup credit started as an issue for
2 transportation casks. We currently -- the standard has been
3 that fresh fuel assumption is used in analyzing criticality
4 for the transportation casks. DOE has for several years
5 tried to get a topical report approved on burnup credit and,
6 also, more recently, we have issued an interim staff
7 guidance on burnup credit.

8 As for Part 71 rulemaking, periodically, the IAEA
9 transportation standards, which appear in a document called
10 ST-1, are revised. That occurs on a 10 year cycle
11 currently. The U.S. regulations, as well as the regulations
12 of the rest of the world, are currently compatible with the
13 1985 versus of the IAEA standards.

14 The entire world is in the process of revising
15 their requirements to be compatible with the 1996 version.
16 Now, the nature of those changes that were undertaken in
17 this revision cycle are fairly minor. There is no change to
18 the overall approach to transportation safety or the cask
19 certification scheme. There are some changes in details,
20 for example, certain packages transported by air, large
21 quantities by air have a higher package standard. There is
22 some additional fissile material standard for transportation
23 by air, and there are some additional requirements for
24 uranium hexafluoride packages. Those affect more the DOT, I
25 am sure that Rick could elaborate on that.

1 The thing we have done so far in our rulemaking
2 process is we are in the process actually of identifying the
3 provisions in Part 71 that will need to be changed in order
4 to be compatible with the ST-1 standard. And so far we have
5 identified about 13 topics that paragraphs in Part 71 would
6 need to be changed to bring us up to international
7 compatibility.

8 The implementation date, I should say, for 1996
9 ST-1 is -- the worldwide implementation date is January 1st
10 of 2001. Very few countries are on pace to meet that date,
11 but certain mobile organizations like the International
12 Civil Air Transport -- International Civil Aeronautics
13 Association are on pace to adopt it in that time.

14 There is also in Part 71 some non-IAEA changes,
15 and this is the second bullet, second main bullet. For
16 example, we recently revised Part 72 to include a change
17 process that allows for small changes to be made to casks
18 without NRC proapproval, similar by reactor facilities,
19 similar to the existing authority reactor facilities have to
20 make changes to their plant without NRC proapproval if there
21 is no safety questions involved.

22 Another change is we have an outstanding petition
23 on the double containment of plutonium. We currently have a
24 requirement in Part 71 that says that any packages bearing
25 greater than 20 curies of plutonium must, first of all, the

1 plutonium must be in solid form and, second of all, a double
2 containment system, basically, a package within a package
3 has to be provided for that system. We have a petition that
4 asks us to remove that requirement and, as part of this Part
5 71 rulemaking, we intend to resolve that petition.

6 We want to expand the scope of Part 71 to include
7 certificate holders. This is an issue that we have already
8 changed in Part 72, and what it amounts to is, under the
9 Atomic Energy Act, we have, we believe, the authority to
10 issue notices of violation to certificate holders. But
11 right now there is no mechanism in Part 71 to do that, so we
12 have been issuing these notices of non-compliance or
13 something like that. So this is the intent of that change,
14 to allow us to write notices of violations.

15 And, finally, in 1997, as a result of some
16 material being returned from the former Soviet Union that
17 contained beryllium, we recognize it though as a
18 nonconservatism in our regulatory approach, and we changed
19 that with an emergency rule. That is called the Fissile
20 Exemptions Rule. And the effect of that rule was that there
21 were certain requirements that beryllium is being a better
22 moderator than water, and the rule is being based upon water
23 moderation, the rules didn't handle it well, so we added
24 emergency, a final rule in 1997 to change that situation, to
25 correct that nonconservatism.

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1 And that rule had some unintended impacts upon the
2 industry and we solicited comments when we issued the final
3 rule, and as part of the Part 71 rulemaking, we intend to
4 resolve those comments.

5 As far as the process for Part 71, the staff would
6 like to use an enhanced public participatory approach for
7 Part 71, similar to the approach that was used in 10 CFR
8 Part 63 for Yucca Mountain, where we went out and actively
9 did meetings and got people's comments at the meetings and
10 brought them back and included that in developed the
11 proposed rule, and also in resolving comments to the
12 proposed rule.

13 Part 70 rulemaking recently was -- the proposed
14 rule was issued and a final rule is pending, but that also
15 used the enhanced participatory approach. We haven't -- we
16 have to describe in the near future to the Commission, I
17 think we owe them, in May, a plan that will describe the
18 approach we plan to use for Part 71. So that is why I leave
19 it, we plan to do this, not we intend to do this, at this
20 point.

21 We are, of course, coordinating changes with Part
22 71 with DOT. The DOT requirements and the NRC requirements
23 need to be consistent. They both -- they overlap in a lot
24 of respects and we would promulgate our rule in concert with
25 them promulgating their rule so there is no period of dual

1 regulation that isn't consistent. And our current schedule
2 would have us issuing a proposed rule next March.

3 Now for transportation studies that have been
4 studying since, basically since NRC was created back in the
5 1970s. In 1977 we published the first comprehensive
6 evaluation risk study of transportation safety. I should
7 say I have a detailed slide on each of these studies. This
8 just shows the overall picture of how things have evolved.

9 Based upon the 1977 EIS, in 1981 the Commission
10 issued a finding that the current regulations provided an
11 adequate level of protection and no immediate changes were
12 needed but they stipulated that prudence dictated that we
13 continue to look at these issues of transportation and
14 subject them to close and continuing review, and that is
15 what we have been doing ever since.

16 In 1987 the next major study was issued. It is
17 called "Shipping Container Response in Severe Accidents" but
18 everybody knows it as the Modal Study, because it looked at
19 the different modes of transport including highway and rail
20 modes. That study was prompted more or less in response to
21 some questions that were raised regarding return of fuel to
22 reactors due to the closing of the West Valley Reprocessing
23 Facility. That study looked in greater detail at the
24 accident portion of the Environmental Impact Statement
25 assessments.

1 That brings us to today and shortly I guess -- it
2 is in publication right now -- we will issue this document
3 called "The Re-Examination of Spent Fuel Risk Estimates,"
4 which is akin to a revalidation of our conclusions from 1977
5 based upon the newest technologies, not only the newest
6 analysis tools but also the changes that have occurred as a
7 result of larger, dual purpose casks being used, shipment
8 instead of to a recycling facility, shipment to a repository
9 and changes of that nature.

10 The next step in this ongoing process will be the
11 package performance study which we have just begun, and we
12 are in the scoping study phase of that project. By the end
13 of this fiscal year we plan to move beyond the scoping
14 study.

15 NUREG-0170 once again was the first comprehensive
16 look at the transportation safety using the existing NRC and
17 DOT regulations. This is not an EIS done in support of a
18 change to regulations. It looked at the existing set of
19 regulations which for package certification purposes really
20 haven't changed all that much, but it looked at the existing
21 regulatory structure and decided what level of safety that
22 provided.

23 It assessed both public and transportation worker
24 impacts for both incident-free transportation and for
25 accidents, transportation accidents, for all radioactive

1 materials -- spent fuel is only one of 25 different
2 materials. Medical shipments I think are the biggest
3 fraction of number of shipments and it included all those
4 too.

5 This document is still used as the basis for NRC's
6 and DOT's regulations and the studies since 1977 have
7 continually affirmed that its conclusions are valid, that
8 being that NUREG-0170 will have predicted a certain amount
9 of personrem. In 1981 the Commission concluded that that
10 amount was acceptable and the subsequent studies have always
11 predicted lower personrem because of the conservatisms that
12 were built into the original project, because they didn't
13 understand or they didn't have good data on things like
14 accident response of casks and stuff like that.

15 So regarding spent fuel, the spent fuel was one of
16 five 25 materials studied. The 0170 report assumed a
17 reprocessing economy and predicted shipments in 1978 and
18 predicted shipments in 1985 of about 2,000 per year -- 1500
19 truck and 600 rail or something like that. Those of course
20 were never realized because the reprocessing economy was
21 abandoned, and the total population dose is from spent fuel
22 that NUREG-0170 predicted in personrem are stated in the
23 last line.

24 Very simple accident release was used in
25 NUREG-0170 and there was no modeling. It was just if there

1 is an accident of this severity "x" amount will be released.
2 I think the maximum release was something like 300 curies of
3 cesium or something. It was just based on engineering
4 judgment alone.

5 The Modal Study, which was finished in 1987, only
6 looked at spent fuel and it was done, as I said, partially
7 because of the shipment, the questions that were asked
8 during the return of shipments from West Valley to the
9 utilities. The Modal Study took advantage of some new tools
10 that were available, finite element analysis became more
11 feasible to do. The computer power had increased enough and
12 so what we did in the Modal Study looked at some historical
13 accident rates, tried to calculate severities of those
14 accidents based upon developing a fault tree type thing of
15 what could go wrong in an accident and what fraction of the
16 route length would involve hard surfaces along the roads and
17 stuff along those lines, and looking at the impact forces
18 and the thermal forces that could be created in accidents
19 that tried to predict releases from casks, from spent fuel
20 casks using a finite element analysis of the cask wall.

21 It didn't try to model the seal mechanism, the
22 lid, because the computer power wasn't available at that
23 time and the cask wall was presumed to be an adequate
24 representation.

25 Also, one other thing it did was it related the

1 Part 71 hypothetical accident tests which are the 30 feet
2 drop onto an unyielding surface, the 40 inch drop onto a
3 mild steel bar, six inch mild steel bar, and the 30-minute
4 fire immersion at 800 degrees, and it tried to see where you
5 stood in the real world realm of accidents if you minimally
6 met those tests.

7 The conclusion there was that those tests
8 encompass about 99.4 percent of accidents that could occur,
9 whether they be rail or highway.

10 It also did some case studies of some historically
11 very severe accidents and postulated what would happen if
12 the spent fuel casks had been involved in those accidents.
13 The Caldecott tunnel fire I think is one of the most famous
14 severe fires and they concluded that had spent fuel casks
15 been involved in that fire it would not have been damaged to
16 the point of releasing its contents.

17 The final conclusion it drew was it did compare
18 its results to -0170 and determined that the risks were
19 about one-third of those from NUREG-0170, so that brings us
20 up to the current study we have underway, about to publish.
21 Actually it is, the study is done.

22 Once again this looks only at spent fuel
23 shipments, only at normal risks, and accident risks,
24 transportation accident risks, and instead of looking at
25 reprocessing economy this looks at possible combinations of

1 storage and repository locations and route length from
2 reactors to those locations, and it looks at current cask
3 designs, modern fuel properties like higher burnup, more
4 realistic cooling time than was used, a 90-day cooling time
5 in -0170 was assumed.

6 One of the things it does is also models,
7 explicitly models the closure, the cask closure system, with
8 a finite element model to see what the cask closure system
9 response is to impact and thermal forces, because the cask
10 closure system appears to be the most likely place where a
11 release path could be created in an accident.

12 It used RADTRAN 5. RADTRAN 1 was the risk code
13 that was developed to perform NUREG-0170. It is up to
14 RADTRAN 5 now and it is a much more detailed code, with many
15 different input parameters that can be chosen and actually
16 for this study we did do a little bit of sampling of some of
17 the key variables to see what the sensitivity of those
18 variables were to the result. Some variables like the
19 package radiation level, the regulatory limit is 10 millirem
20 per hour, two meters. That was a variable that was sampled
21 in this study to look at the effects, because not all
22 shipments are expected to be done at the regulatory limit,
23 especially as the cooling time of the fuel increases.

24 That turns out to be one of the most important
25 variables. Population density is an important variable.

1 Duration of truck stops is an important variable, and that
2 is one we sampled to see -- it is kind of adding a little
3 bit of probabilistic aspect to the study but by no means is
4 it a probabilistic study. It is still a very deterministic
5 analysis. The LHS sampling method was used for that.

6 The result that we are getting for this report
7 which we are about to issue is that the risks that this
8 study calculate are in a best estimate type analysis less
9 than the risks represented by the Modal Study, which are
10 subsequently about three times less than the risks
11 represented by NUREG-0170.

12 We have just started, as a matter of fact next
13 week we are going out to Sandia to help them in their
14 efforts to write a plain English complement to the technical
15 report that we are about to publish.

16 MR. LEVENSON: Would you be willing to make a
17 guess as to what percent of the reduction in risk is due to
18 the fact that changes in the properties of the fuel, longer
19 cooling, et cetera, are a significant part compared to
20 improved methods of analysis?

21 MR. LEWIS: The age of the fuel has an effect in
22 the accident risk but it is not as much a big effect in the
23 incident-free risk, which tends to dominate the overall risk
24 anyway because the incident-free risk is really only based
25 on the dose rate at two meters from the package.

1 MR. LEVENSON: But that comes down also with
2 longer cooling?

3 MR. LEWIS: Right, but the RADTRAN code doesn't
4 calculate based on the cooling time of the fuel. It just
5 assumes that it is 10 millirem --

6 MR. LEVENSON: It assumes the limit.

7 MR. LEWIS: -- or in our case we might have gone
8 down to 8 or something, but it assumes that everything is at
9 the limit so the normal risks tend to dominate by a factor
10 of 10 or so the accident risks.

11 The accident risk though does change with the
12 different cooling time because of the source term change.

13 I could not give a quantitative guess off the top
14 of my head.

15 MR. LEVENSON: No, but I think the important
16 comment was your one that the normal risks dominate.

17 MR. LEWIS: Yes, because the 10 millirem per hour,
18 two meter exposes many people. It exposes a greater number
19 of people along the entire route as compared to the accident
20 risk you have to calculate the probability of an accident
21 occurring in the first place and the probability of it being
22 in an urban area falls in there too.

23 MR. LEVENSON: Would you care to comment on the
24 recent French decision to stop decontaminating casks because
25 yet more people are being exposed decontaminating casks than

1 would be exposed if they shipped them that way?

2 MR. LEWIS: Well, when you look at arguments like
3 those, the contamination limit on the cask is going to be
4 something, so there is a certain amount of exposure you get,
5 that the workers at the power plant will get to determine
6 the contamination level, whatever it may be.

7 I think that even if the Europeans are not
8 entertaining raising the contamination level that has been
9 in existence, that contamination level, by the way, is not
10 really meant for spent fuel casks, it is meant for the
11 materials package that maybe a thousand packages a year goes
12 through some FedEx facility and the same guy handles each
13 one, and that is where the basis for that contamination
14 limit comes from.

15 So the short answer is that I don't buy into those
16 arguments. I don't think it is a big impact. Nobody in the
17 U.S. -- we have had also experience with casks. I don't
18 think it's been an issue that has raised a lot of alarms.

19 DR. GARRICK: Excuse me. If you were to exclude
20 collective dose as a consideration and only look at it on
21 the basis of individual dose, would you change anything that
22 you are doing?

23 MR. LEWIS: Well, I don't believe we would. We
24 did look at the maximally exposed individuals for normal
25 transport and for accident transport, accidents that could

1 occur during transport and those values I don't have on the
2 top of my head but they are definitely less than like 100
3 millirem per year for the incident-free.

4 You get into a lot of, you have to make a lot of
5 assumptions like the amount of time -- say you are stuck
6 next to it in a traffic jam. Theoretically if you are stuck
7 there you get 10 millirem per hour. Say you are two meters
8 from the cask. Well, how many hours would you be stuck in a
9 year and if there's multiple shipments, how many traffic
10 jams would you be stuck in next to a cask? You have to make
11 some assumptions and I think that we are comfortable with
12 the assumptions we made and the doses we got.

13 DR. GARRICK: Yes, but those are pretty reliable
14 assumptions. I mean there's tremendous amounts of data on
15 traffic and traffic delays and of course it is coming at us
16 with much greater abundance now than ever before, so there
17 shouldn't be a great deal of uncertainty associated with
18 being able to represent and characterize how a cask would
19 move over a particular path, it would seem.

20 MR. LEWIS: Yes, I don't think -- I wasn't making
21 that point. What I was trying to say, I think, is you could
22 take a very simplistic assumption. I think that the state
23 of Nevada maybe has tried to analyze this and for example
24 using the 10 millirem per hour they assumed a person could
25 be stuck in traffic for four hours. Therefore, their dose

1 is 40 millirem from that traffic and I think that neglects a
2 lot of factors that you could debate whether you should
3 include, like shielding that is between the people, the
4 actual distance, whether it is two meters or 2.5 meters
5 tends to impact that a lot.

6 It's an argument that you have to justify what you
7 do. Although you might not want to be ultra-conservative,
8 you want to be on some middle ground there.

9 MR. LEVENSON: Let me ask a slightly different
10 question. Since all of these shipments are monitored, the
11 data must exist. What fraction of the shipments actually
12 are at the 10 MR limit? What fraction of them are
13 significantly below that? This is a case where we must have
14 a very large database. Why do we continue with a
15 hypothetical number? We have a database

16 MR. LEWIS: And I don't know the answer to that.
17 Maybe Earl does.

18 DR. GARRICK: Microphone. Identify yourself
19 first.

20 MR. EASTON: Earl Easton. I am with Spent Fuel
21 Project Office.

22 A lot of the newer casks have not been used yet.
23 The ones that are going to be optimized to go to the
24 repository are being designed right up to the limit to get
25 the maximum amount of fuel in, so a lot of the data, yes, we

1 have is very good, but we are anticipating an optimization
2 of casks to lower the number of shipments, to lower the
3 expense. It might be right up against the limit.

4 MR. LEVENSON: But do you have any data on
5 historically what it has been? That was really my question.

6 MR. EASTON: I think there is some data. I think
7 there is -- actually there was a NUREG done by the NRC that
8 tried to predict the average TI. That is the limit from
9 transportation casks that the Department of Energy tried to
10 use in its Rad Protection Program. I think it is referenced
11 average.

12 Do you know the number, Rick?

13 MR. BOYLE: No, I don't.

14 MR. EASTON: No? Well, we could probably get that
15 to you but I think --

16 MR. LEVENSON: My question is really a very simple
17 one. All of these casks you have calculated would come out
18 10 MR and now they have all been measured, the ones that
19 have been used in the past. The question is a very simple
20 one. How good was your modeling? Is the radiation from the
21 casks one or two orders of magnitude less than calculated or
22 is it more?

23 I am not sure -- I am not asking in pejorative way
24 whether it is less or more, but certainly by now every cask
25 that has moved has been monitored "x" times. Don't we have

1 any data, real numbers compared to the postulated numbers?

2 MR. LEWIS: We did sample the dose rate that comes
3 from the casks. It is not a variable that varies orders of
4 magnitude. It is going to be between like five millirem per
5 hour, 10 millirem per hour, in that area, because the cask
6 is designed to hold its maximum contents and be 10 at that
7 point. That is one of the criteria we have in Part 71.
8 There's other criteria that may actually be more limiting on
9 it, but that is one of the criteria, but what we have done
10 in risk assessments is two things.

11 First, we assume that all the casks are at the
12 limit of 10 and that gives us a data point if you will --
13 this is what, this would bound the risk certainly, and then
14 we have also looked at the distribution of the more
15 realistic cask dose rates and decided how that variance has
16 a sensitivity effect on the answer, and all that is wrapped
17 into this overall conclusion that risk is lower than -0170,
18 it is lower than the Modal Study.

19 MR. LEVENSON: Go ahead.

20 MR. LEWIS: Any other questions?

21 DR. GARRICK: Well, I just wanted to pick up on
22 one thing before we get off the fuel cask business and onto
23 the regular transportation issues.

24 The studies that you have done, the risk study,
25 the Modal Study, these have been based basically on finite

1 element methods and risk assessment methods, fault tree
2 methods and so forth.

3 In the '70s there was a great deal of testing of
4 casks at Sandia -- railroad crash tests, truck crash
5 tests -- and I realize the design of the casks have changed
6 with time, but how much of that experience has been brought
7 forward into these particular analyses? How much --

8 MR. LEWIS: Explicitly --

9 DR. GARRICK: -- are these analyses test
10 supported, I guess?

11 MR. LEWIS: There was no explicit attempt to
12 incorporate that test information into the re-examination
13 study. One thing we are doing, and it is a good segue into
14 the next slide, is the package performance study will
15 consider the benefits of testing and it has as part of its
16 scoping study to look at what testing had been done in the
17 past and how that could help us, but what I should say is
18 that that testing was done in Sandia Labs. Sandia Labs has
19 done the re-examination and they are also our contractor for
20 the package performance study, which is the next one I will
21 talk about, but the NRC did not sponsor that testing, and
22 the testing was done for illustration purposes, in the
23 colloquial saying. It was done for illustration purposes.
24 It wasn't done for the intent of demonstrating any degree of
25 safety quantitatively against our Part 71 approach, so we

1 are incorporating what they have done insofar as they could
2 assist us.

3 We asked Sandia to include that in their issues
4 report they are going to give us at the end of the scoping
5 study, but in reality I don't believe that testing will give
6 us very much useful information in terms of these new
7 products.

8 DR. GARRICK: So, are you saying that the designs
9 really haven't had an evolution or much of an evolution? I
10 would think that people that are in the cask design business
11 would have relied very heavily on those tests.

12 They were very convincing, and there was a large
13 series of them and they were very expensive tests. I'm a
14 little surprised that they're sort of just set aside as not
15 being applicable to Part 71 specifications when what we're
16 talking about here is the physics of failure of cask design
17 that can be reduced to some pretty fundamental
18 considerations, it would seem to me.

19 As a risk analyst, I would -- the first place I
20 would go to to get a sense of how to model these casks and
21 what kind of input to put into my model would be those
22 tests. And I would look for differences between the design
23 and the way in which those casks were designed and the ones
24 that we're trying to analyze.

25 From a risk assessment standpoint, that's an

1 enormous insight with respect to the kinds of failure
2 mechanisms that can take place, and the consequences of
3 impact forces and heat and what have you.

4 So I'm a little surprised that in all of this,
5 there seems to be such a little tie with what at one time
6 was a very intense activity of tests performance at a time
7 when there were hearings and debates between the railroads
8 and the utilities and law suits and tremendous amounts of
9 information brought forward to try to correlate train
10 accidents, for example, and the kind of severities that you
11 could get with these kinds of accidents, with cask failures
12 and the consequences of those failure.

13 MR. HODGES: Well, I'm not aware that those tests
14 were well implemented to get them the data you might need.
15 As you say, they were used more to demonstrate that the
16 casks were robust than to get that kind of data.

17 But I think the number of non-spent fuel shipping
18 casks are tested and are analyzed with the same computer
19 codes that are used specifically for the spent fuel casks.

20 If you look at the crash tests that the automobile
21 industry does on automobiles, they analyze them with the
22 same computer codes we're doing for spent fuel casks, and so
23 there is a fair amount of validation of the physics that is
24 modeled in those codes.

25 DR. GARRICK: Well, maybe what you're doing here

1 is not taking credit for that kind of knowledge and
2 information base that exists.

3 MR. HODGES: Right.

4 DR. GARRICK: And you're maybe not doing yourself
5 as much justice as you should, because the impression here
6 is that these are just analyses.

7 MR. HODGES: These specific analyses were not
8 based -- were not supported by testing, though.

9 DR. GARRICK: Well, I don't believe that. I don't
10 believe that. I think the people that were doing the hard
11 work were very much aware of the results of those tests and
12 the documentation that supported those tests, of which I've
13 still got some -- it's that much -- as being extremely
14 valuable in the way in which I would model these casks.

15 So I think that's a wrong statement. I just don't
16 accept that, as an analyst. I think that there is a
17 continuity here at the analysis level and the modeling level
18 that probably exists that you're not manifesting in these
19 kinds of presentations.

20 Or else the analysts that are doing it are not
21 taking advantage of it. That's my only point.

22 MR. HODGES: Okay.

23 MR. LEVENSON: Let me just comment. My view of
24 such things is normally quite different than John's because
25 I'm of the old school of engineering which makes any

1 analysis suspect if it isn't supported by a test.

2 And even though the tests were completely
3 different kinds of casks and different conditions, it seems
4 to me that benchmarking what you now think is a proper code
5 against those tests would certainly give a large amount of
6 credibility to your current analytical methods and so forth.

7 If you can't benchmark them against the newest
8 designs that haven't been tested yet, but if you're code
9 doesn't predict what really happened in the old ones, then I
10 think you've got a suspect code that I think you better take
11 a look at.

12 MR. LEWIS: Maybe I could address that in the
13 context of when I talk about package performance studies.
14 Because, I didn't mean to leave the false -- it is a false
15 impression that we don't think there's anything useful to
16 gain from the tests that were done in the past.

17 That was one of our reasons for selecting Sandia.
18 Some of the people that are on our team at Sandia were
19 involved with those tests.

20 DR. GARRICK: That's my point, that I suspect that
21 there is a continuity of knowledge here that is very
22 beneficial to this whole process, and that there is a
23 stronger tie with fundamental measurements and observations
24 than maybe you're taking credit for.

25 MR. LEWIS: In the package performance study,

1 again, we'll only look at spent fuel truck and rail
2 packages. In this case, we will focus on the accident
3 portion of the risks, not the incident-free risks.

4 And what we intend to do is, as the reexamination
5 was built as a logical followon to the 0170 project, the
6 package performance study is the logical followon to the
7 Modal Study component of that.

8 And people say -- people have called this Modal
9 Study II, including myself, call it Modal Study II. We're
10 not redoing the Modal Study, because we don't believe that
11 anything is inherently wrong with the original Modal Study.

12 What we are doing is, we're building upon that,
13 and we're building upon the 2000 reexamination study as an
14 additional tool to make the safety case.

15 The goal of the package performance study will be
16 to assess severe accident cask performance and fuel
17 performance. We may look at the behavior of the fuel inside
18 the casks in greater detail than we have in some of the
19 previous studies.

20 Of course, that would have to assume that the cask
21 already has a leak path due to the accident.

22 One of the major points of this scoping phase that
23 Sandia is currently contracted to do is to consider the need
24 for and benefits of physical testing, whether it be partial
25 scale or whether it be full scale, and not only physical

1 testing at the hypothetical accident conditions in Part 71,
2 the 30-foot drop and so on, but physical testing beyond that
3 realm into the 90 mph collision, say, to see that our risk
4 codes and estimates in that realm are representative.
5 Therefore, we could determine the risk significance or
6 insignificance in that very severe accident realm in greater
7 detail.

8 And we are, as I mentioned, using an enhanced
9 public participatory approach, which is the subject of a
10 slide in a second, so I will get to that.

11 But where we are today, we have a contract with
12 Sandia Labs to do --

13 MR. LEVENSON: Excuse me. On the previous slide,
14 I've got the question of -- are the packages by which the
15 vitrified Defense wastes will be shipped from Savannah River
16 to Yucca Mountain, if that's where they go, are those
17 licensed shipping containers, by NRC?

18 MR. LEWIS: Yes, they will be certified by the NRC
19 because the Nuclear Waste Policy Act requires all high level
20 waste --

21 MR. LEVENSON: So it isn't only spent fuel?
22 That's my question, where do those casks fit into this
23 picture?

24 Your slide says spent fuel only.

25 MR. LEWIS: Well, we focused on spent fuel because

1 it's the larger component of the risk of the shipment in an
2 accident.

3 MR. LEVENSON: But you also have a responsibility
4 for those. Part of what we're trying to do is sort out
5 who's responsible for what.

6 MR. LEWIS: We would certify any high level waste
7 package that would be going to Yucca Mountain. That's my
8 reading of the Nuclear Waste Policy Act.

9 Sandia is working, and as we speak, they're
10 working on the scoping study phase. We've gone out to the
11 public and collected public comments on the package
12 performance study.

13 We made up a bunch of issues, and got roundtable
14 of experts and kind of did a brainstorming, all-day
15 roundtable session to find out what could be and what maybe
16 should be done.

17 The second part of the scoping study is to do a
18 literature review and determine what tests have been done in
19 the U.S. and worldwide, because there are some tests in
20 England and Japan, I understand, that have also been done on
21 spent fuel cask performance against the IAEA standard.

22 Of course, there is a lot more experience in
23 shipping spent fuel internationally than in the U.S., and
24 the international standards are essentially the same as the
25 U.S. standards for Type B spent fuel type packages.

1 And the product of this first phase is going to be
2 the Issues and Issues Resolution Options Report, which is
3 due to NRC at the end of next month. It will take us a
4 month or maybe a month and a half to turn it around and give
5 it out to the public.

6 Our intent is to share that Issues Report with the
7 public. This issues report is akin to a proposal for
8 followon research. It's kind of a joint proposals from NRC
9 to the public and from Sandia to NRC.

10 And it will describe the approach by which we plan
11 to proceed for the next phases. We currently do not have
12 any contract for anything beyond this scoping study phase.

13 MR. LEVENSON: I have one other -- sorry, going
14 back -- clarification question on what's in your scope.
15 Does NRC license the casks that are used to ship spent fuel
16 back to this country from overseas reactors?

17 MR. LEWIS: We issue a revalidation of a foreign
18 competent authority certificate through a request from the
19 DOT, which is kind of yes.

20 I mean, we do look at the casks, any import/export
21 casks for spent fuel.

22 DOT wanted to add something.

23 MR. BOYLE: Yes, both. If they are domestic,
24 there are certain casks that are manufactured in the U.S.
25 that are licensed by the NRC first, then revalidated by the

1 Department of Transportation, which then are shipped
2 overseas to retrieve the research reactor fuel.

3 There are also foreign packages that get foreign
4 certification first, are sent to the Department of
5 Transportation. We ask for the NRC's review and
6 recommendation before we issue a license, so there are both
7 types used for that research reactor shipment.

8 MR. LEVENSON: Thank you.

9 MR. LEWIS: Thanks, Rick. Like I said, we are
10 using for the package performance study, this intense public
11 involvement process, not only in describing how we're
12 proceeding with the study, but designing the study itself.

13 We have a website established which has study
14 information on it, and a forum for interactive communication
15 on the project.

16 We have held workshops last year. At these
17 workshops, we had DOE, DOT, the nuclear industry and the
18 transportation industry, all collected at a roundtable, as
19 well as others like the International Atomic Energy
20 Commission came to one of them.

21 As I said, we had this session where we presented
22 some ideas and Sandia presented some ideas, and we just kind
23 of brainstormed on what should be done.

24 We held some public outreach meetings in Nevada.
25 We had a workshop in Nevada, like I just described, and we

1 also had some more traditional public meetings in Nevada,
2 kind of town hall type meetings in the December timeframe.

3 We have a study mailing list which we haven't used
4 much because we don't have any products yet, but we do have
5 this mailing list we're compiling.

6 We have planned for additional workshops, once we
7 get this first phase product, the issues report. We're
8 going to go out to the public and present it in workshops
9 this summer.

10 At those same workshops, we'll also present the
11 results of the reexamination study that will be published
12 this month, and hopefully between this month and the public
13 meetings, we can let the public have a chance to digest it,
14 as well as get the public consumable brochure, the plain
15 language version out in time for those meetings as well.

16 And so that's all I had, and unless you have
17 questions, I'll turn it back over to Wayne for the summary.

18 MR. HODGES: In summary, we think the reactor
19 licensees will have more options for dry cask storage
20 available. There should be four dual-purpose casks
21 available by the end of this calendar year.

22 We have established rules of engagement and
23 schedules for review, and as a consequence, the FSPO staff
24 has met all schedules.

25 We have introduced a stability and predictability

1 to the review process.

2 There are areas for improvement, both in the
3 process, procedural improvements such as amendment process,
4 and for resolution of technical issues such as for high
5 burn-up fuel and burn-up credit.

6 We're actively engaged with both the industry and
7 the public in discussing the issues related to spent fuel
8 storage decommissioning and transportation.

9 As far as the transportation studies themselves,
10 we're positioning ourselves to be better prepared to address
11 questions on the large shipment campaign when it does come,
12 and we're actively seeking public participation as we go
13 along.

14 That concludes the presentation, and we're open
15 for questions.

16 MR. LEVENSON: Yes, for clarification on this last
17 point, there is a large shipment campaign. I'm just trying
18 to sort out who is responsible for what.

19 It's clear that the NRC licenses the shipping
20 container. You say that you review routes; you earlier
21 mentioned that.

22 But exactly what is your responsibility in the
23 overall transportation picture, other than licensing the
24 casks?

25 MR. BOYLE: You might want to let my presentation

1 go first.

2 MR. LEWIS: You might want to hear from DOT, but
3 our responsibilities are specified in Section 180 of the
4 Nuclear Waste Policy Act, and they are limited to certifying
5 the packages for high level wastes that go to Yucca
6 Mountain, and DOE must also use our advanced notification
7 procedures in shipments to Yucca Mountain.

8 DOE has the responsibility to do training along
9 the route. That particular paragraph of the Act doesn't
10 mention anything about NRC's role there.

11 MR. LEVENSON: What is covered under what you call
12 physical protection that you said you were responsible for?
13 Are those guards? What does physical protection mean?

14 MR. LEWIS: Physical protection is the term we use
15 when we talk about our 10 CFR Part 73, which is prevention
16 of theft of the material, as well as that provision also has
17 the safeguards rules in there.

18 Our requirements involved armed escorts through
19 cities, immobilization devices in the truck, yes, constant
20 communication capabilities, and one that's slipped my mind
21 -- oh, safe havens be identified along the routes and things
22 of that nature. It's not safety; it's our safeguards aspect
23 of the Agency's role.

24 MR. LEVENSON: Oh, so it's safeguards, not safety.

25 MR. HODGES: Safeguards.

1 DR. GARRICK: Wayne, NRC has just finished risk
2 assessment, spent fuel pool risk assessment.

3 Has there been anything -- I haven't -- I have
4 just barely glanced at that, but has there been anything in
5 that study that has been of any help to your studies?

6 I'm thinking primarily of any special work that
7 was done to quantify the source term and the integrity of
8 the fuel and what have you.

9 Is this providing you with any additional source
10 material that enhances the quality or reduces the
11 uncertainty of some of your analyses?

12 MR. HODGES: I haven't personally even looked at
13 that one yet, but some of the staff may have.

14 DR. GARRICK: Okay.

15 MR. HODGES: But I'm not aware of anything at this
16 point. We are having some work done in the Office of
17 Research now to help out with the study that we're starting
18 on risk in dry cask storage. And that should be done soon.

19 DR. GARRICK: Well, the other thought I had there
20 is that I don't know how far you're pushing the
21 risk-informed methods. But I would have thought that on
22 that particular study, they would have pushed them pretty
23 far.

24 And it's possible that there would be some.

25 MR. HODGES: Yes, but it's a different set of

1 issues that you deal with. Our failures tend to be things
2 like cladding creep over a number of years as opposed to the
3 kinds of things you might have in a pool, and so it's a
4 different kind of a technical issue.

5 DR. GARRICK: Yes. One final question: Have you
6 attempted to characterize the importance of what one might
7 call the accident risk versus the routine risk or the acute
8 risk versus the chronic risk?

9 There are a lot of people that believe that there
10 are very important tradeoffs with respect to those two,
11 especially if you don't get too hung up on the collective
12 dose angle.

13 MR. HODGES: Right, and I think the Modal Study
14 and this more recent study would tend to show that the
15 normal risks are larger than the transportation and the
16 accident risk.

17 DR. GARRICK: Yes, yes. I think it's important
18 for --

19 MR. HODGES: Both of them being small.

20 DR. GARRICK: For some sort of information to be
21 put out there that allows people to trade off between the
22 two and appreciate the fact that there is a tradeoff. The
23 whole waste field seems to be suffering from the syndrome of
24 compromising the operating risks in order to reduce what is
25 believed to be, but a highly uncertain accident risk, highly

1 uncertain in terms of timing, and highly uncertain in terms
2 of consequence.

3 MR. HODGES: Some of the work is being done by the
4 Office of Research for this dry cask storage PRA, and it is
5 aimed at trying to get best estimates on, one, the
6 likelihood that one of the casks will leak at all, for
7 example; and, two, if it does leak, looking at leakage
8 fractions and release rates and things of that nature.

9 DR. GARRICK: The other thing that's important, it
10 seems to me, to keep in mind, at least in the short term --
11 I'm not talking about thousands of years timeframes -- is
12 the recovery angle.

13 One of the little known facts of reactor risk
14 assessment is the high dependence upon accident recovery to
15 keep the risk low. And you don't really see a great deal of
16 emphasis on recovery scenarios with respect to the analysis
17 of transportation risks.

18 And yet the opportunities there are probably much
19 greater than what you would find in a reactor case. And the
20 risk is greatly affected in reactor risk assessments by
21 recovery, accident management activities.

22 MR. HODGES: Right, right.

23 DR. HORNBERGER: I'm interested in when you
24 certify, the certification process for a new cask. What
25 kind of testing data are required and what kind of analyses

1 are required? I know you can't give it to me in great
2 detail, but can you give me a little bit of a mental
3 picture, at least?

4 MR. HODGES: Why don't you start?

5 MR. LEWIS: In our certifications, we do accept
6 analysis, testing, comparison, or combinations of those in
7 determining whether or not they pass the four hypothetical
8 accident tests, and the normal condition test as well.

9 The spent fuel casks typically will use analysis,
10 and if -- they will have an impact limiter on them as well.
11 Often the impact limiter is tested, but the cask itself is
12 done with analysis.

13 That's my understanding, that that's the typical
14 approach. That's not to say that somebody couldn't come in
15 with a scale model and test it.

16 MR. HODGES: It really also depends upon the kind
17 of testing you're talking about. With fire testing, for
18 example, the regulations allow explicitly to either do
19 analysis or by test, and for something the size of a spent
20 fuel package, it's not very practical to stick it in an oven
21 and do a test, and so it's generally done by analysis.

22 For smaller shipment or transportation packages,
23 it's a mixture. Some are done by analysis, some are done by
24 tests.

25 Whenever there are new materials that are

1 introduced, for example, for neutron shielding, we would
2 require testing for those materials, looking at things like
3 the distribution of the boron and how it changes as it
4 ages.

5 So there are tests that have been required, but a
6 lot of the stuff is done by analysis.

7 DR. HORNBERGER: That's good, thanks.

8 MR. WYMER: The only thing that occurs to me is
9 that the doses from a cask are so strongly dependent on the
10 cooling time of the fuel before it goes into a cask, that it
11 seems to me that you're not adequately or realistically
12 taking advantage of that wide variation.

13 You could have a whole series of cask types graded
14 to cooling, but it seems to me that you're not really
15 capitalizing on that.

16 MR. HODGES: That's really by choice of the vendor
17 when they come in with their design. We don't preclude them
18 from doing that.

19 And in fact, it has been proposed that for some of
20 the high burn-up fuel, they may actually need to do some of
21 that, but it's generally cheaper if you can live with it, to
22 analyze for a kind of uniformity there.

23 MR. WYMER: I see. I have just one last question
24 on clarification of responsibility. NRC licenses the WIPP
25 shipping containers.

1 You also have a role in the safeguarding of those
2 shipments similar to spent fuel?

3 MR. LEWIS: No, I don't think we get involved with
4 that. We did certify the TRUPAC package, though.

5 MR. LEVENSON: Okay. I want to thank you very
6 much.

7 MR. HODGES: Rick Boyle will come and talk about
8 DOT activities.

9 MR. LEVENSON: Thank you. I also want to thank
10 you for finishing up five minutes early.

11 MR. BOYLE: I want to thank you for offering me
12 the opportunity to come speak to you today. My name is Rick
13 Boyle and I am with the Department of Transportation --
14 rather than run through the litany of abbreviations that
15 would follow, I think as I give you an overview of the
16 Department you will figure out exactly where I sit and it
17 will make more sense to you than just giving you a bunch of
18 initials.

19 I was asked to come in to give you an overview of
20 the Department of Transportation, primarily focusing on
21 hazardous material or radioactive material transport and who
22 is involved, which parts of the Department are involved, and
23 then give you a brief overview of the Department of
24 Transportation and the NRC's relationships. If I have
25 oversimplified I was told I had about 10 or 15 minutes

1 because they didn't expect to finish early so they said keep
2 it brief and if they have more questions they certainly are
3 not afraid to ask, so interrupt me at any time you would
4 like to.

5 I could have put an org chart up that would show
6 the Office of the Secretary and the six Associate
7 Secretaries he has, and the Inspector General, but rather
8 than that I dropped right to the bottom of his organization
9 chart, which lists the 10 DOT operating administrations.
10 Even that, when you get into hazardous material, is a little
11 bit large so we will jump right down to who is involved with
12 hazardous material administrations. We will also get into a
13 little more pictures.

14 As you can see, this is a little bit idealistic.
15 RSPA stands for Research and Special Programs Administration
16 and that is where I work. One branch within that
17 administration is the Office of Hazardous Material Safety.
18 Now I see everyone is writing "Research and Special Programs
19 Administration, Hazardous Material Safety" -- the technical
20 office houses the Radioactive Material Transport Branch and
21 that is the branch that I head up.

22 This is a little bit idealistic and hopefully this
23 is the way the Department is going, I believe it should be
24 going, is that the Research and Special Programs
25 Administration, by housing the Hazardous Material Office,

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1 will coordinate the entire Department's hazardous materials
2 efforts. I think you can easily see that administrations
3 such as the FAA, the Coast Guard, Federal Rail, and Federal
4 Highway are much larger than the Research and Special
5 Programs Administration, so I think you can understand the
6 politics of the situation, that the small, minor funded
7 agencies usually do not drive the whole process, so that is
8 where this is a bit idealistic but they do defer to us to
9 develop all of hazardous material regulations, which the
10 radioactive material regulations are part of it.

11 To give you name for the pictures that we see, the
12 train of course is the Federal Railroad Administration and
13 our counterparts are in the Office of Safety Enforcement,
14 and they had a Hazardous Material Branch and then something
15 we'll touch on later but I think was very important, the
16 other offices in that safety deal with track, making sure
17 that the tracks are safe, making sure that the railcars are
18 safe and then a special branch is for -- I think they call
19 it Method of Power. I would call it the Loco Section -- the
20 locomotives to make sure they are safe, so they have four
21 branches.

22 The airplane you see on the top right is for the
23 Federal Aviation Administration. Our counterparts are in
24 the Civil Aviation Security and Intelligence Section,
25 certainly a misnomer like Defense Intelligence. Our

1 counterparts are definitely in the Dangerous Goods and Cargo
2 Security Section.

3 The cruise ship you see is really a Coast Guard
4 cutter, but I couldn't find a better picture, and we work
5 with the Marine Safety and Environmental Protection Group
6 and then that is what you would see in our organization
7 chart reflects the Coast Guard at Headquarters. We also get
8 many calls from the individual ports representing the
9 captains of the ports and what is going on out in the field,
10 so they are much broader than you would really see at
11 Headquarters, where more of the other administrations are
12 more what is at Headquarters.

13 Lastly, the truck represents the Federal Highway
14 Administration and their Motor Carrier and Highway Safety
15 Office. I am sure you are following around here Congressman
16 Wolf from Virginia has been working with the Department of
17 Transportation and that office will be split out separately.
18 I personally believe he was correct in saying that somebody
19 that is overseeing safety should not be in the same group
20 that is promoting trucking, so you would look to see our
21 organization change and see a Motor Carrier and Highway
22 Safety Office formed. It has already formed but all the
23 positions are TBA since it hasn't finally come through, I
24 think, the budget process, so I left them under Federal
25 Highway.

1 Radioactive Material Transport in the Federal
2 Government -- a little bit of the who does what to whom, the
3 regulatory role, which I will define more as I go through
4 the memorandum of understanding between the two agencies.
5 The regulatory role falls within the Department of
6 Transportation and the NRC and something I knew you would be
7 interested in, somehow I thought I would throw in the
8 Department of Energy, who is the primary shipper of most of
9 the spent fuel and certainly would be the shipper were Yucca
10 Mountain to open.

11 We have a little bit different role or probably a
12 very different role than the NRC has with the Department of
13 Energy. We treat them as a person. They are subject to the
14 regulations of the Department of Transportation and that is
15 listed in our regulations in Part 107.3, which is where we
16 define what we mean as "person." Rather than just read it to
17 you -- it is kind of dry, regulatory text -- I can provide a
18 copy to the administration or administrators here and you
19 can see where that comes in and that one of the subparts is
20 also that any Federal agency is also subjected to our
21 regulations, so I will just pull that out. It is a little
22 bit dry legalese, but I will leave it with you.

23 The one exception to that policy, which is in
24 173.7 of our regulations, which I will also leave -- it says
25 if they are making a shipment for national security, they

1 can be excepted from our shipments. Those are SST shipments
2 and those would not be spent fuel or their waste products.
3 Those are not national security, and there is a whole list
4 of special provisions they have to take to sign off
5 paperwork beforehand that that is what they are doing, to
6 have armed escorts along with it.

7 My understanding is that was the issue when they
8 just took the MOX fuel pins up to Canada is they were
9 bringing it in SSTs and when it got to the Canadian border
10 those SSTs were not allowed to go into Canada, that I don't
11 think the Canadians liked the armed guards or anything else,
12 therefore the shipment was picked up by helicopter and taken
13 the rest of the way to Chalk River.

14 The great dividing line, which I also did bring
15 more copies of so I can leave them for four or five members
16 as well as one for the copy -- I think you will be
17 interested in the memorandum of understanding between the
18 Department of Transportation and the NRC. That truly
19 defines the who is responsible for what and fortunately for
20 my office, which is very small, most of it is you are
21 talking about spent fuel transport and certainly if you are
22 talking about transportation domestically above a Type A
23 quantity most of those responsibilities fall to the NRC,
24 even though you can see our column is a little bit longer
25 than the NRC's as far as the MOU is given.

1 Our responsibility is we serve as the competent
2 authority. That means the IAEA safety standards -- we are
3 the lead agency in the United States but in my recollection
4 we haven't been over there where we haven't had an NRC
5 representative right beside us because the regulations do
6 form the basis for both Title 10 and Title 49 of the Code of
7 Federal Regulations.

8 One of the biggest projects we have taken on to
9 bring into the next revision cycle, which is in 2003 for the
10 IAEA, is a more risk-informed basis. We have been working
11 to have actual proposals submitted which are instead of --
12 usually it is little more than here is the problem and they
13 do a very brief problem statement, here are the regulations
14 that are affected and what they should be changed to.

15 Working with your staff from the SFPO we have
16 developed a little lengthier format that says you have to
17 give a little more justification and provided guidance to
18 say you do have to look at cost. You do of course look at
19 safety first, but then there is cost, and there is dose, and
20 there are a lot more factors to consider other than your
21 particular country has a problem with a set of the
22 regulations. We have also switched to a two-year -- I think
23 it is more of a never-ending rule cycle -- rather than the
24 10-year process where there is a bigger push, because you
25 weren't going to have a chance for another decade to push a

1 lot of ideas in.

2 I think switching to a two-year cycle, which is in
3 line with the way the UN does it and the Modal organizations
4 do it, would better suit the review and the development of
5 risk-informed documentation because you didn't feel if I
6 don't get it in today, I will have to wait 10 years, so I
7 think those have been some big changes internationally that
8 will benefit the way the regs are developed.

9 Classification -- that would mean defining what we
10 mean by radioactive material and we switched from, we used
11 to call it a below regulatory concern limit, to radionuclide
12 specific exemption values for the regulations, as well as
13 conveyance limits, and that would determine when, as we
14 know, everything is radioactive but to what point you would
15 have to be covered by the radioactive material transport
16 regulations.

17 The dividing line -- you will see Type A materials
18 on our side of the chart, Type B materials on your side of
19 the chart. It is the same limit. When you reach that
20 threshold you become the property of the NRC and their
21 packaging requirements. Below Type A standards are ours.
22 Low specific activity materials, surface contaminated object
23 material, non-fissile excepted, UF-6 are also DOT's
24 responsibility. Hazard communications are shipping papers,
25 labels, marking, emergency response phone numbers, the

1 emergency response guide book, things of that nature that go
2 along with the shipment are our responsibility.

3 Radiological controls, which would be the surface
4 contamination allowed on packages, radiation levels for
5 routine transport, and we do have employee training
6 requirements which I think are minimal. Their are
7 function-specific to the job that you perform and you also
8 are required to have an awareness of what is the hazard you
9 are transporting, and I think you have to remember for us we
10 have nine hazard classes from flammables and compressed
11 gases, poisons, all the way through radioactive material, so
12 just an awareness of what you are carrying and if you have
13 more than one hazard to know not only is it radioactive, you
14 may have a flammable hazard or it could be a compressed gas
15 or it could be corrosive, so you have to be aware of all the
16 hazards, not just the radioactive, and then we do have
17 emergency response training or emergency awareness training
18 I think is a better term, to say if there is an accident at
19 your facility or with one of your shipments you would know
20 what to do or some general advice to give people.

21 We do have many Modal requirements, but I am going
22 to get to those later because they aren't part of the MOU.

23 Briefly I think the previous presentation with Rob
24 and Wayne went over the NRC responsibilities very well. The
25 technical support for competent authority -- they come to

1 all the meetings with us. The dividing line is if it is a
2 domestic package the NRC will certify it and go through the
3 entire revision process and then we will take second action
4 to authorize it for import and export purposes. If it is a
5 foreign design it comes to us first and when it is for
6 fissile material it is sent over to this office with a
7 request for review and recommendation, and when that review
8 is granted then they would get the approval for import and
9 export for foreign packages being used in the U.S.

10 The same would be true for most Type B packages
11 and that -- it is written in. I think you have to
12 understand it is written in the MOU that we do not have to
13 follow that. That is I think I would say a good practice.
14 I think we ran into trouble a little over five years ago
15 with not sending enough things to the NRC for their review
16 and where there were more and more foreign packages. I
17 think we have really changed that and it has put a lot of
18 burden because fortunately because of the MOU we don't have
19 to pay the NRC so those are done gratis and we really
20 appreciate that, but it does put a burden on their time.

21 Safeguard standards were covered. Quality
22 assurance -- we do reference yours. Inspection and
23 enforcement -- I can get into the small role that we have
24 later, but you primarily do package fabrication and use,
25 your physical security and you also enforce DOT regulations

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1 on your licensees.

2 MR. LEVENSON: Let me ask one question for
3 clarification.

4 MR. BOYLE: Certainly.

5 MR. LEVENSON: On materials I don't know whether I
6 misunderstood or whether you didn't intend to have it come
7 out that way, but I interpreted what you said to mean if it
8 was Type B materials the container, what have you, had to
9 meet NRC requirements only. It didn't necessarily have to
10 meet DOT requirements -- that there was a division of
11 responsibility here, that if it is Type A materials, it is
12 DOT requirements. If it is Type B materials, it is NRC
13 requirements.

14 MR. BOYLE: I certainly misspoke there if that is
15 what I said, that there are baseline packaging standards for
16 all packages containing hazardous material and those are
17 found in our regulations in 173.24, then there are baseline
18 standards for packaging for radioactive materials that are
19 found in 173.410 and these are all building, these are all
20 cumulative. You follow those, then you would first hit your
21 Type A standards, which are in our regulations in 173.465
22 and then you would drop out to the NRC Type B, so they would
23 all be cumulative until you get into LSA, SCO which are
24 excepted out from some of them as well as the excepted
25 packages would be dropped out of some of them, but it is

1 cumulative into the NRC packaging standards.

2 DR. GARRICK: Before you take that off, Rick, I
3 can't help but comment on this. As I think back on some of
4 the public meetings we have had and the training that we
5 have had in risk communication and I look at that list. I
6 can just hear the public looking at that list and saying,
7 well, really, all I want to know is who is responsible for
8 safety, and trying to figure out what this really says.

9 How would you answer a John Q. Public question
10 that says, okay, I don't understand all of these terms and
11 what have you. What I want to know as a person living on a
12 highway through which all kinds of materials transport who
13 is responsible for the safety of those transports?

14 How would you handle that? How would you answer
15 that?

16 MR. BOYLE: First, I want to say the training that
17 we require is of only carriers to train their own people or
18 shippers to train their own people. We do not require them
19 to go out to their community and say I am running a
20 radiopharmacy here and these would be the risks to your
21 community, so we don't do that as a fixed facility is not
22 required to go out and train the community.

23 As far as that is, I think we would have to go
24 back and as we have participated at the NRC meetings is use
25 the same modal studies and risk studies you are using as

1 well as we may pull some international studies together or
2 our own studies to say the regulations provide for the safe
3 transport of radioactive material.

4 My experience is that doesn't always cover it
5 because one of the things you can't define is what "safe"
6 means. What I feel is safe transport certainly is different
7 than what somebody that maybe lives right along the highway
8 or lives in a different part of the country would think.

9 My familiarity with the regulations also is quite
10 different than everyone else. We have had to in the past
11 drop back to the same type of public outreaches that's been
12 done through the NRC. We try to do quarterly outreach
13 meetings for hazardous material as a whole, which somebody
14 from the Radioactive Materials Branch goes out.

15 Those are held regionally throughout the country
16 just trying to explain the regulations and what they mean
17 and how they are implemented.

18 DR. GARRICK: I know, and that is a real problem,
19 because we have heard a considerable amount of emotional
20 rhetoric about transportation and who is responsible for
21 transportation safety and that there's a variety of agencies
22 involved and there is a great need, it seems, speaking of
23 simple English, for some simple English explanations to
24 people who view this as a major issue.

25 In fact, I would say that in some instances that

1 we are dealing with they view it as the major issue -- how
2 to assure the public that there is accountability and
3 responsibility for the safe transport of these things, but
4 the public is definitely struggling with who is accountable.
5 We don't need to dwell on that anymore --

6 MR. BOYLE: It is a hard point, and I think a lot
7 comes down --

8 DR. GARRICK: And I don't think you get there by
9 just listing these kinds of things.

10 MR. BOYLE: Correct. I think a lot does come down
11 more to the shipper than it does to the regulator to explain
12 that role because our standards are always seen as the
13 minimum, which are certainly far exceeded in many cases and
14 if you would look at the larger campaigns, be it a pharmacy
15 or anything else, a lot of it is your perceived risk is.
16 Somebody gets their pharmaceuticals, they tend to think that
17 those are less risk and the shipments proceed without much
18 thought.

19 You get to larger reactor components, which is one
20 of the things we are working on is their going to waste
21 repositories. You raise a little more concern, and we had
22 seen the utilities holding a lot more public outreach than
23 they had in the past, and if you would look at some of the
24 larger DOE shipments now, the work that they do to explain
25 to everybody along the route and to train more people. It

1 has fallen more as the shipper responsibility to -- I don't
2 have the right words for that.

3 MR. LEVENSON: Just to follow up on that for one
4 minute, from what you have said the shipper
5 responsibility -- I'll put some words in your mouth maybe --
6 would you say that any responsibility not on this list for
7 potential shipments to Yucca Mountain would therefore all be
8 DOE's responsibility?

9 MR. BOYLE: No, I wouldn't say that that is an all
10 inclusive list. I would have to throw the book at you and
11 say here is the all-inclusive list and follow this, and it
12 certainly would be more requirements and much more detailed
13 requirements than five or six bullets on a page.

14 MR. LEVENSON: But you have defined the things you
15 are trying to cope with, which is to sort out -- I mean if
16 we can't sort out who is responsible --

17 MR. BOYLE: Right.

18 MR. LEVENSON: -- how can the public sort out who
19 is responsible?

20 MR. BOYLE: These would be the basic -- that is
21 the starting point. I am sure if we went around the room
22 and brainstormed we may come up with three or four more
23 bullets for each chart, but each bullet may refer to a whole
24 section of the regulations and our book is tabbed so you can
25 see the whole -- the table of what properties we are looking

1 at as well as all the shipping papers and everything else,
2 so there's whole sections of regulation on each portion,
3 each bullet that is shown.

4 MR. LEVENSON: But that is --

5 MR. BOYLE: That is a basic and as I said it is
6 rather dated but it is the only one we have is in the 1979
7 Federal Register copy that said this is what the MOU between
8 the two agencies is. I think it would be helpful if
9 you're -- I didn't realize that is what you were looking
10 for. I just coincidentally brought it along with me to look
11 at who is responsible for what.

12 You are ahead of me.

13 MR. LEWIS: Thank you.

14 MR. BOYLE: The Modal responsibilities throw one
15 more little quirk of who is responsible for what routing. I
16 think the only routing we can really be concerned with as
17 far as who is responsible for it within DOT is the highway
18 routing.

19 Certainly, the rail routings, those are private
20 railroads and the Department cannot come in and tell them,
21 you may not use this.

22 The highway routing is primarily uses the
23 interstate highways system, beltways wherever possible. If
24 you vary from that, you justify it, get it approved by the
25 states, and use highways as much as possible.

1 The inspection and enforcement role, we do leave
2 it to the -- it's a combination at the Department that we
3 have enforcement in the Research and Special Programs
4 Administration to look at the packaging efforts.

5 But once it is, if you will, on the road, or
6 carrier, the conveyance, that would be the responsibility of
7 the modes. We certainly inspect the locomotives, as we
8 said, or the train or the rail cars. That's the federal
9 highway and we don't inspect the track bed; that's the --
10 those were both the federal rail -- highway, we don't check
11 the roads and bridges. That would be the Federal Highway.

12 We don't inspect the trucks; that would be motor
13 carriers safety, so those types of responsibilities are at
14 the modes where the packages themselves, we would inspect
15 them up to the Type A, and once you exceed the Type A, as
16 the previous presentation said, the NRC would look at those.

17 I believe, for NRC licensees, they'd also look at
18 their Type A and below standards as well, as they have the
19 right to enforce Title 49, so upon their licensees, they
20 would.

21 Then, finally, there are additional operator
22 training requirements. I'm sure everyone is familiar with
23 commercial drivers licenses. And you'd have a hazardous
24 materials stamp to show you'd been trained for commercial
25 vehicles as well as for hazardous materials. That would be

1 what we're talking about there.

2 MR. LEVENSON: Excuse me, before you leave that
3 slide, routing, what's the interface or what is the role
4 between DOT and the states in the area of routing? My
5 understanding is that the states have a rather major role in
6 that for highways.

7 MR. BOYLE: I'm not from Federal Highways, so I
8 can't really speak too much to the exact role and who can
9 preempt whom. My understanding is that Federal Highway's
10 position is that you're to use interstate highways, and the
11 states are to designate the approved routes that they have.

12 Certainly, you're going to have to work between
13 the states, because if one state says I want to use this
14 highway and it's much farther north than the other state
15 wants to, you're going to have to work out how you go state
16 to state.

17 You know, you have to select the state -- the
18 major interstates and what your alternates are. But I don't
19 believe that the Department of Transportation dictates that
20 it has to be one or the other. I'll say they offer an
21 opportunity to mediate such disputes, but I think you're
22 correct that it's between the states to determine what the
23 route, state-to-state, is, as well as Indian tribes as well.

24 MR. LEVENSON: Among the states, there are over
25 500 laws that have some effect on routing.

1 MR. BOYLE: And probably more since the time that
2 article was written there. There will be even more; they
3 just keep growing.

4 Just some of the current activities, as I said,
5 and you saw a previous slide on it: We have a large program
6 for the adoption of the current IAEA regulations which were
7 issued at the very end of 1996, and are to go into effect at
8 the end of this year.

9 They will go into effect, if you're transporting
10 by air, if you're transporting internationally, or if you're
11 transporting by water. Your surface mode, which is
12 primarily the U.S. and Canada, both the two countries are
13 delayed in implementing them, so we'll stick with our Title
14 49, your Title 10, the Canadian regulations, or the older
15 versions of what they call Safety Series 6 instead of ST-1.

16 The revision of the IAEA regulations, as we said,
17 the 2003 revision kicks off in September of this year.
18 We're in the process now of taking the comments that we've
19 received on ST-1. We're not doing the -- we're doing an
20 old-fashioned rulemaking, if you will.

21 We went out for an Advance Notice of Proposed
22 Rulemaking which closes in June of this year. We're taking
23 those comments and trying to, wherever we can, change the
24 regulations to address those comments.

25 We also went out last week with a call for papers

1 or change proposals, if you will, so we'll wrap that effort
2 up by mid-May for a September kickoff to the entire process,
3 which should lead to a new white book, Safety Series 6.
4 Actually, they have a whole other number that's coming out
5 for the 2003, and that will come out then.

6 Current events, in quotes: I think you're all
7 familiar with all the legislation that's been going on,
8 Senate votes and the like. We have a very small office, and
9 very few people know about radioactive material in that
10 office, so we get to do a lot of the question and answer for
11 all those programs.

12 So I guess I could have said that's Congressional,
13 but if it's states or anything else, we do all the current
14 event answers, questions, and everything else.

15 Program coordination and outreach: We've had a
16 series of public meetings, as I said, quarterly, just to
17 explain the regulations. We've been participating at the
18 NRC's studies when they have their public meetings. We try
19 to do public meetings around whenever we go overseas and
20 give regulatory reviews or changes to that. Those try to go
21 out, as well as just as you have here, if you will, an open
22 door policy where applicants and industry can come in, as
23 well as the public can come in.

24 If I can skip down to package case work, we're
25 seeing more of that in what we're calling our special cases.

1 We're seeing large reactor components, primarily steam
2 generators that are being shipped to Barnwell.

3 The public is much more interested in that than
4 our previous efforts, so we're seeing more outreach and more
5 interest in those, and running those special cases.

6 But our other case work is the international
7 revalidations as the competent authority, which is
8 Import/Export, and we see quite a bit of those.

9 Our case work -- we don't do the Type A and below
10 packages as the NRC does. those are done on an enforcement
11 case basis. Since they are self-certified, we would go out
12 and verify your records and your QA and your documentation,
13 so that work is also done at the Department.

14 Again, that's all I had as an overview, and kind
15 of decide who's responsible for what, but I am free to
16 answer any questions. If you'd like me to come back in a
17 couple months when you have another meeting, with more
18 detailed information, I'd be happy to do that.

19 Again, I just appreciate the opportunity for being
20 invited to come out and talk to you.

21 MR. LEVENSON: John, do you have any questions?

22 DR. GARRICK: No, I don't think so; thank you.

23 MR. LEVENSON: George?

24 [No response.]

25 MR. LEVENSON: Ray?

1 MR. WYMER: It's too much for me.

2 MR. LEVENSON: I have one more: I don't like to
3 repeat rumors I've heard, but for the casks that come from
4 overseas, the accusation has been made that it's okay that
5 spent fuel can be shipped from anywhere in the world to one
6 of the U.S. sites, but that same cask cannot be used to ship
7 it from one U.S. site to another, the same fuel; is that
8 true?

9 MR. BOYLE: I don't believe so. If I can review
10 the two types of casks, if the NRC, if it's a domestic
11 design, the NRC is going to approve it.

12 MR. LEVENSON: If it's a domestic -- no, it's a
13 foreign design.

14 MR. BOYLE: A foreign design is going to come into
15 my office first.

16 MR. LEVENSON: Right.

17 MR. BOYLE: And we're going to get the same --
18 well, we're going to ask for the safety analysis report, and
19 it's certainly going to be in a different format than the
20 NRC is used to seeing, since they don't have to follow
21 internationally -- doesn't have to follow the NRC
22 guidelines.

23 MR. LEVENSON: I understand that.

24 MR. BOYLE: But if you get a safety analysis
25 report, it's going to be sent to the NRC for their review

1 and recommendation. Once we receive that, we're going to
2 approve it for use into, out of, or through this country.

3 So as far as the package being approved for it, I
4 believe that that's true.

5 MR. LEVENSON: But into or out of or through does
6 not cover from one place in this country to another place in
7 this country.

8 MR. BOYLE: I'm not familiar, and this is not my
9 specialty, to get export licenses as, can you export?

10 MR. LEVENSON: If I have an export license, if it
11 comes from overseas to Idaho, for instance, and subsequently
12 the same cask cannot be used, I have been told, to ship it
13 from Idaho to Savannah River.

14 MR. BOYLE: That's correct, that you get an
15 import/export, if you will, permit, and that does not allow
16 you to use it domestically, and that comes from -- I have my
17 own opinions. Probably the NRC could better explain. When
18 they give us a review and recommendation, that is not
19 equivalent to getting a full transport certificate, and they
20 could explain the differences between the two reviews and
21 what they're really doing.

22 I know I can't license domestic use.

23 MR. LEVENSON: For somebody in the public, it's
24 hard to explain that it's safe to ship this cask halfway
25 around the world, halfway across the U.S., but it's not safe

1 to ship it the other half way.

2 MR. BOYLE: I think that that's an unfair
3 characterization to say it's unsafe. I think the truth of
4 the matter is that nobody has asked to do it domestically;
5 that in my opinion, the casks you're talking about, there is
6 no reason that they couldn't be used from Idaho to Savannah
7 River, except nobody has asked, nobody has come in and made
8 the application to the NRC and gone through the -- if I can,
9 and I know I'm outnumbered here -- the expensive review.
10 You do have to pay for --

11 MR. LEVENSON: I think you just answered the
12 question as to why it requires a completely new set of
13 reviews and licensing; it economically isn't worth it.
14 Okay.

15 Any other questions?

16 MR. BOYLE: I just have one. Who should I turn
17 the paperwork over to? They can do with it what they will.
18 Thank you for your time.

19 MR. LEVENSON: Thank you. Do we have a
20 representative from EDLOW?

21 MS. OWENS: Yes, I'm here.

22 MR. LEVENSON: Are you Janice Owens?

23 MS. OWENS: Yes, I am.

24 MR. LEVENSON: Good. The floor is yours.

25 MS. OWENS: Hello, my name is Janice Owens, and

1 I'm with EDLOW International Company, and with me is Keith
2 Brown. He is a former DOE contractor, and he's now working
3 with EDLOW on our foreign research reactor spent fuel
4 shipments into the United States.

5 I would like to begin my remarks by asking a few
6 questions to emphasize what I believe are some of the key
7 issues.

8 First, did you know that according to IAEA data,
9 that on an international basis, over the last 25 years, more
10 than 88,000 tons of commercial reactor spent fuel has been
11 shipped either by sea, road, rail, away from the reactors
12 where it was generated?

13 Do you realize that some form of spent fuel is
14 being transported on a routine basis in the United States?

15 While the general public has been led to believe
16 otherwise, that spent fuel is rarely moved, this simply is
17 not the case. I believe that it's important to recognize
18 that the world is already engaged in a substantial amount of
19 spent fuel transportation, and there is quite a bit of
20 international cooperation to make this possible.

21 So what's the big deal about shipping spent fuel?
22 The big deal is that it's being done all the time and very
23 safely.

24 I'd like to tell you a little bit about my company
25 and our views on shipping spent fuel, if you haven't gotten

1 an idea of where I'm going. Then I will provide you with
2 the description of some of the key planning considerations
3 in arranging a spent fuel shipment.

4 And I will finish by briefly describing the
5 international regulatory framework, although I think you've
6 had a very good presentation on that framework already.

7 EDLOW International Company's primary business
8 expertise is arranging for all types of international
9 nuclear materials shipments, not just spent fuel.

10 Our business is very interesting and unique, and
11 we interact regularly with people all over the world in all
12 facets of the nuclear fuel cycle.

13 We have offices in Washington and Australia, the
14 United Kingdom, and in Russia.

15 Sam Edlow, the founder of our company, was an
16 early pioneer in spent fuel transport. He built the first
17 spent fuel cask and arranged for the first shipment of
18 research reactor spent fuel back to the United States in
19 1963.

20 My message is simple: We have the ability in the
21 United States right now to make arrangements and begin
22 moving commercial spent fuel. As Keith and my colleagues in
23 Washington can tell you, we are currently arranging for
24 foreign research reactor shipments to the United States on
25 the order of three to four campaigns a year, serving up to

1 as many as 12 reactors.

2 So I ask you, what is the problem about shipping
3 spent fuel? Is it the lack of a stable, effective,
4 international regulatory framework? Is it the lack of
5 cooperation among international organizations to coordinate
6 and establish standards for public protection?

7 Is it the lack of a stable, effective domestic
8 national regulatory framework? Is it the design and
9 licensing of transport casks? Is it the performance of the
10 cask in accident conditions?

11 Is it threats of sabotage and terrorism? What is
12 it, exactly?

13 Well, if you ask me, I'd say the problem is, we're
14 not transporting enough of our commercial spent fuel in the
15 United States. Experience has shown that the technical
16 issues associated with spent fuel transport are not the
17 problem; the technical issues are not causing the delays and
18 the consolidation of spent fuel at fewer sites.

19 The safety record for 40 years of spent fuel
20 transport is nothing short of exemplary. I have every
21 reason to believe that this record can and will be
22 maintained and strengthened in the future.

23 So what is the big deal? I think it's fair to say
24 that, based on our experience to date, the political and
25 public acceptance issues are truly the most difficult issues

1 to deal with.

2 As we all know, in the United States and in other
3 countries, there is widespread concern about the safety of
4 spent fuel shipments, and the possibility of a severe
5 accident.

6 Some knowledgeable parties seem to imply that it
7 will only be acceptable to begin shipping spent fuel when
8 the repository is licensed for operation in the United
9 States.

10 Other use the term, "mobile chernobyl" when
11 talking about spent fuel shipments to evoke images of great
12 disaster comparable to an atomic bomb explosion.

13 So, in the United States and in other countries as
14 well, sensationalism is a fact of life, and any mistake is
15 going to become a media event.

16 Are people wrong to be concerned about spent fuel
17 shipments? No, certainly not. Concern and scrutiny are
18 constructive parts of the oversight process, and
19 particularly if such activities serve to enhance the safety
20 of these shipments.

21 It would be helpful, of course, for more people to
22 understand how rigorous the protective measures are. The
23 stellar safety record of the nuclear transport industry is
24 not just a fluke; it's a product of a well-established
25 regulatory regime that has served the public for more than

1 40 years.

2 I must admit, if you've not guessed it by now,
3 that I'm one of those who favor moving spent fuel to a
4 centralized interim storage facility prior to disposal.
5 Without it, instead of reducing the number of sites where
6 spent fuel is stored, we're looking at having somewhere
7 close to 75 interim storage facilities throughout the United
8 States.

9 As has been explained earlier today, we have 15
10 independent spent fuel storage installations, ISFSIs,
11 operating in 13 different states in the United States.

12 Twenty additional ISFSIs are planned in 14
13 additional states.

14 Now, in terms of planning spent fuel shipments,
15 all of the key parameters must be identified and considered.
16 Of course, the most important question to address is where
17 is the spent fuel going?

18 Answering this question in the United States has
19 been the big challenge. It means addressing the daunting
20 series of public and political acceptance hurdles.

21 In my experience with foreign research reactor
22 spent fuel, once the environmental review process is
23 completed and the court challenges are resolved, we have
24 found that everything tends to fall into place very rapidly
25 thereafter.

1 So once the political will is mustered to decide
2 to ship spent fuel, I believe it is bound to proceed.

3 In the preparation and planning phase, the
4 questions that one asks oneself are, is the shipment part of
5 a larger campaign, or will it be a one-time unique
6 arrangement? We've had experience with both arrangements.

7 How much spent fuel is to be transported? Is it
8 too much for one shipment; that is, one physical shipment,
9 or will it involve several shipments?

10 What modes of transport are necessary and can be
11 utilized, given the location and the ultimate destination of
12 the spent fuel?

13 Typically, a shipment of the foreign research
14 reactors' spent fuel will involve all modes of transport:
15 Sea, road, rail, and we've even done some shipments by air.

16 What is the total radioactivity level of the
17 material? What is the condition of the fuel? Is it
18 damaged? Is it in a pool?

19 Most likely, our experience has been that, yes, it
20 is coming from a pool, but more and more in the future, I
21 suspect we'll be looking at dry storage.

22 What is the schedule that needs to be met? When
23 must the spent fuel be picked up at the reactor and when
24 must it arrive at its destination?

25 Are there weather considerations or other major

1 contingencies or factors to consider in selecting the
2 routes, equipment, and shipping mode?

3 What are the liability insurance needs, and how is
4 responsibility shared among the parties involved in the
5 shipment?

6 What kind of transport casks are needed? Are they
7 available? Are they approved by all of the various
8 regulatory authorities involved in an international
9 shipment?

10 Are they single-purpose or dual-purpose? If
11 they're single-purpose transport casks, which we routinely
12 use, arrangements have to be made for their return.

13 What is the weight of the cask, and how much spent
14 fuel does it carry? With respect to weight, does the
15 reactor have the crane capacity to lift it? Does it meet
16 heavy-haul rail and road restrictions or are special
17 arrangements necessary?

18 What are the emergency response plans for each leg
19 of the shipment?

20 What are the physical security requirements? Is
21 an escort required? Is the communications tracking system
22 in place? Is it acceptable? What notifications must be
23 made prior to the shipment? To whom? When? And how?

24 Answering all of the questions involves the
25 preparation of a transportation plan. This is an iterative

1 process requiring extensive interaction among all the
2 parties involved, the owner of the spent fuel, the shipper,
3 the regulatory authorities in all of the countries through
4 which the spent fuel will be shipped, and the recipient of
5 the spent fuel.

6 The transport plan is likely to be changed several
7 times. Importantly, however, I think it's very clear that
8 the regulatory framework for international spent fuel
9 shipments has evolved over many years and continues to
10 evolve in a generally constructive manner to meet new
11 challenges or address unforeseen issues.

12 Numerous spent fuel shipments have been made and
13 are still being made all over the world. Although there
14 have been some transport accidents, none has resulted in a
15 serious radioactive release.

16 Nevertheless, there will continue to be intense
17 public scrutiny of all spent fuel shipments. As others have
18 indicated, the IAEA regulations for the safe transport of
19 radioactive material has served as the basic guidelines to
20 promote safe transport of spent fuel worldwide.

21 These regulations establish the fundamental
22 standards for the safety of the industry. The regulations
23 are not legally binding, but may be adopted by IAEA member
24 states for use in their national regulations with respect to
25 their own activities.

1 Because the regulations have been widely adopted
2 all over the world and applied, a very high level of safety
3 has ensued.

4 The IAEA has also long been involved in the
5 development of non-binding international standards for
6 physical protection. The first publication, entitled
7 Recommendations for the Physical Protection of Nuclear
8 Materials, was issued in 1972. It has been periodically
9 revised and updated since then, with the fourth and latest
10 version conducted in 1988 and published in 1999.

11 There is, of course, also an International
12 Physical Security Convention governing nuclear materials in
13 international transport. It's up to each nation to decide
14 how physical protection requirements are fulfilled, however,
15 there is a dynamic international dialogue underway in this
16 area of physical protection, and many in the U.S., in
17 particular, believe further initiatives are needed to get
18 all nations to upgrade their physical protection standards.

19 For international organizations the International
20 Maritime Organization incorporate the IAEA regulatory
21 standards. For sea shipments, for example, the IMO adopts
22 in whole the IAEA safety series. It also sets forth its own
23 requirements for establishing three classes or categories of
24 ships for transporting spent fuel. The ships must meet to
25 varying degrees certain requirements for stability in the

1 event of damage -- fire protection, temperature control of
2 cargo spaces, structural considerations, cargo securing
3 arrangements, electrical supplies, radiological protection
4 of equipment, management training, shipboard emergency plans
5 and notification in the event of an incident involving the
6 nuclear materials.

7 I hope the message is clear that shipping spent
8 fuel requires advance planning and application of the
9 rigorous protection standards.

10 The international and national regulatory
11 frameworks have required the industry to meet very strict
12 safety standards and they have been very effective in
13 promoting public health and safety. In summary, from a
14 so-called technical perspective my colleagues and I continue
15 to have high confidence that the nuclear industry can move
16 spent fuel, high level waste and any sensitive nuclear
17 materials globally without adverse effects on the public
18 safety or environment.

19 If there is a clear political will, a mandate, to
20 move the materials and continue adherence to the strict
21 regulatory standards and criteria including those of
22 physical security, then the industry will be ready, able,
23 and willing to respond and to meet the challenges.

24 While I am optimistic about our industry's ability
25 to ship spent fuel, that does not mean there aren't

1 challenges that need to be overcome.

2 First, the location of the centralized interim
3 storage facility must be established. The public must be
4 convinced that the shipments will be conducted safely. In
5 the U.S. we have quite a bit of work to do on transportation
6 planning and preparation. I am optimistic that the studies
7 that are now underway by the NRC that we have heard about
8 today will help resolve some of the outstanding questions
9 and will get the process moving.

10 I think the pressures are increasing to establish
11 centralized interim storage. I don't think that pressure is
12 going to diminish, and I think the planning will have to
13 begin soon to engage in any major transportation campaign in
14 the United States.

15 I would be happy to answer any questions and Keith
16 here can help with specific questions on our foreign
17 research reactor spent fuel shipment.

18 MR. LEVENSON: Okay, thank you. You have
19 identified a large range of topics and a large range of
20 things that have to be done. Our previous speakers
21 identified that certain things were the responsibility of
22 the shipper. Could you briefly summarize from that big list
23 of things that have to be done that you covered what you
24 consider the primary responsibility of the shipper?

25 MS. OWENS: The primary responsibility of the

1 shipper is to develop the transportation plan -- that is,
2 according to the regulations that have been promulgated by
3 all of the agencies. There are guidelines on what types of
4 equipment can be used, how the equipment can be used, and
5 there are regulations that govern the selections of the
6 routes that can be used.

7 This, too, is an iterative process and it requires
8 a great deal of interaction with the states and we have been
9 involved in the planning of our shipments. It has taken
10 quite an effort to interact with the states and to agree on
11 the acceptable routes.

12 MR. LEVENSON: You are implying that your
13 responsibility is basically limited to conforming to
14 regulations? Identify yourself.

15 MR. BOYLE: Thank you. I am Rick Boyle with the
16 Department of Transportation.

17 The first thing I think I want to comment, EDLOW
18 is not the shipper of research reactor fuel, nor would they
19 be the shipper of any high level waste that were to go to
20 any repository. They are an agent or a broker that would
21 work between the owner, in this case the Department of
22 Energy and research reactor, owns the fuel and is the
23 shipper. They contract out to various companies to arrange
24 the transport or broker the transport so in this case EDLOW
25 is neither the shipper or the carrier or the receiver of the

1 material, so the question you are getting at -- what is the
2 shipper's responsibility -- would be better addressed to the
3 Department of Energy.

4 MR. LEVENSON: Okay, thank you.

5 DR. GARRICK: That sort of brings us to a question
6 that Janice asked at the opening, having to do with who is
7 in charge here. I think that my observation of the anxiety
8 of the public about transportation is a very simple one.
9 That is, they are frustrated by not getting a clean answer
10 on who is accountable -- single point accountability is what
11 they are looking for and they don't get it.

12 They get multiple agency responsibility. They get
13 carrier responsibilities and lists of items and things as we
14 have seen here this afternoon, but they don't get the
15 satisfaction evidently that they are looking for as to who
16 is in charge. Of course, if you look at specific cases like
17 the shipment of transuranic waste to the WIPP facility, the
18 states play a critical role in there, so there is another
19 player, so if you ask me what the problem is, the problem is
20 one of resolution of accountability.

21 In a time when we are preaching the gospel of
22 taking a total systems approach and a total integrated risk
23 assessment, being able to pinpoint responsibility and
24 accountability is extremely important to that, and I think
25 that is what is causing a great deal of frustration among

1 the citizenry, and speaking of citizenry, we have Amy
2 Shollenberger, who wants to make a comment, and I will ask
3 her to introduce herself and her affiliation, but I would
4 like to give her a chance while we are in the middle of this
5 discussion to make her comment.

6 MS. SHOLLENBERGER: First of all, thank you,
7 Chairman, for the opportunity to speak. My name is Amy
8 Shollenberger and I am a Senior Policy Analyst with Public
9 Citizen's Critical Mass Energy Project. Public Citizen is a
10 consumer and Government watchdog organization founded in
11 1971 by Ralph Nader, who I am sure you have all heard of.

12 The Critical Mass Energy Project deals
13 particularly with energy issues and we follow this issue, I
14 follow this issue particularly of Yucca Mountain high level
15 waste nuclear waste transportation.

16 I just have a few comments, most of them geared
17 specifically to the most recent discussion happening but a
18 few that will go back to this morning's session as well,
19 which was not on the record.

20 First of all, I find it ironic just seeing who you
21 have invited to speak at your meeting to you to give you the
22 information that you are looking for. I am always
23 encouraged by Chairman Garrick's attempts to bring in the
24 public's concerns to your meetings and I am continually
25 grateful that he tries to keep that in the forefront and the

1 focus of your discussions. However, I have noticed that at
2 lease in all the meetings that I have attended you have
3 never actually asked a member of the public to come in and
4 speak to you the way you ask EDLOW Incorporator or the
5 Department of Transportation of the Department of Energy to
6 speak to you and to raise the concerns and the questions
7 that happen.

8 Now I am aware that you do have workshops and
9 roundtables. I have participated in those, as has EDLOW and
10 the Department of Transportation and Department of Energy.
11 However, I think that if you really want to get a clear
12 picture it might be good to bring that discussion into a
13 more formal place, into your meetings, so that is just the
14 first thing that I would like to say.

15 Related to that is it is interesting to me to have
16 a company like EDLOW come in to give you the information
17 about how safe nuclear waste transportation is. I feel that
18 there's somewhat of a conflict of interests there, because
19 of course as the Department of Transportation pointed out,
20 they are not the shipper of waste. The Department of Energy
21 is the shipper of Waste, and they will own the waste that is
22 being shipped, but it says in the Nuclear Waste Policy Act
23 that the waste will actually be transported by a private
24 company which will bid on it, and of course the more
25 opportunity that EDLOW has to assure you that their waste

1 shipping is safe and all of the associated public relations
2 that goes with that, the more likely it is that they may get
3 the contract or that the waste will be shipped in the first
4 place, so I would just like to point that out, that that is
5 definitely something that the public is concerned about.

6 Also I would like to comment on something that Ms.
7 Owens said earlier about all of the shipping campaigns that
8 have happened in the past and I would encourage you to ask
9 the question of what is the average distance of any one of
10 those transports. The records that I have looked at that
11 list out all of the nuclear waste transportation shipments
12 often include shipping waste from a spent fuel pool to a dry
13 cask storage area, which could be 100 yards, okay? -- so
14 you can say you shipped 200,000 shipments but if they are
15 all at 100 yards, when you look at that on a bigger
16 perspective of shipping waste from Maine to Nevada it is a
17 much different story.

18 I have seen pictures of the Calvert Cliffs
19 shipments going from the spent fuel pools to the dry cask
20 storage area where they have armed guards all around the
21 trucks and they are walking really slowly and the roads are
22 all closed off, and that is a lot different than shipping
23 waste along Route 80, so I would just like to encourage you
24 to keep that question in the front of your mind as well.

25 Also, I would like to go to the question of

1 accountability. Again I really appreciate Chairman
2 Garrick's insistence on bringing that up because that is a
3 big concern of the public and it is true that we do want
4 single point accountability, and what is interesting is I
5 don't know if you all had a chance to watch the debates when
6 S. 1287 was being voted on in both the Senate and the House
7 recently but Mr. Markey from Massachusetts gave some
8 interesting comments about liability and what is interesting
9 to me is that -- the truth is that the taxpayer is really
10 the one that is accountable for the shipment because in fact
11 the Department of Energy will own the waste. It will be the
12 shipper. It will be liable for any accident. The
13 Department of Energy is funded by taxes, so again an
14 accident happens in a community, who is liable for cleaning
15 it up? The Department of Energy. Who pays for the
16 Department of Energy's ability to clean up the accident?
17 The taxpayer. So it is a double burden to whoever is
18 affected by any kind of an accident.

19 The shippers are not liable and Mr. Markey pointed
20 that out pretty eloquently and I would encourage all of you
21 to look at the Congressional Record for his statements.

22 Also, related to that is -- I asked this earlier
23 in the day, but I would like to say it on the record as
24 well. I am interested in how the "take title" provisions
25 would be -- would affect liability, and I know that at the

1 last minute when S. 1287 was getting voted on in the Senate
2 they took the "take title" provisions as far as taking title
3 to the waste onsite, so currently even if S. 1287 is signed
4 into law by the President, DOE will not be allowed to take
5 title to the waste onsite. It will only be able to take
6 title to the waste when it will be shipped.

7 However, there is a strong push for that, both by
8 the Administration and by several members of Congress, and
9 it seems like it would be an important question to ask --
10 what happens when DOE owns the waste as opposed to the
11 licensees.

12 Also, as far as shipping is concerned, I think the
13 question that Mr. Levenson brought up about the preemption
14 of state laws and who sets the routes is a very important
15 question, and I think it is one that was not adequately
16 answered nor I am not sure that it ever will be adequately
17 answered in the public's viewpoint.

18 Anytime I have ever been in a meeting where it has
19 been asked, well, who is responsible for saying which routes
20 will be chosen and who is responsible for making sure that
21 the routes that are chosen are safe, there is a big circle
22 that goes between DOT and NRC and DOE and it is never quite
23 clear to the public who is responsible for that.

24 Several states have put in alternate shipping
25 plans that can be approved by DOT. However, it seems to me

1 that there is a pre-emption of DOT regulations over state
2 plans and so if the DOT does not approve the state plan,
3 then the state plan does not go into effect, and I think it
4 is really important to make it clear to the public who gets
5 to pick the routes and why they are picked and what the
6 implications of which routes are picked are.

7 Just one more point I would like to make -- oh,
8 two more points, excuse me. As far as interim storage goes,
9 I would just like to point out that it is not only the
10 public that is against interim storage. The Administration
11 is opposed to interim storage as well, and so I don't really
12 think it is fair to characterize that as only, you know,
13 crazy people out in the public opposed to interim storage.
14 The truth is that the Administration has taken a strong
15 stance against interim storage including Secretary
16 Richardson and others in the Administration, and it is
17 really important to recognize that it is not a bunch of
18 crazy people opposed to that.

19 That interim storage provision was taken out of S.
20 1287 because the President showed that he was opposed to it
21 and when Mr. Murkowski was trying to make the bill palatable
22 to the President they removed interim storage and they put
23 in a provision called "Backup Storage" which only allows
24 temporary storage at the site after a license is granted by
25 NRC.

1 Finally, I would just like to make one final
2 point. That goes back to the Modal Study question that you
3 were discussing earlier. I participated in the roundtable.
4 I believe that Mr. Boyle was there as well, and Mr. Edlow
5 himself was in the meeting as well, on the performance
6 package scoping study, and at that time, if I understood it
7 correctly, it was explained that those tests that were
8 conducted in the 1970s were actually not used as the basis
9 for modeling in the 1987 Modal Study and that is one of the
10 reasons that they are re-looking at the package performance
11 study -- if I understand it correctly. In fact, Lawrence
12 Livermore did the 1987 study, not Sandia, so it was two
13 different groups that did the two different studies.

14 Sandia at the meeting said that they definitely
15 wanted to look at whether tests should be the basis of the
16 analysis for the new studies, so I just wanted to also point
17 that out, that it is not necessarily true that the tests
18 were used in the modelling for the 1987 study.

19 Thank you.

20 DR. GARRICK: Thanks, Amy.

21 MS. OWENS: Could I respond? On one of the
22 questions or one of the points that you raised, Amy, the
23 amount of miles -- I don't have the data with me here right
24 now, but it is on the order of hundreds of millions of
25 miles. There have been several shipments from Japan all the

1 way to Europe, spent fuel shipments, so it is not trivial.
2 It is not a trivial amount of miles.

3 With respect to interim storage, I would like to
4 point out that we already have more than 75 interim storage
5 sites in the United States and even though the
6 Administration may oppose it, I believe that it makes sense
7 to begin slowly, to move spent fuel into centralize it in a
8 single -- at fewer locations than where it is located now.

9 MS. SHOLLENBERGER: Were the shipments from Japan
10 to Europe by truck or rail or by boat or plane?

11 MS. OWENS: A combination.

12 MS. SHOLLENBERGER: That is my point.

13 MS. OWENS: Yes --

14 DR. GARRICK: If you are going to talk, you have
15 to use the microphone.

16 Any comments from the committee members? Let me
17 just turn it back to you, Milt, to wrap up?

18 MR. LEVENSON: Do you have any comments, John?

19 [Laughter.]

20 DR. GARRICK: Lots of them. The only overriding
21 comment that I have is that speaking of the taxpayers, the
22 taxpayers are paying a terrible price for decisions that are
23 being made in the name of the high risk of transportation,
24 not only in the shipment of nuclear materials but in the
25 shipment of all kinds of hazardous materials.

1 As I have said before, maybe the classic example
2 of the response to the fear of transporting hazardous
3 materials is in connection with the Army's Chemical
4 Demilitarization Program, where rather than utilizing
5 centralized disposal facilities for destroying the chemical
6 weapons, the decision was made on the basis of a very
7 shallow risk assessment that is full of holes to, rather
8 than centralize the destruction of these weapons, to build a
9 \$500 million to billion plant at each of the storage
10 locations in the United States, and again, who is paying for
11 this? The taxpayer. It was a decision that was made on the
12 basis of very limited information.

13 I see that whole attitude being repeated with
14 respect to transportation in the disposal of or the
15 destruction of hazardous materials over and over again, and
16 yet on the other hand we keep hearing and we keep being told
17 that the risk of such transportation is extremely small, so
18 something doesn't hang together, and here we are with the
19 nuclear, about to perhaps make the same stupid mistake, and
20 again who is stupid here? The taxpayer will have to be
21 accused of being so because they are tolerating it.

22 I think that we need to really be careful about
23 what we do in the name of safety and risk assessment, and
24 have to be on our toes to make sure that that information is
25 indeed getting in the right place and that the decisions

1 that are being made have the benefit of such information.

2 I don't think that is happening very effectively
3 and that is why it concerns me when I hear presentation
4 after presentation about transportation of nuclear materials
5 and do not see a tying together of all of the supporting
6 evidence of the risk associated with the transport of
7 nuclear materials, and so -- any what we have heard here
8 today just continues in my mind that legacy.

9 MR. LEVENSON: George, any comments?

10 DR. HORNBERGER: No.

11 MR. LEVENSON: Ray?

12 DR. WYMER: I just have one sort of small
13 observation. I am certain that it is true that there's been
14 many, many miles of transportation of high level waste of
15 various kinds around the world, but there is also something
16 I haven't heard much discussion of, which I guess I would
17 refer to as an intensity factor, by which I mean that if you
18 have a central repository then from all parts of the
19 country. They focus there and as they get near there they
20 tend to all run down the same road, and small though the
21 frequency of accidents may be, the likelihood of them
22 happening at all increases as you focus, as you intensify.
23 I have not heard much discussion of that, and I don't think
24 that is particularly very important in a real sense. I
25 think it is in the sense of having accidents. I think it is

1 important for the public perception point that people out
2 there in Nevada are really concerned about that focusing
3 effect. You don't get much discussion about that. Just an
4 observation.

5 MR. LEVENSON: Amy, this is partly in response to
6 your comment. I don't know what the data is on
7 internationally. NRC two years ago in NUREG-0725 did
8 publish a survey of fuel shipment and by and large, by a
9 factor of three or four, the quantity of fuel was shipped at
10 the range of 200 to 400 miles rather than just a few hundred
11 yards and a lot of it is shipments of up to 600 or 700
12 miles. That is all tabulated there, and I have no idea how
13 this relates to foreign data, but at least in the U.S. it
14 doesn't look like they are mostly short shipments.

15 One other comment. I will bring your history up
16 to date, because I am not sure -- Sam may have done the
17 first commercial shipping cask, but the first shipments of
18 spent fuel were done in 1944 and they were flown by air from
19 Hanford to Oak Ridge, and while it wasn't high burnup fuel,
20 it was only cooled two days. I know that because I arranged
21 it, so this shipping of spent fuel including by air goes
22 back quite a ways.

23 Other comments? I want to thank you.

24 MS. OWENS: Thank you very much for the
25 opportunity.

1 DR. GARRICK: Thank you. We are only ten minutes
2 off our agenda? That is excellent. All right, unless
3 there's further comment or discussion, I think we will take
4 a break, and I guess for the meeting following we don't need
5 to have a record -- we don't need to have it on the record,
6 so we will adjourn.

7 [Whereupon, at 4:10 p.m., the recorded portion of
8 the meeting was recessed, to reconven Tuesday, March 28,
9 2000, at 8:30 a.m..]

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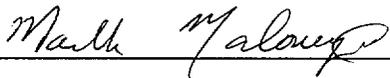
REPORTER'S CERTIFICATE

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

NAME OF PROCEEDING: 118TH ADVISORY COMMITTEE
ON NUCLEAR WASTE

PLACE OF PROCEEDING: ROCKVILLE, MD

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.



Mark Mahoney

Official Reporter

Ann Riley & Associates, Ltd.

Activities of the Spent Fuel Project Office



Briefing of the Advisory Committee on Nuclear Waste
March 27, 2000

1

Overview

- SFPO Responsibilities
- Current/Planned ISFSIs
- Storage Certificate Review Issues/Status
- Transportation Activities/Studies
- Summary

2

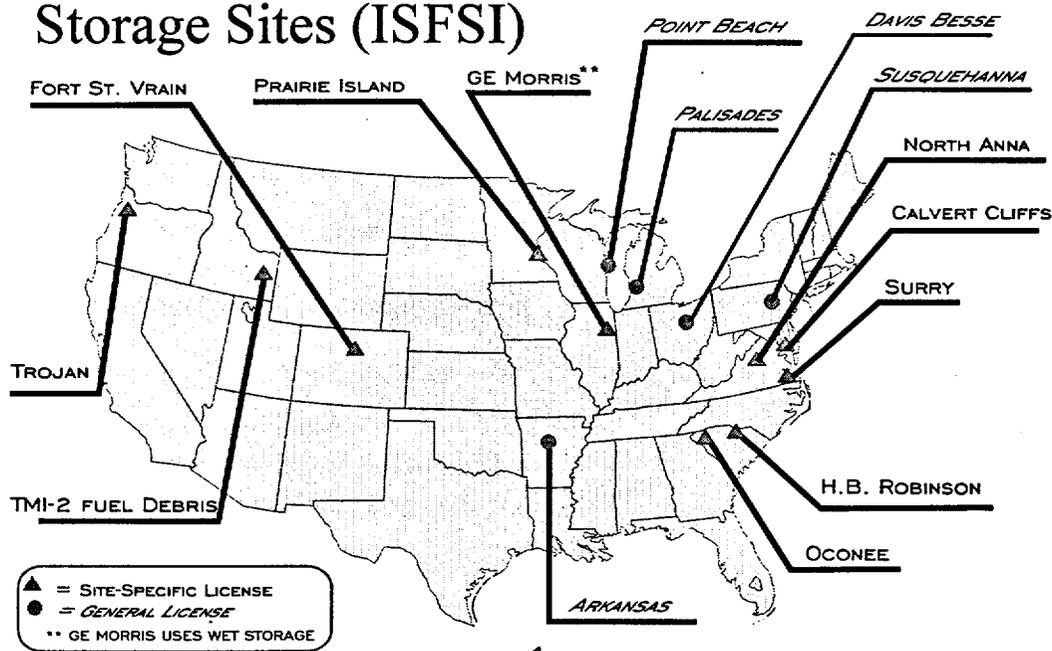
Spent Fuel Project Office Responsibilities

- Independent Spent Fuel Storage Installation (ISFSI) Licensing, Inspection Program Development, and Project Management
- Storage and/or Transport Cask Certification for Spent Fuel; Transport Package Certification for other Radioactive Materials Packages
- Regulatory Program for Safe Transportation of Licensed Radioactive Materials; DOT/IAEA Interface
- Quality Assurance Program Reviews and Inspections

3

Operating Spent Fuel Storage Sites (ISFSI)

March 27, 2000

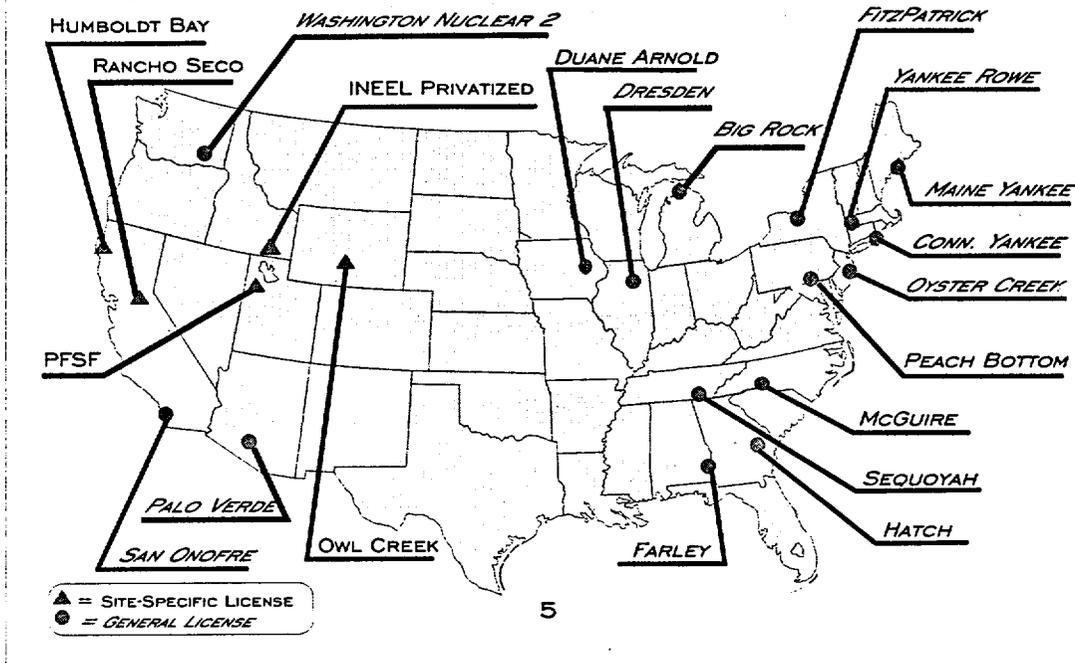


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Potential Near-Term, New ISFSI Sites

March 27, 2000



Storage Certificate Review Issues/Status - Implemented Activities

Rulemaking Initiatives

- Certificate rulemakings signed by EDO
- Standard rulemaking plan for certificate rulemakings
- Direct final rulemaking for certificate amendments
- Developed standardized rulemaking packages

Storage Certificate Review Issues/Status - Implemented Activities

NRC Review Process Improvements

- Rules of engagement (schedules and templates)
- Internal procedures (e.g., standardized RAI and SER formats)
- Standard review plans
- Interim staff guidance documents
- Lessons learned process

7

SFPO CASE WORK STATUS

Oct 1998 - Jan 2000

Spent Fuel Storage Casks¹

	Dual Purpose Casks	Single purpose Casks
Completed	1	0
In Rulemaking	4	1
Under Review	2	0

Transportation Certificate Reviews (Spent Fuel & Non-Spent Fuel)

Completed	141
Under Review	51

Independent Spent Fuel Storage Installations¹

Completed	3
Under Review	3

¹ Additional certificate/license amendments are under review and in rulemaking to address site specific issues (10 amendments pending / 20 amendments projected in FY00)

8

Storage Certificate Review Issues/Status - Initiatives

Certificate Review and Approval Process

- Minor changes not requiring NRC approval
 - ▶ Improved certificates
 - ▶ Improved standard technical specifications
 - ▶ Guidance on new 72.48 change control process
- Alternative certificate amendment process
- Areas for improved effectiveness and efficiencies (e.g., review times, staff guidance)

9

Storage Certificate Review Issues/Status - Initiatives

ISFSI Dry Cask Storage License Renewal

- SFPO task group developing staff guidance and process
- Considering NRR and NMSS license renewal experiences
- Surry lead plant for renewal (license expires in 2006)
- ISFSI renewal process and guidance will be in place to support renewal

10

Storage Certificate Review Issues/Status - Initiatives

High Priority Technical Issues

- High Burnup Fuel (Industry Highest Priority)
 - ▶ Currently reviewing basis for up to 60 MWD/MTU
 - ▶ NEI forming industry working group to coordinate and develop technical basis
 - ▶ Technical concern is embrittlement, cladding creep
- Burnup Credit
 - ▶ Past practice no credit allowed for burnup credit
 - ▶ Issued two ISGs in 1999 which provide limited burnup credit
 - ▶ Developing technical basis with RES for expanded burnup credit

11

Transportation Activities/Studies

Overview of Discussions

- SFPO transportation roles and activities
- Revisions to 10 CFR Part 71
- Transportation risk studies
 - ▶ Reexamination of spent fuel risk estimates
 - ▶ Package performance study
- DOT role in transportation of radioactive material
(Mr. Richard Boyle, U.S. DOT)

12

SFPO Transportation Roles and Activities

- Agency lead for transportation matters
 - ▶ Interface with DOT and IAEA
 - ▶ Assist other NRC offices (e.g., EIS reviews)
 - ▶ Point of contact for Regional offices/inspectors
- Certify transportation packaging designs
- Quality assurance program approvals/inspections
- Transport physical protection
- Generic issues resolution
(high burnup, burnup credit)

13

10 CFR Part 71 Rulemaking

- Rulemaking to incorporate latest, periodic revision of IAEA transportation standards (ST-1)
 - ▶ Identified 13 topics that may result in Part 71 changes
 - ▶ Changes involve details, but not changes to the overall approach of the regulation
- Also includes other considerations:
 - ▶ Changes for certain spent fuel packages (similar to process in §72.48 and §50.59)
 - ▶ Resolve petition on double containment for plutonium
 - ▶ Expand scope to include certificate holders, owners
 - ▶ Resolve comments on 1997 fissile exemptions rule

14

10 CFR Part 71 Rulemaking

Process

- Staff plans to use enhanced public participatory approach
 - ▶ Similar to the approach used for Part 63, Part 70
 - ▶ Public meetings and outreach on issues
- Coordinating Part 71 changes with DOT's changes to 49 CFR Parts 171-178
- Schedule: develop proposed rule by 3/01

15

Transportation Safety Studies

Ongoing Effort to Ensure Shipment Safety

- 1977 - FES on Transportation by Air and Other Modes (NUREG-0170)
- 1987 - Shipping Container Response to Severe Accidents (NUREG/CR-4829)
- 2000 - Reexamination of Spent Fuel Shipment Risk Estimates (NUREG/CR-6672)
- ~2003 - Package Performance Study (Severe Accidents)

16

NUREG-0170 (1977)

Final Environmental Statement on the Transportation of Radioactive Material by Air and Other Modes

- Assessed public and transport worker impacts
- All licensed shipments, all modes, incident-free transport and accidents
- Used as basis for NRC and DOT regulations
- Spent Fuel (1 of 25 types of materials studied)
 - ▶ Reprocessing economy (90 day cooled fuel)
 - ▶ Simple accident release (using engineering judgement)
 - ▶ Estimated a 1985 total of ~2000 shipments/year
 - ▶ Total population doses (p-rem): 565 (truck); 298 (rail)

17

Modal Study (1987)

NUREG/CR-4829 (LLNL): Shipping Container Response To Severe Highway and Railway Accident Conditions

- Spent fuel package accident response by analysis
- Impact and thermal forces
- Finite element analysis of cask wall stresses
- Goal: relate Part 71 tests to forces in accidents
- Also considered 'real life' transport accidents
- Risks estimated to be ~1/3 those in NUREG-0170

18

Reexamination of Spent Nuclear Fuel Risk Estimates (March 2000)

NUREG/CR-6672, Sandia National Laboratories

- Assess risks for shipment campaign to storage facilities and repository
- Model current cask designs (including closure system), modern fuel properties
- RADTRAN V incident-free & accident dose risk
- Result: risk < Modal Study < NUREG-0170
- Plain-English compliment to technical report is in development

19

Package Performance Study

- Spent fuel only, truck and rail packages
- Build upon 1987 modal study and 2000 reexamination study
- Assess severe accident cask performance and fuel responses
- Consider the need for and benefits of physical testing (partial-scale or full-scale)
- Using an enhanced public participatory approach

20

Package Performance Study

Where We Are Today

- Contract with Sandia National Laboratories
- Scoping study
 - ▶ Collect public views
 - ▶ Literature search/review
- Issues & Resolution Options Report
 - ▶ Available summer 2000

21

Public Involvement

- Website (<http://ttd.sandia.gov/nrc/modal.htm>)
- Workshops
 - ▶ Nov. 17, 1999: Roundtable in Bethesda, Maryland
 - ▶ Dec. 8, 1999: Henderson, Nevada roundtable and evening seminar
 - ▶ Dec. 9, 1999: Pahrump, Nevada seminar
- Mailing list
- Additional workshops this summer, to discuss both reexamination report and issues report

22

Summary

- Reactor licensees will have more dry cask options
 - ▶ SFPO anticipates 4 dual-purpose cask systems should be completed by December 2000
- SFPO has established rules of engagement and schedules for reviews
 - ▶ Schedules have been met
 - ▶ Stability and predictability in review process established

23

Summary (Continued)

- Principal areas for further improvement (amendment process, technical issue resolution)
- SFPO actively engaged with industry and public licensing and technical issues related to spent fuel storage, decommissioning, and transportation
- Transportation studies
 - ▶ Positioning NRC to be better prepared to address questions on a large shipment campaign of spent fuel to repository or storage
 - ▶ Enhanced public communication process being used

24

Overview of DOT's Program for the Safe Transport of Radioactive Material



Richard W. Boyle

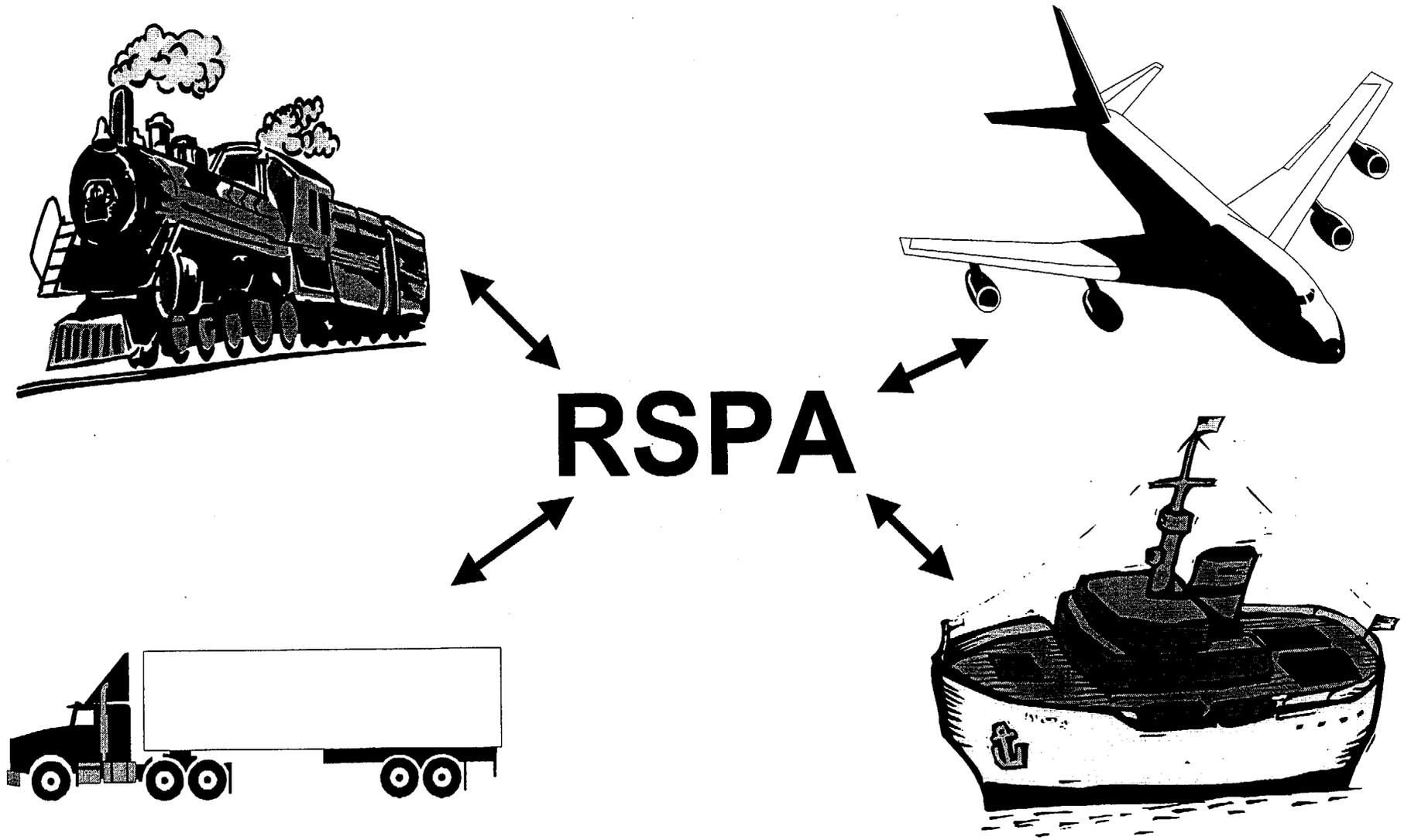
DOT/RSPA/Hazardous Materials Safety

March 27, 2000

DOT Operating Administrations

- U.S. Coast Guard
- Federal Aviation Administration
- Federal Highway Administration
- Federal Railroad Administration
- National Highway Traffic Safety Administration
- Federal Transit Administration
- St. Lawrence Seaway
- Maritime Administration
- RSPA
- Bureau of Transportation Statistics

DOT "HazMat" Administrations



RAM Transport in the Federal Government

- Regulatory Role
 - Department of Transportation
 - Nuclear Regulatory Commission
- Department of Energy

MOU Between DOT and NRC

- DOT Responsibilities

- Competent Authority
- Classification
- Type A Materials (LSA, SCO, Non-fissile UF6)
- Hazard Communication
- Operations/Handling
- Radiological Controls
- Employee Training

- NRC Responsibilities

- Technical Support to the Competent Authority
- Type B Materials
- Fissile Materials
- Safeguard Standards
- Quality Assurance
- Inspection/Enforcement

DOT Modal Responsibilities

- Routing
- Inspection/Enforcement
- Infrastructure/Conveyance Safety
- Operator Training

Current Activities

- U.S. Adoption of IAEA Regulations, ST-1 (1996 edition)
- Revision of IAEA Regulations
- “Current Events”
- Program Coordination and Outreach
- Package Review Casework