

1 UNITED STATES OF AMERICA
2 NUCLEAR WASTE TECHNICAL REVIEW BOARD

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6 FULL BOARD MEETING

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10 Key Bridge Marriott
11 Potomac Ballroom, Salon C
12 1401 Lee Highway
13 Arlington, Virginia

14
15 Tuesday, January 5, 1993
16 9:00 a.m.

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2 PARTICIPANTS:

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4 JOHN E. CANTLON, Chairman of the NWTRB

5 CLARENCE R. ALLEN, Member of the NWTRB

6 GARRY D. BREWER, Member of the NWTRB

7 EDWARD J. CORDING, Member of the NWTRB

8 PATRICK A. DOMENICO, Member of the NWTRB

9 DONALD LANGMUIR, Member of the NWTRB

10 JOHN J. MCKETTA, JR., Member of the NWTRB

11 D. WARNER NORTH, Member of the NWTRB

12 DENNIS L. PRICE, Member of the NWTRB

13 ELLIS D. VERINK, JR., Member of the NWTRB

14 HUGO POMREHN, Under Secretary of Energy

15 ROBERT M. BERNERO, NRC/NMSS

16 JOHN W. BARTLETT, DOE/OCRWM

17 RONALD A. MILNER, DOE/OCRWM

18 CHARLES B. LEMPESIS, Office of the Nuclear Waste

19 Negotiator

20 E. LINN DRAPER, American Electric Power Company

21 LYNN SHISHIDO-TOPEL, Illinois Commerce Commission,

22 NARUC

23 F. KENNETH MOORE, Virginia Power

24 ROBERT W. RASMUSSEN, Duke Power

25 MARVIN L. SMITH, Virginia Power

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PARTICIPANTS [Continued]:

- WILLIAM D. BARNARD, Executive Director of the NWTRB
- SHERWOOD CHU, Senior Professional Staff, NWTRB
- LEON REITER, Senior Professional Staff, NWTRB
- CARL Di BELLA, Senior Professional Staff, NWTRB
- ROBERT LUCE, Senior Professional Staff, NWTRB
- RUSSELL McFARLAND, Senior Professional Staff, NWTRB
- DENNIS G. CONDIE, Deputy Executive Director, NWTRB
- VICKI REICH, Librarian, NWTRB
- FRANK RANDALL, Assistant, External Affairs, NWTRB
- NANCY DERR, Director, Publications, NWTRB
- KARYN SEVERSON, Congressional Liaison, NWTRB
- PAULA ALFORD, Director, External Affairs, NWTRB
- LINDA HIATT, Management Assistant, NWTRB
- HELEN EINERSEN, Executive Assistant, NWTRB

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

2 [9:00 a.m.]

3 DR. CANTLON: Good morning. If we can have our
4 seats, we'll get the session underway.

5 This is a meeting of the Nuclear Waste Technical
6 Review Board. This is our winter meeting. My name is John
7 Cantlon. I'm Chairman of the Board. I'm Vice President
8 Emeritus for Research and Graduate Studies at Michigan State
9 University. My professional field is environmental biology.

10 Let me briefly introduce the other members of our
11 Board to you. Dr. Clarence Allen, who is Professor Emeritus
12 of Geology and Geophysics at Cal Tech. Garry Brewer, who is
13 the Dean of the School of Natural Resources and Environment
14 at the University of Michigan, and Professor of Resource
15 Policy and Management.

16 Ed Cording, Professor of Civil Engineering at the
17 University of Illinois. Patrick Domenico, who is a David B.
18 Harris Professor of Geology at Texas A&M. Donald Langmuir,
19 Professor of Geochemistry at the Colorado School of Mines.
20 John McKetta, Joe C. Walter Professor of Chemical
21 Engineering, Emeritus, at the University of Texas.

22 Warner North, Consulting Professor in Engineering
23 and Economic Systems at Stanford University, and a principal
24 with Decision Focus, a consulting firm. Dennis Price,

1 Professor of Industrial and Systems Engineering, and
2 Director of Safety Projects Office at Virginia Polytechnic
3 Institute and State University.

4 Ellis Verink, Distinguished Service Professor of
5 Metallurgical Engineering Emeritus at the University of
6 Florida. Also in attendance are our professional staff and
7 the technical group here at the front of the building.

8 As most of you know, the Nuclear Waste Technical
9 Review Board was created by Congress in 1987 in the amendment
10 to the Nuclear Waste Policy Act. The Board is charged with
11 providing an unbiased source of expert assessment of the
12 technical and scientific validity of the DOE's work in high-
13 level nuclear waste management.

14 We report twice each year to Congress and to the
15 Secretary of Energy. The major subject of this meeting is
16 the systems implications of interim storage. We have
17 allotted a day a half for this very timely topic.

18 Tomorrow afternoon we will also hear from the
19 Department of Energy on its Systems Studies Road Map, and its
20 Mission 2001 planning effort -- two agency approaches to
21 identifying the integrative challenges of bringing the
22 complex, high-level nuclear waste management system into
23 being.

24 The Board has long believed that the principal

1 functions in the waste management process -- handling,
2 storage, transportation, and disposal -- are strongly
3
4 connected.

5 As a result, major technical decisions from one
6 part of the system significantly affect other parts. The
7 Board, up until now, has reviewed different aspects of
8 transportation and disposal, including their implications
9 for other parts of the system. It has not yet, however,
10 had the opportunity to address the systems issues associated
11 with the interim storage of spent fuel.

12 The purpose of this meeting is for the board to
13 review aspects of interim storage in the context of the
14 waste management system as a whole. Discussions will
15 encompass storage, both at reactor sites and at sites
16 away from reactors.

17 As you can see from the agenda, we have invited
18 participation from organizations with wide-ranging
19 responsibilities and perspectives. Also, with recently
20 announced changes in DOE policy, this meeting is proving to
21 be very timely.

22 The NRDC representative has called to say because
23 he's part of the transition team, would be unable to
24 participate today. We lament that since they have a

1 particular view that we would like to have had expressed.

2 The subjects that we will be discussing during the
3 interim storage sessions of the meeting relate to themes that
4 have been pursued by several of the Board's panels, and
5 the Board as a whole.

6 Therefore, we're dividing up the job of moderating
7 the discussion sessions among Dennis Price, Garry Brewer, and
8 Ellis Verink.

9 Dr. Price, who is Chairman of the Board's Panel on
10 Transportation and Systems, will moderate this morning's
11 session. Dr. Brewer, who is Chairman of the Panel on
12 Environmental and Public Health will be moderating the
13 afternoon session.

14 Tomorrow morning's session on some of the technical
15 issues associated with multi-purpose containers will be
16 moderated by Dr. Verink, who is Chairman of the Board's Panel
17 on Engineered Barrier Systems.

18 Time has been provided for questions and comments
19 at the end of both sessions today. A substantial amount of
20 time is also set aside tomorrow morning for further
21 discussion and summary among all of the participants. I know
22 that some of you will have to leave before tomorrow, but I
23 hope that most of you can stay.

24 Before we get the morning's program underway and I

1 turn it over to Dennis Price, I have the pleasure of
2 introducing Dr. Hugo Pomrehn. Dr. Pomrehn is the Under
3 Secretary of Energy. He will make a statement on the
4 Department's new policy initiatives on waste management.

5 Dr. Pomrehn?

6 DR. POMREHN: Thank you very much. I appreciate
7 the opportunity to be here this morning.

8 I have attended some of these review sessions in
9 the past. I think this leading edge of technical activity is
10 very vital to the successful program development as we go
11 down the road here in the next couple of years.

12 What we tried to do in the last several weeks is to
13 step up the pace, if you will, on this interim storage issue.

14 I don't know how many of you have been following the
15 headlines in the news media, but it's not clear that it's
16 been captured in that context.

17 That is to say the Department of Energy's
18 suggestions here are designed to assure spent fuel receipt
19 can be achieved in 1998. We thought at the time a few weeks
20 ago that we had opened the portfolio, if you will, and
21 expanded our thinking into some other alternative siting
22 approaches.

23 Number two, to get on with the engineering of a
24 robust receipt storage, transport, storage, and final

1 disposal waste engineered system so we could get on with this
2 interim storage issue.

3 Contrary to what some of the headlines have been
4 and some of the implications have been, this was not meant,
5 in any way, to distort or hinder the negotiator process for
6 finding alternate intermediate interim storage sites.

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8 In fact, it was meant to supplement that effort.
9 In fact, if appropriate Government sites can be identified,
10 the negotiator would come in as an assist, in terms of local,
11 state, and other constituency involvement in the siting
12 process.

13 That's what we intended to do. I think that's what
14 our objectives are here, is to assure a site, or sites, for
15 interim storage as soon as we possibly can.

16 I think prior sessions have discussed the waste
17 repository, the Yucca Mountain program itself. Significant
18 progress is being made in that regard. I don't think there's
19 any question in anyone's mind that we're going to assure and
20 confirm the ability to permanently dispose of high-level
21 nuclear waste.

22 Yucca Mountain is a very fruitful opportunity for
23 that. We're dedicated to find out whether or not that site
24 is capable. You're all dedicated to that same aim. I don't

1 think this meeting is going to address that, with the
2 exception of: What are the engineered barrier systems that
3 are being studied in the permanent repository condition?

4 We need to study that very, very hard, because if
5 we can specify what that barrier system is, I think we can
6 bring it back into the overall waste management and waste
7 handling system. That's going to be discussed here today.

8 I don't have a lot to really say. You've read the
9 Energy Daily, the inside energy article that was written.
10 There's no question in my mind that David Leroy got it right
11 in terms of the bullets that were not said over the past
12 several weeks in terms of what this program, what this
13 expanded siting analysis, is all about.

14 So, I'm confirming that what he says in there
15 should have been said is now said, that is to say, to
16 characterize in his words, "The Department continues to
17 fully support the Office of the Negotiator."

18 The grant process remains in place. There are no
19 jurisdictions that he has found that all of a sudden will
20 become involuntary hosts, even though they've subsequently
21 said they're not candidate sites for interim storage.

22 All the things that he has put in here -- the new
23 strategy is designed only to supplement, not supersede the
24 siting activities that have gone on. In fact, we probably

1 can learn an awful lot from some of his activities in that
2 regard.

3 There still remain some opportunities in
4 successes. The Department anticipates an active role for
5 the negotiator in helping to solve this siting dilemma
6 that we seem to be in right now.

7 We felt we had to move this fall and winter in
8 this regard because if there is environmental activities to
9 be done preliminary to the negotiator going to Congress
10 with opportunities for interim siting, we need to get started
11 on it right away.

12 So, our clock said in November that we had to do
13 something extraordinary and open the possibility thinking in
14 terms of interim storage. That's what we did. So, I want
15 to put that in a very positive sense.

16 I guess David Leroy couldn't be with us today, but
17 I think we'll hear from the Negotiator's Office, John, if I'm
18 not mistaken.

19 So, I could take a few questions now. I will be
20 with you this morning unless you're going to take time for
21 questions and answers towards the end of the morning. I
22 didn't quite know how you wanted to proceed.

23 DR. CANTLON: If you're going to be with us in the
24 morning, let's save it for discussion at the end.

1 DR. POMREHN: All right. Thank you very much.

2 DR. CANTLON: Thank you very much.

3 Now, Dr. Price will take over.

4 DR. PRICE: Our first presenter this morning is
5 going to be Robert Bernero, Director of the Office of Nuclear
6 Material Safety and Safeguards, for NRC.

7 MR. BERNERO: When the switch is to off, it is on for
8 the benefit of the next speakers.

9 [Laughter.]

10 [Slide.]

11 MR. BERNERO: Good morning. My name is Bob
12 Bernero. I'm Director of Nuclear Material Safety and
13 Safeguards at NRC. I'd like to speak to you today about our
14 perspective on the storage of spent fuel.

15 Let me start by saying that many years ago a number
16 stuck in my mind. A large pressurized water reactor
17 assembly, a single spent fuel assembly, after it's out of its
18 service life in the pile, one year later still has about one
19 million curies of radioactivity. It's a very simple number
20 to remember. A megacurie one year out of pile in a
21 pressurized water reactor assembly.

22 What's interesting about that is that a large
23 reactor, or a reasonable-sized pressurized water reactor is
24 going to generate about 2,000 of those assemblies in its 40-

1 year life.

2 So, when we speak of interim storage of spent fuel,
3 we're talking about a highly concentrated form of
4 radioactivity in very large bundles.

5 [Slide.]

6 MR. BERNERO: I would like to speak to you about
7 how we regulate that, starting out with some questions. Why
8 do we need interim storage? Because the reactors were
9 designed and licensed in the first place to have what we
10 thought was adequate fuel storage? Can we safely store it?

11 That's been a major question posed to the NRC

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13 because we have continued to license nuclear reactors anew,
14 and to amend the licenses of operating reactors. We have
15 been subject to legal challenge: How can you do that when
16 there's no place to put the spent fuel?

17 Then I will explain to you how we license it and
18 speak of some of the systems that are available now and what
19 are coming available.

20 [Slide.]

21 MR. BERNERO: Well, DOE has a burden in the
22 handling of information on spent fuel storage. On an annual
23 basis, the Department of Energy publishes a summary that
24 indicates for every reactor in the United States, how much

1 fuel they have, how much in the pool. Now, of course, some
2 of them have dry storage. It does the bookkeeping to discern
3 what is the need for spent fuel storage.

4 You just heard Dr. Pomrehn say they see the need to
5 start receiving spent fuel fairly soon -- 1998 -- from the
6 reactors because their projections indicate that 26 reactors
7 will need it very soon.

8 I would add there's one reactor in the United
9 States today that's in the final weeks of its operating
10 cycle. When it shuts down later this year in May or June, it
11 will not be able to defuel or refuel unless it has additional
12 storage available there. So, we have reached the point where
13 some reactors are right up against the wall for
14
15 spent fuel storage, even now.

16 DR. NORTH: Warner North. Could you identify that
17 reactor?

18 MR. BERNERO: Palisades. I will be talking about
19 it a little bit later.

20 [Slide.]

21 MR. BERNERO: Now, the options that exist to the
22 licensees now -- a couple of them have existed for some time
23 -- increase the capacity of the existing spent fuel pool.

24 Originally when the reactors were licensed, the

1 spent fuel pool was designed to hold fuel for awhile with
2 the expectation that spent fuel reprocessing would be
3 undertaken and that the fuel would be shipped out in some
4 orderly way to a fuel reprocessing plant and disposed of
5 through that method.

6 When reprocessing wasn't in the cards, in 1976 the
7 policy change said "No more reprocessing." When that
8 happened, many of the reactors began to modify the spent fuel
9 pools by saying, "Look, we were generous in our allowance of
10 margins and so forth. Why don't we go for greater packing
11 density in the spent fuel in the pool and use more dense path
12 racks, put poisons in the racks?"

13 There were a variety of techniques that would
14 basically increase the amount of fuel that could be stored
15 within that pool. Remember when you extend the storage
16
17 capacity of the pool, what you're actually adding is not the
18 new, fresh out of pile, fuel. You're keeping older and older
19 fuel. Therefore, the heat load is a lesser and lesser
20 contributor with time.

21 We have licensed -- of course, the NRC has to amend
22 the license to authorize the safety of those changes to the
23 spent fuel pool. But many reactors have reached the point of
24 no return on that. They can't do it any more.

1 Transshipment of fuel to another facility --
2 needless to say there aren't many takers for spent fuel. If
3 a company owns two sites -- and a couple of companies have
4 had that benefit -- Carolina Power and Light and Duke Power
5 -- have been able to ship some spent fuel from one of their
6 sites to another of their sites, but certainly no other
7 company is about to step forward to take their spent fuel.
8 So, that hasn't been a very significant option.

9 The last is acquire some independent storage
10 -- independent being outside of the pool, outside of the
11 reactor plant, probably right on the same site. I'll be
12 showing you some of those.

13 [Slide.]

14 MR. BERNERO: Now when I mentioned earlier that we
15 were challenged about why are you continue to license nuclear
16 reactors when you don't have a destiny for the spent fuel,
17 what we have done in the NRC under challenge is a
18 waste confidence finding.

19 Waste confidence is basically a formal statement by
20 the Nuclear Regulatory Commission, after evaluating all the
21 facts, are we confident that there is an ultimate management
22 of this high-level waste?

23 Those findings -- the first one was made in 1984,
24 the second one in 1989 -- the 1989 findings were based on

1 very pessimistic assumptions. I want to emphasize these are
2 assumptions.

3 I don't want to hurt Carl Gertz's feelings, but we
4 said in that waste confidence proceeding, "Let's postulate.
5 Let's be pessimistic. Let's assume that we argue about Yucca
6 Mountain until the Year 2000, and then abandon that site for
7 whatever reason."

8 Then you go back. You have to go to the Congress.
9 You have to go through another thing. It could be another
10 25 years before you get a program going and successful at
11 another site.

12 With that we were making an assumption so
13 pessimistic because we wanted to see what sort of prolonged
14 spent fuel storage might be there.

15 In that context, then, we said, "These plants that
16 exist now are licensed for 40 years. They might have a
17 license extension, or license renewal, for perhaps even as
18 much as 30 years. Then, depending on whatever program is
19
20 available and when spent fuel can be shipped away, there
21 could be still another 30 years after shutdown.

22 So, that's why we had this 40, 30, and 30. We
23 looked at the available technical data for wet storage and
24 dry storage and evaluated whether we could say -- and did

1 conclude that we could say with confidence -- "This spent
2 fuel can be safely stored for at least 100 years," for that
3 period of time. That is consistent with any reasonable
4 availability of a repository.

5 [Slide.]

6 MR. BERNERO: Now, what do we do about spent fuel
7 storage? Under law, we have to license, however this spent
8 fuel is stored. We have a regulation strictly for that
9 purpose -- 10 CFR, Part 72.

10 Now, we have different ways to do this licensing.
11 Administratively it can be somewhat confusing. Let me try to
12 clarify it.

13 We can issue a Certificate of Compliance for a
14 cask, or a system of storage, an independent system of
15 storage. Or, we can approve a Topical Report which describes
16 a system of storage, or a cask.

17 The NRC has a mechanism whereby a company that
18 doesn't operate a nuclear plant, but just makes storage
19 systems, can come to us, pay a fee, and get a review and
20 approval of their report, their Topical Report, for a
21
22 system.

23 Then to license the actual storage, there are two
24 choices -- a site specific license, a company that operates a

1 nuclear power plant can come in and say, "We want to use the
2 system in that Topical Report at our site in Michigan, or
3 Illinois, or wherever. We want that storage system. Will
4 you give us a license for it?" We can take that action.
5 That is a case specific licensing action. It's subject to a
6 hearing process.

7 On the other hand, we can have a general license.
8 A general license is perhaps best understood if you think of
9 transportive spent fuel. A transportation cask is certified.
10 As long as you are authorized to possess spent fuel, and you
11 have an authorized recipient somewhere to receive spent fuel,
12 the regulations give you a general license. It's framed
13 right in the regulations. It's a general license that you
14 may ship spent fuel in a certified cask.

15 In spent fuel storage, you have a similar thing.
16 There is a possibility of a general license for the storage
17 of spent fuel. We'll talk about that just a little bit more.

18 [Slide.]

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20 MR. BERNERO: If we look at our licensing process,
21 these general objectives that I list here -- safe

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24 confinement; prevent degradation of the fuel cladding; and

1 where possible -- not mandatory, but where possible --
2 compatibility with transportation. Those are important.

3 But I think it's good to step back, just to step
4 and say, "Technically what do we want to see the industrial
5 proponents achieve?"

6 Frankly, I was talking to Charlie Haughney, who is
7 the Chief of our Branch for Spent Fuel Storage. I was
8 saying, "Sometimes I would like to go back to the days of
9 Part 72 when we first wrote the regulation because what we
10 really want are simple, passive, no moving parts, long-lived
11 systems."

12 That's what we want because safety is best assured.

13 I think ultimately economy is best served if you have simple
14 passive systems. So, that's unwritten criterion that
15 pervades all of this licensing review -- simplicity and
16 passivity.

17 [Slide.]

18 MR. BERNERO: Now, specific licenses I will review
19 with you, show you some systems, and identify the ones we
20 have licensed, direct review, or Topical Report approval.
21 The general license -- this is the one that I mentioned
22 that's enshrined right in the regulations.

23 Not everyone qualifies for that general license.
24 The regulation, Part 72, is quite clear. You have to be a

1

2 power reactor owner. There's no getting away from that.
3 You're the only one that could possibly be authorized such a
4 general license.

5 You have to be a Part 50 licensee, that is, 10 CFR
6 Part 50, operating reactor owner. It has to be a certified
7 system so some rule-making is done, to certify the system.
8 Then that Part 50 owner, subject to conditions of physical
9 security, operations and maintenance, can use that system
10 without specific license approval, and, therefore, without
11 hearing.

12 Now, the Congress and the Nuclear Waste Power Act
13 10 years ago said the Department ought to encourage and work
14 to develop systems amenable to this, and NRC ought to work to
15 license them. That's what we have done.

16 [Slide.]

17 MR. BERNERO: So there is the possibility of having
18 these general licenses and the requirements, as long as they
19 are certified casks and the Part 50 owner satisfies the
20 conditions for use. Then the general license is acceptable.

21 Now what we do is we issue 20-year renewable
22 certificates. In a spent fuel license, if you come as a
23 reactor owner for a specific license, it's a 20-year term of
24 license, subject to renewal. That just gives us some

1 housekeeping management. Rather than give an indefinite

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4 license, we have a finite term for it.

5 I want to make that point. There is no sense
6 involved that 20 years is the designed life of the cask, or
7 the system. That's not the case at all. Now, we have these
8 and we publish these in the record.

9 [Slide.]

10 MR. BERNERO: Let me talk about what storage
11 systems are available today. Now, they come in three
12 categories. One the storage only casks. These are basically
13 physical large casks that are for the purpose of storage at a
14 reactor site, but they are not certified for transport.

15 The very first one, the CASTOR V/21 -- I'll show
16 you a picture of that -- but we have a whole family of casks.
17 Now, remember here the competitive system is at work.
18 People are designing and proposing systems, getting licensing
19 review. All of these systems are competing with one another
20 for this business.

21 The NRC is very conscious of that. We can't favor
22 one or the other. We have to have an even playing field so
23 that competition can be fairly worked, and the regulatory
24 accesses aren't unique.

1 Another system other than the cask is the modular
2 vault dry storage. I'll show you a picture of that. Foster
3 Wheeler corporation has developed it. It's basically a dry
4
5 spent fuel pool, or a spent fuel pool system without water in
6 it.

7 Then there are concrete and steel systems that are
8 rather interesting. They come in two varieties. I'll show
9 you photos here soon. The NUHOMS system is basically a
10 concrete bunker with a bunch of steel cartridges inserted in
11 it where the steel cartridge contains the spent fuel.

12 The VSC 24 is a steel cartridge vertically oriented
13 in a concrete cask. It's just a concrete structure in the
14 shape of a cask with a steel insert in it, holding the spent
15 fuel.

16 [Slide.]

17 MR. BERNERO: Here is the first of the spent fuel
18 license. That's a CASTOR V/21 cask. These casks are arrayed
19 at the Virginia Electric Power Corporation site, Surry,
20 across the river from Williamsburg, Virginia.

21 The reactor buildings are visible in the
22 background. It's on sort of a peninsula of land. There's
23 quite a bit of acreage there. You can see the reactors.
24 They're over on the James River.

1 This concrete pad area and a fenced area is
2 somewhat set aside, but still on the reactor site. You can
3 see security lights. There is fencing around it. Basically
4 it's just a parking lot. It's just a parking lot for that.

5 [Slide.]

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7 MR. BERNERO: Here is a later view of that same
8 facility. Now you can see that they have finished 12 CASTOR
9 V/21s. This is a new cask. I believe that's a MC-10. It's
10 another storage-only metal cask. It's on the site. Here's
11 the transporter. It's like an A-frame transporter used to
12 bring the cask from the spent fuel pool area of the reactor
13 up to this site. Here again you can see the simple security
14 and lighting. The surveillance is relatively simple also.
15 Again, we're looking for passive systems -- very robust
16 passive systems.

17 [Slide.]

18 MR. BERNERO: Here is one of those concrete bunker
19 systems, the NUHOMS. This is the small one at H.B. Robinson
20 plant, which is in the Carolinas. This contains only seven
21 PWR fuel assemblies in it. It was designed to fit a General
22 Electric IF-300 shipping cask as a movement cask because the
23 company owns one or two of those.

24 The cartridge goes into the bunker there. Then a

1 shielding door closes in front of it. Here you see the
2 shipping cask being hauled around with this tractor-trailer
3 combination. The shipping cask contains the cartridge and is
4 simply the handling shield. It provides shielding strictly
5 for handling. Then you use a plunger to slide it into the
6 bunker.

7 [Slide.]

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9 MR. BERNERO: That system is also used at the
10 Oconee Nuclear Station. See the three reactor buildings.
11 Now, Oconee is a much larger system. It has 24 assemblies in
12 each cartridge.

13 Now if you look at the notes in the hand-out, you
14 will see some line drawings that I think are useful to depict
15 a few characteristics of the bunker and the cartridge.

16 The cartridge is basically just a dense nest of
17 fuel assemblies held snugly and seal welded. It's a seal-
18 welded steel cartridge, 24 assemblies packed with reasonable
19 density and with appropriate reactivity control and
20 mechanical control.

21 Now the bunker itself, you can see is open for air
22 convection cooling. There are whole slots. If you look at
23 your handout, you can see that there are air inlet slots. It
24 was interesting.

1 There's a similar system at Calvert Cliffs. A
2 newspaper reporter photographed it from standing inside the
3 bunker before the cartridge is put in. It's quite open in
4 there. The air is free to flow around and out the vents.
5 There are bird screens up in the top of it.

6 So, that system is a simple passive one. I don't
7 have a photograph to show you, but if you look also in the
8 handout, you will see the concrete cask, the VSC 24. It has
9
10
11 air inlets at the bottom. It's like an annular chimney for
12 the cooling.

13 [Slide.]

14 MR. BERNERO: I do have a sketch of the modular
15 system. This is the modular vault system that I referred to
16 earlier as just as a spent fuel pool with no water in it.

17 You can see it is a concrete structure. It has the
18 fuel hanging in cans, and air comes in through this array
19 right here, through number 7, goes over a baffle, and then
20 just flows up, and out of the building. Just natural
21 convection cooling.

22 It is passive. It is very simple. It is a very
23 robust structure. That one has been used, built once so far,
24 and this is at Fort St. Vrain reactor in Colorado, Platville,

1 Colorado, North of Denver.

2 It looks like a grain elevator when you come up to.
3 Just a great, big building, a good size building. And, it
4 is entirely passive. This building was built to hold all the
5 spent fuel from Fort St. Vrain, because they could not send
6 it to the Idaho site, where the initial spec fuel shipments
7 were made.

8 And that is in operation now, in operation meaning
9 it has spent fuel in it. It is just sitting there under
10 surveillance. And they are de-commissioning the rest of the
11 reactor, the Fort St. Vrain reactor itself, in its handling.

12 Now, there are other things on the horizon. For
13 some time, people have proposed that we should have dual
14 purpose casks. The dual purpose meaning that the cask would
15 be certified for storage at the reactor.

16 And then, however many years later, that same cask
17 would be used to ship the material, and that cask therefore,
18 would have to be certified for shipment to be used under that
19 other general license, that I spoke of earlier, the general
20 license for transport.

21 And that would be a very desirable feature. So, we
22 have under review right now, a dual purpose cask. It is a
23 stainless steel cask, and that one is particularly of
24 interest to the Spanish government, ENRESA, the Spanish

1 Regulatory Authority, has a strong interest in having a dual
2 purpose cask system, for all of their reactors.

3 We are also looking at a concrete container and a
4 steel multi-element canister.

5 [Slide.]

6 MR. BERNERO: There are other schemes by which the
7 dual purpose might be served. Now, one of the ways that it
8 might be served -- you recall the picture here of the spent
9 fuel bunker, the NUHOMS system. Now, that is a transport
10 cask.

11 If one carefully designed it, the system could
12 consist of a transport cask that could load the canister
13
14 into a storage module, or bunker, and then when needed, come
15 back, take it out, seal it up for transport, take it where
16 it is going, and return to get another one.

17 So, you might have 20 or 30 canisters here,
18 serviced by one transport cask. And that concept is being
19 evaluated right now.

20 [Slide.]

21 MR. BERNERO: Now, we have licensed a lot of
22 storage only, and I just tabulate them here, and I have the
23 names of the -- I have the docket and license numbers, and
24 the names of the systems that are used. Again, when you see

1 a name like CASTER V/21 or MC-10, that is a typically a metal
2 cask, and that site Surry is already licensed for three
3 different metal casks.

4 The NUHOMS systems are the concrete bunkers, with
5 the sliding cartridge, and the modular vault system for Fort
6 St. Vrain.

7 [Slide.]

8 MR. BERNERO: We have license applications from
9 Brunswick. It is just a follow-up. It is a further
10 licensing of the system they already have, because they want
11 to put more in storage.

12 Then here is the interesting one. The Palisades
13 reactor. Palisades originally applied for a license to a
14 site specific license, to have spent fuel storage at their
15
16 site, which is on the Shores of Lake Michigan, in the State
17 of Michigan.

18 And they received requests for hearing. And it
19 looked like there was going to be heavy litigation. So, they
20 withdrew that application, but then went to the VSC-24 cask
21 by general license. But that requires a rulemaking. And so
22 now, we are in a rulemaking, in the final steps of a
23 rulemaking, to authorize VSC-24 casks by general license.

24 And when that rulemaking is final, any reactor will

1 be able to use VSC-24 casks, without hearing, without
2 specific licensing action at that site, and Palisades is the
3 first. And they are literally waiting for the conclusion of
4 that rulemaking, because they are a pressurized water
5 reactor, Palisades, and they come to zero parts per million
6 boron on May 17th. And on a pressurized water reactor, that
7 is basically the end of the trail. You can do some coast
8 down, but not much else.

9 And so, this is a very important, and critical path
10 effort. And what is interesting about it is, it illuminates
11 why the Congress asked for this kind of licensing. What they
12 wanted -- the ability to have approved technologies used
13 without site specific approval.

14 Calvert Cliffs is another large NUHOMS system, like
15 Oconee. Prairie Island, a TN-40, is really a TN-24 cask with
16 40 assemblies in it, because Prairie Island has
17 smaller than normal assemblies. Same size -- it is basically
18 the same cask.

19 And Rancho Seco, remember Rancho Seco is the
20 reactor which shut down permanently. They want to de-
21 commission the plant, and they are proposing, it appears, a
22 NUHOMS bunker system -- one of those concrete bunkers with
23 cartridges, but with the dual purpose aspect, the ability to
24 ship it later, without using a reload capability in the spent

1 fuel pool. So they could completely de-commission the
2 reactor.

3 [Slide.]

4 MR. BERNERO: Now, we have these applications for
5 Certificates VSC-24, and this VSC-24, these would be for
6 general license certificates. The VSC-24 is the one for
7 Palisades, that I mentioned earlier.

8 And these are, this one here, NUHOMS, is an attempt
9 to get a certificate for the bunker cartridge system in PWR
10 and in BWR. That is the only difference in the numbers.

11 The boiling water reactor assemblies are much
12 smaller in size, so that you can get that many more of them
13 into a facility.

14 [Slide.]

15 MR. BERNERO: Now, we are reviewing this topical
16 reports. Again, you will see the numbers reflecting what
17
18 kind of system. The entire industry of spent fuel storage
19 has been in vigorous competition for three or five years,
20 five years now. And it is a very interesting situation, and
21 a very delicate one, because what is happening now is, the
22 Department of Energy, is taking initiatives, as well as
23 individual utilities, that may narrow the field.

24 So, it is a very, very complex interaction going on

1 right now.

2 [Slide.]

3 MR. BERNERO: And, I just end by showing you a map
4 of the United States. We are starting, we are seeing enough
5 dry storage, that we are starting to keep a log of where is
6 there independent storage, and how many assemblies are there
7 in independent storage. And I expect to see this map grow
8 for several years, and more and more sites, and certainly
9 more and more assemblies, and the plants continue to operate.

10 That concludes my remarks, and I think I will wait
11 until Discussion Section II.

12 DR. CANTLON: If there are any questions, we would
13 be happy to take them?

14 DR. PRICE: Is anyone smoking with burning
15 questions?

16 DR. CANTLON: I will take the prerogative of the
17 chair, and in a sense, put you on the spot. But, just an
18
19 observation, that one of the difficulties the country has
20 been in nuclear, is the high variation, in both reactor
21 types, and now we seem to be repeating the same problem, as
22 we get into transportation and storage casks, and so on.
23 Could you expand a little bit on your closing remarks, about
24 what effort are we into, to simplify and to settle on, a

1 highly uniform system, where we can build some real
2 experience.

3 MR. BERNERO: There is an interesting display that
4 we put together some years ago for our Commission, a slide,
5 that I wish it here today.

6 We got the available data for all the fuel types --
7 - what are the different dimensions of spent fuel that are
8 out there, that ultimately the Department of Energy has to
9 pick up. And it is appalling. It is absolutely -- little
10 things, big things.

11 South Texas, one of the newest plants, has fuel two
12 feet longer than everybody else. It is the French Advanced
13 PWR design.

14 And what we did, we looked at all of that, and
15 recognized that whatever systems are available, the bulk of
16 that is going to be handled by some generic system, but some
17 casks of some kind will have to be available to handle the
18 peculiar ones.

19 The NRC has tried to exhort people toward
20 compatibility or general applicability, try to have systems
21 that can do the best, or hold the most, or hold everything.

22 And what is actually happening is -- now we can't
23 refuse a license. If somebody says, look, I own Babcock &
24 Wilcox PWR that has exactly this size, and I have a right to

1 license a storage system that holds that.

2 We can encourage -- get with the Department of
3 Energy, or get with your reactor owners, to try to have a
4 more generally applicable system, and we have so encouraged.

5 What is happening now, I think, is a combination of
6 schedule and economic pressures, and the actions of the
7 Department of Energy, and I presume you will hear more about
8 that later, whereby certain systems that have this
9 adaptability, or compatibility, more readily available, are
10 coming to the fore. And I think that is the way the
11 competitive system has to work. And I think it is working
12 that way. I think you will see that.

13 But I want to be very clear. We are not making a
14 system analysis and a system selection. We can't.

15 DR. CANTLON: Thank you.

16 DR. PRICE: I would like to ask a question here on
17 dual purpose casks. What complexities do you see for long
18 term storage, then followed by transportation, with respect
19 to the licensing aspect. And then, what complexities do you
20 see when you add to that storage at a site, that must be
21 dealt with from a regulatory standpoint?

22 MR. BERNERO: Actually, I think the way it is
23 coming out, we are not going to see a lot of complexity
24 entailed with the dual purpose character.

1 Let me start with probably, the most significant,
2 and most limiting factor. When we review a transportation
3 cask, we review it with the presumption that during
4 transport, it will suffer a damaging accident and leak water
5 in.

6 We virtually assume is in. And we want to ensure
7 that it is critically safe. That is part of the margins of
8 safety for the licensing of a cask in transport.

9 But if you look at that ahead of time, you can
10 figure a critically safe basket, and if you go back to the
11 criteria for spent fuel storage, which are very passive, very
12 simple systems, helium filled, inert gas, seal welded, they
13 store very well. They store very well.

14 So basically, what we envision, is a system that is
15 certified for transport in advance, is very likely to be an
16 assured transportable system, when the time comes, 20, 30, 40
17 years later.

18 That it will be a -- not a very complex system.
19 The greater complexities would come with these, like I
20 described for Rancho Seco, the bunker system, where you pull
21 something out. It is just mechanical.

22 Remember, you are handling very large, heavy
23 assemblies. A pressurized water reactor assembly is what,
24 maybe 4/10ths of a ton in weight. And 24 of them are pretty

1 heavy, and then, they are in a heavy, steel canister. And
2 you are sliding them from one shield into another shield.
3 Those are mechanical system complexities that you have to
4 deal with.

5 But, I don't see the dual purpose. At least, if
6 you are working in that theme, as a great complexity. It is
7 homework you have to do ahead of time.

8 DR. PRICE: Now, when you add to that storage at
9 the repository?

10 MR. BERNERO: I don't think it would be any, you
11 know, basically, most of these systems, whether you have got
12 a concrete bunker with cartridges in it, or you have got
13 casks standing on it, it is a parking lot.

14 And they are not -- you know, I like to look at
15 that one for Surry, where is the -- the picture for Surry is,
16 perhaps, the best one to illustrate that.

17 [Slide.]

18 MR. BERNERO: How many of those do you need? I
19 told you, you have about 2,000 assemblies, out of a
20 pressurized water reactor in its life. That's all the fuel.

21 And each one of those casks, these hold 21 assemblies,
22 that one holds 24 assemblies. The third one
23 that is licensed on that site holds 28 assemblies.

24 You don't need very many of those things, and you

1 don't need a very big parking lot. The storage density is
2 very favorable.

3 So, as long as the system is a passive, simple,
4 mechanical system, and is pre-certified, I don't envision
5 real big problems, or complexities, either storage at
6 reactor, or storage at a repository, pending appropriate
7 disposition.

8 DR. PRICE: If we were to see a move toward this
9 universal cask, is there any changes in the wording, specific
10 wording of regulations necessary?

11 MR. BERNERO: No, there wouldn't -- now, we
12 wouldn't be mandating the universal cask. It would just be
13 that people are using a certified cask. But the NRC wouldn't
14 change its regulations.

15 You know, we have a general license certificate on
16 the street now for the CASTOR V/21 cask. And this company is
17 specifically licensed to use that cask.

18 That is the last one they are building, right
19 there. They build a set of 12. And no one has used it under
20 general license. So, we have don't have to require the
21 master cask, or the universal cask, when its time comes.

22 The industry can choose to do that, along with the
23 Department, and go in that direction. But, I don't think we
24 will change our rules.

1 DR. PRICE: Warner.

2 DR. NORTH: I wanted to pick up on the theme of
3 systems analysis, and turn to it the performance assessment
4 question.

5 You have restated the NRC conclusion that with
6 these casks, safety can be assured to the extent that there
7 is a finding that the spent fuel can be safely stored for 100
8 years.

9 MR. BERNERO: At least.

10 DR. NORTH: And I realize that is your regulatory
11 framework, in which you make that assessment. Nonetheless,
12 it has been subject to some criticism, by those who have
13 wondered if this is the right question.

14 And I will cite from the Board on Radioactive Waste
15 Management Report, rethinking high level radioactive waste
16 disposal. On page 2, they say, engineers and scientists, no
17 matter how experienced or well-trained, are unable to
18 anticipate all of the potential problems that might arise in
19 trying to site, build and operate a repository. Nor can
20 science prove in any absolute sense that a repository will be
21 safe, as defined by EPA standards and U.S. NRC regulations.

22 Now, it seems obvious that that statement holds for
23 dry cask storage on the surface as well. In the same

24

1 report, page 22, they advance a conclusion. This is with
2 regard to the comparison of storage on the surface versus in
3 a repository.

4 And this report states, even when the detailed
5 behavior of an underground repository is still under study,
6 it may well be safer to put the waste there, in a way that
7 permits retrieval, if necessary, rather than leaving it
8 reactors, or in storage at, or near the surface of the earth.

9 Now, my general question is, what is being done
10 about this? The Board on Radioactive Waste Management has, I
11 think, appropriately picked up a theme that was in the Lewis
12 Budnitz, et al. Report on Probabilistic Risk Assessment --
13 namely, that the right question is one of comparing the
14 safety of alternatives, rather than an absolute determination
15 of the number, the probability of an accident or a release of
16 a given size.

17 So, what would seem needed, is a comparison between
18 the risk of getting on with the repository sooner, or later,
19 with more storage, at or near the surface, in the type of
20 casks that you have just been describing.

21 My question is, is NRC doing any of this kind of
22 performance assessment, looking not at the repository alone,
23 but rather, the repository versus cask storage of the kind
24 that you have looked at, and concluded under the regulation

1

2 is safe?

3 Is it, in fact, a good conclusion, as the Board on
4 Radioactive Waste Management has put it? That it would
5 appear safer to put the waste underground in Yucca Mountain,
6 as opposed to a dry cask storage system?

7 MR. BERNERO: Let me answer you, Dr. North, first
8 of all, by saying the NRC is not doing such a performance
9 assessment of comparative risk.

10 We are operating on the program assumption that the
11 high level waste repository effort, which is subject to our
12 other set of regulations, Part 60 and the like, that that
13 effort is going on to reach fruitful conclusion when the
14 system is justifiably acceptable.

15 You know, meeting the EPA standard and projections
16 of all the other standards. And it includes the requirement
17 that the waste be retrievable, should the development of the
18 repository show up that, hey, this is a terrible place to
19 leave it. So the waste has a retrievability requirement.

20 We are not looking at spent fuel storage, weighing
21 is this marginally less safe, or more safe, than proceeding
22 with the repository.

23 We are not making the societal decision that might,
24 for instance, say -- boy, this is very, very safe. I am

1 going to do this for the next hundred years, and I am going
2 to schedule Carl Gertz to wait for 100 years before he
3 drills his hole. We are not doing that.

4 We are not doing that. I don't think it would be a
5 wise decision. No. We are not comparing the risk in that
6 sense, whether it is safer to emplace retrievably, as against
7 stacking it in a parking lot like this, because we are able
8 to establish that a -- there is a desire to move toward
9 disposal, and that is what society is trying to do, that is
10 why the Department of Energy has that program.

11 But in the meanwhile, the safety of this is so
12 effectively assured, that it need not be a factor. You need
13 not do that risk balance. That for reasonable, economic
14 efforts, you can provide great assurance. At least 100
15 years.

16 And I would argue, if you go into the technology of
17 spent fuel storage, you are not drawing a fine line at 100
18 years. Because the whole system is fundamentally passive,
19 inert atmosphere, mild conditions. So, we are not doing that
20 tradeoff.

21 DR. NORTH: Is anybody else?

22 MR. BERNERO: I don't think so.

23 DR. NORTH: Thank you.

24 MR. BERNERO: But I let DOE speak for that.

1 DR. PRICE: I have a question here. Can you
2 license a cask for permanent storage before a repository is
3 selected?

4

5 MR. BERNERO: Can we license a cask for permanent
6 storage? Now, by that, I think you mean, if we get a
7 multipurpose cask, such that instead of just storage and
8 transport, some would say, I want to certify this cask for
9 storage, for transport, and for ultimate disposal.

10 And let me, for sake of argument, say it is
11 canister. You know, it is not one of these, with the lids
12 and white paint and everything. It is a cartridge.

13 We could do the third part of the certification.
14 The third part of the certification being that this canister
15 will ultimately be unopened, going into the repository. And
16 we could do that by a variety of means.

17 One of -- I have already discussed with our
18 counsel, the possibility of even -- we could do a rulemaking
19 action under Part 60 to do that, on the barrier system.
20 However, there is one issue that you would have to confront.

21 Generally, when we speak of a disposal cask, or can, or
22 cartridge, we are speaking of something that may be medium
23 specific.

24 In salt, you might use one alloy, in unsaturated

1 tuff, you might use another. I would suggest that you would
2 very likely find yourself having an overpack can -- that you
3 might certify the cartridge, subject to the incorporation of
4 a suitable material medium specific overpack. That kind of
5 consideration might very well get into it.

6 DR. PRICE: Other questions from the Board? We do
7 have our next speaker scheduled at 10 minutes after 10, so
8 there is a little time for questions. Bill Barnard?

9 DR. BARNARD: Bill Barnard, Board staff. Bob, we
10 now have spent fuel and storage at about 110 reactors,
11 located about 70 sites in the United States, and the
12 Department of Energy would like to site a centralized storage
13 facility and begin accepting spent fuel in 1998.

14 The question is, is centralized storage more safe
15 or less safe than that reactor storage?

16 MR. BERNERO: Well, we have confronted that system
17 analysis in the past ourselves, with testimony to the
18 Congress as well, in talking about an MRS.

19 Basically, centralized storage provides you system
20 management incentives, centralized control, system management
21 benefits. But we cannot discern any significant difference
22 in safety between disbursed storage reactors, or centralized
23 storage.

24 And part of that judgement depends on, that the

1 risk of transportation is so low, that the idea of, perhaps
2 an unneeded trip across the country somewhere, is entailed in
3 going to centralized storage and into the repository.

4 That level of risk, that level of environmental
5 impact, is very, very low.

6 DR. BARNARD: So we have formally said that we do
7 not discern any safety difference of significance between at
8 reactor, I will call it disbursed storage, or centralized
9 storage. Yes Woody.

10 MR. CHU: Just a short follow-up on that. Woody
11 Chu on the staff.

12 What would you say with respect to safeguard as
13 opposed to safety then, physical security and so on? Would
14 there be any difference between centralized?

15 MR. BERNERO: No, we have taken that into account.

16 You see what the physical security arrangements here are.
17 It is a perimeter fence and some light poles to make sure
18 that the guards can make their rounds, and see that no one is
19 there.

20 Frankly, even if we didn't have a fence, and guard
21 surveillance for physical security, I don't think anybody is
22 going to come in and steal one of those things. They are a
23 little bit hard to move. And if they fall on you, that is
24 it.

1 Yes, the physical security is really not a
2 significant problem. We looked at it when we looked at the
3 idea of discernable differences in safety.

4 DR. CANTLON: For those sites, like Palisades, that
5 have storage limitation problems -- what is the scale of that
6 group that don't have on-site storage, for which some kind of
7 interim storage may be needed?

8 MR. BERNERO: I think right now, I have it on one
9 of the earlier slides. It is two dozen reactors needed by
10 the year 2000 -- 26 -- yeah, it is one of the earlier slides.

11 [Slide.]

12 MR. BERNERO: Twenty-six facilities need increased
13 capacity prior to the year 2000. That is the current
14 projection, and of course, that hinges on a variety of
15 parameters -- you know, how many plants, or what enrichment.
16 A lot of plants have been increasing their enrichment. But
17 in round numbers, I think that is reasonable.

18 DR. CANTLON: But what does that translate into in
19 terms of number of casks, that is the number of facilities
20 and doing the math, then -- what are we talking about?

21 MR. BERNERO: Well, I think what you run into is
22 getting back to our friends at Surry. Every refueling, and a
23 refueling nowadays in a reactor is running 15 months, 16
24 months interval, you will fill two to three of these casks.

1 It depends on the size of the reactor, and the size of the
2 cask. But, I think Surry has something like 70 fuel
3 assemblies per refueling, or 60. I can't remember the
4 numbers.

5 But what that means is, the people who have already
6 gone into this business will, like Surry, keep adding it,
7 because every refueling -- it means they are
8
9
10 spent fuel poolers.

11 DR. PRICE: Dr. North again.

12 DR. NORTH: Could I follow-up a bit on that? What
13 is the approximate magnitude of the costs of those
14 containers?

15 MR. BERNERO: Gee, that's the one thing we don't
16 license, and we have only second-hand knowledge, and, in
17 fact, it is true hearsay. It is muttered. The licensee
18 might say something. There is certainly megabucks per
19 container. I don't know.

20 DR. BARTLETT: Half a meg.

21 MR. BERNERO: Half a meg. \$500,000 for one of
22 those?

23 DR. NORTH: Having visited Surry, Warner North
24 again, my impression was it used to be about a meg, but there

1 are projections that it is coming to the number that Dr.
2 Bartlett just cited.

3 Now the conclusion I would draw from this, from
4 which I would invite your comment, is that the issue is not
5 in economics. given the economics of running a nuclear plant.

6 If you can continue the operation of the plant for
7 a couple of million bucks every 15 to 16 months, that is a
8 very easy decision, given the value of continuing to be able
9 to generate the electricity.

10

11 The problem, it seems to me, is getting the
12 licensing approvals, including the opposition from state and
13 local authorities. Would you concur?

14 MR. BERNERO: Yes. Look at Prairie Island.
15 Prairie Island had a very, very hard time in their plant
16 specific licensing, not quite a year ago, it was earlier in
17 1992.

18 And it was the State Regulatory Economic Regulatory
19 Authority that questioned whether a Certificate of Need
20 should be granted for the spent fuel storage, and state of
21 the art technology, and medical casks.

22 As in all matters concerning waste storage or waste
23 disposal, siting or siting permission dominates it. It
24 usually doesn't find itself dominated by the economic cost of

1 the cast, and look at the low level waste disposals in the
2 United States are a dramatic example of that.

3 The actual cost of shallow land burial of low level
4 waste in the United States is something like \$20 a cubic
5 foot, you know, excavating, doing it all the right way -- \$20
6 or maybe \$30 a cubic foot. And the actual disposal costs
7 today are ten times that much.

8 DR. NORTH: Would you concur then that the basic
9 driving issue is one of public perception of risk, as opposed
10 to economics, or the technical aspects of safety?

11 MR. BERNERO: Oh, I would say so, yes. All of the
12 siting difficulty come from public perception. And in the
13 case of the Northern States Power, the perception of the
14 regulatory authority, this is the State Economic Regulatory
15 Authority was, if we let them store in these casks, how sure
16 can we be that those guys will ultimate take it away? That's
17 really what it was. It was waste disposal.

18 This is supposed to be temporary. But aren't we
19 just continuing a temporary step. It was the perception of
20 program destiny. It wasn't so much risk. Although there was
21 some element of that there too.

22 DR. PRICE: Bill Barnard?

23 DR. BARNARD: Bill Barnard, Board staff. Bob, how
24 many reactors are there in the United States that don't have

1 the physical capacity to expand to dry storage, the actual
2 acreage?

3 MR. BERNERO: I don't know of a single one. I have
4 been at a lot of the U.S. reactor stations, and I don't know
5 of a single one that doesn't have -- these systems aren't
6 very large, and most of the reactors have large enough sites
7 that there is virtually no significant limit on the number of
8 casks.

9 DR. NORTH: Could I follow up with one more from Dr.
10 Barnard's question. Is there any other significant
11 limitation than public perception of risk, or is that it. I
12 interpret your last answer as, space is not a problem. Are
13 there any other problems other than public perception?

14 MR. BERNERO: Oh, the only -- what we run into,
15 these are mechanical problems. These systems have evolved to
16 be large and heavy.

17 And there are some reactors that have lifting
18 cranes in their spent fuel area, that just aren't strong
19 enough to pick up this stuff. You know, because some of
20 these are over a hundred tons, and they have to either, don't
21 use a heavy system, or modify the crane system, to be able to
22 pick it up.

23 DR. PRICE: But if they modify the crane system,
24 they can do so without onsite hearings?

1 MR. BERNERO: Oh, Charlie, can they -- Charlie
2 Haughney from the staff.

3 MR. HAUGHNEY: The crane we are talking about is in
4 the fuel handling building. It is part of the Part 50
5 license. It may or may not trigger an amendment that gets
6 beyond the threshold for a Sholly action (U.S. v Sholly). So
7 it may involve a site specific hearing.

8 There are other things -- there may have to be
9 impact limiters put in the bottom of the defueling pit. It
10 can be a rather complicated process, to handle larger loads
11 than they were originally intended for.

12 MR. BERNERO: Keep in mind, if you have been in
13 some of these reactors, especially boiling water reactors,
14 have a tendency to have a spent fuel pool very high in the
15 air.

16 And you come to that shaft, and you look down
17 there, and you start thinking of lowering something that
18 weighs over a hundred tons, and you think twice.

19 DR. PRICE: All right. I think probably we are the
20 limit of our questions right now, for this speaker, but we
21 will have discussion a little bit later in the morning, and
22 also ask for more participation from the audience, on
23 questions.

24 Our next topic is the Department of Energy Programs

1 and Activities, related to interim storage, with Dr.
2 Bartlett, Director of the Office of Civilian Radioactive
3 Waste Management and Ron Milner, who is Associate Director
4 for Storage and Transportation.

5 [Slide.]

6 DR. BARTLETT: Good morning. My role here this
7 morning is what I call appropriate, brief and transitional.
8 I think -- just the discussion so far, as done an excellent
9 job or capturing and identifying some of the key issues,
10 which are going to be addressed in the next day and a half or
11 so.

12 And I would like to highlight a couple of them.
13 But really, just briefly, in three, brief slides, I would
14 like to serve, what I would regard, as a transition function,
15 with regard to some of the comments that have been made so
16 far, as to provide a basis for what you are going to hear
17 from the department, in terms of programmatic activities
18 addressing spent fuel storage.

19 [Slide.]

20 DR. BARTLETT: First, what I would like to do is
21 underline in print what Dr. Pomrehn addressed on behalf of
22 the department, the secretary's initiatives.

23 The objective is to begin spent fuel receipt from
24 reactors in January of 1998. And I can tell you from close

1 exposure for over the past three years, the secretary is
2 deeply, deeply committed to beginning spent fuel receipt in
3 1998.

4 And that brings me to a point that was just briefly
5 addressed in essence. All ready, I think it has been
6 identified here that economics is not the issue, safety is
7 not the issue. What is the issue.

8 The issue very frankly, and I think this is what
9 the secretary reflects, is responsible management. If you go
10 back into the foundation of the Nuclear Waste Policy Act, the
11 idea is to responsibly manage the spent fuel, maintaining
12 throughout the management system, safety to the public with
13 regard to safe health and environment, and protecting the
14 environment.

15 So, the objective is fundamentally to get on with
16 the effective management of spent fuel as an environmental
17 issue, and not to transfer the responsibility to future
18 generations.

19 That is the basis of the secretary's commitment.
20 And as Dr. Pomrehn indicated, the key elements of the
21 initiatives are, in fact, to supplement the negotiator's
22 efforts.

23 There are two fundamental issues. What
24 technologies and where? And, as it turns out, so far, the

1 schedules that the department has been working toward, with
2 respect to meeting the secretary's objection, for January
3 1998, would have required that the environmental assessment
4 work, site specific, on a candidate storage site, have
5 started back in October.

6 That particular window closed. And the secretary
7 very responsibly said, what are my options to meet my goal?
8 And so, he initiated actions toward potentially changing the
9 schedules, the basis for plans as they exist, and potentially
10 changing the opportunity, the timing opportunity, with
11 respect to siting, and interim storage facility.

12 So that is fundamentally what he did. And then, as
13 part of the effort, with regard to changing the schedules,
14 and the technologies, that might improve the opportunity to
15 begin in 1998, expedited or gave orders to

16
17 expedite development of the multi-purpose container system.

18 Carefully chosen word, expedite. Because that has
19 been under evaluation. In fact, the concept of a multi-
20 purpose container has been under consideration for many
21 years, actually, in various incarnations.

22 We are now getting some focus with regard to what
23 the technologies might be, and that is some of what you are
24 going to hear about from the department.

1 In order to have the resources the program needs,
2 the secretary recommended to the Office of Management and
3 Budget that the program, Nuclear Waste Fund, be taken off-
4 budget, so it is not subject to the trade-offs that go on in
5 the federal budgeting process.

6 And he also said that we will explore the potential
7 for compensation to the utilities, if, in fact, the start of
8 receipt is delayed. Those are the initiatives. [Slide.]

9 DR. BARTLETT: There are some action plans, again
10 to emphasize underlying, Dr. Pomrehn's comments, that are
11 unchanged. Our support of the nuclear waste negotiator is
12 unchanged.

13 Our operation of the feasibility grants for
14 candidate hosts for a storage facility is unchanged. Our
15 protocols for spent fuel receipt, in other words, the oldest
16 fuel first protocol, which has been established, is
17 unchanged.

18 And our existing transport cask development in the
19 procurement programs, which have been underway, are
20 unchanged. And just to give you an idea, for example, there
21 are 19 reactors that cannot, for one reason or another, use a
22 multi-purpose container system. They represent about seven
23 percent of the spent fuel.

24 And so we have to have, in fact, multiple

1 technologies with regard to some of the technologies that
2 would be used in this system. There has to be some degree of
3 multiplicity. And I will come back to that in a minute.

4 But these fundamentals of the programs are retained
5 and will go forward.

6 [Slide.]

7 DR. BARTLETT: Now in the process of thinking about
8 implementing the secretary's initiatives, we have identified
9 a number of specific issues, with regard to siting and
10 technology, that we recognize will be pertinent to future
11 activities.

12 And I am not going to talk in detail about these at
13 this time, because in essence, you have already identified
14 some of them, and some of the implications.

15 And you will see more from the DOE speakers during
16 the next day and half about some of the considerations here.

17 What I would like to do in my transition is just
18 pick on some of the big points that relate to this and, in
19 fact, have already been mentioned.

20 Over the past three years, I have mentioned a
21 number of times, that there are more than 2500 ways to
22 implement the waste management system, when you consider
23 alternatives, the technologies, and alternatives for location
24 of implementation.

1 From that vast array, somehow the department has to
2 come down to an acceptable array of technologies, both in
3 terms of siting and use, that meets all the requirements for
4 safety, environmental protection and like.

5 The system is, to repeat, Dr. Cantlon's phrase,
6 strongly connected. I have always called it closely coupled.

7 Everything interacts very closely with everything else in
8 this system, starting with spent fuel receipt, the reactor
9 and ending in disposal.

10 There is one very key element or consideration in
11 the system that is vitally important. The requirements for
12 containment for disposal are radically different from the
13 requirements for containment for all activities pre-disposal.

14 Somewhere in the system there has to be a
15 technology transition, a capability, to move from what you
16 need for containment during transport, during intermediate
17 storage, to what you need for containment, with regard to
18 disposal.

19

20 The specifics of where we will disposal, where we
21 will store, what technologies and safety requirements will be
22 imposed on the performance of all the technologies used, have
23 not been established.

24 In other words, at present, we don't know the Yucca

1 Mountain is suitable, so we don't know where we are going for
2 disposable, and we don't know the technical features that
3 might drive that specifically.

4 We don't have a specifically identified site for
5 storage, and how the host choice of technology might affect
6 what technology gets used then.

7 Not having those things means that we don't have
8 the specifics of design requirements and technical
9 considerations for the transition between pre-disposal and
10 disposal also. To summarize the system is at present
11 openended, as well as closely coupled.

12 What the program is trying to do is identify how to
13 take those 2500 options and bring them down to realism. Now
14 what Mr. Bernero has shown you already, is a couple of
15 things. One with all the pretty pictures. The technologies
16 exist.

17 Secondly, it ain't rocket science, and it is not
18 intended to be rocket science, and it shouldn't be rocket
19 science. But in choosing the technologies, there are many
20 things to consider, including the fact the system is
21
22 openended at present.

23 I would therefore say that the fundamental issue,
24 and it has already been mentioned, is not complexity. It is

1 diversity. We already have underway, this multiplicity of
2 technologies.

3 These technologies work very well. The technology
4 at Surry, Oconee, etc. What is going to happen, eventually
5 when that material has to transition from that present
6 storage mode, to the disposal mode? There is going to have
7 to be another transition and a transfer operation of some
8 kind.

9 There are many constraints that operate on the
10 system. For example, a legal weight truck has, the total
11 system has a maximum weight capacity of 80,000 pounds. This
12 is a real shoe horn, believe me.

13 And that in effect becomes a constriction in the
14 pipeline, potentially. It has already been mentioned. Some
15 of the reactors have hoist capacity problems. What are the
16 dimensional problems, etc. with regard to disposal in the
17 package size and things of this kind?

18 These are the kinds of trade-off studies that the
19 program is engaged in right now, and will be the basis
20 eventually, for some of the fundamental decisions.

21 One of the things we are also working on
22 essentially is, what is the hierarchy of decisions that
23 starts to lock in the system?

24 As I already said, the system is openended. As it

1 stands right now, we don't know for sure that Yucca is going
2 to be disposal site.

3 We don't know for sure if it is the site. Whether
4 we are going to go hot or cold, or how hot -- Dr. Domenico's
5 smoky mountain. Refer back to previous discussions, etc.

6 These are still open issues, but we are -- in fact,
7 the program is trying to bring focus to it, and deal with
8 this diversity, without the complexity, but dealing with the
9 complexity that goes with diversity too.

10 I would like to introduce, if I may, Ron Milner,
11 who is the Associate Director for Storage and Transportation,
12 who will tell you something about our existing program
13 activities, and how they are implementing with the
14 secretary's initiatives.

15 [Slide.]

16 MR. MILNER: Good morning. I am Ron Milner, and as
17 I like to say, I have the easy job within the program. I am
18 responsible for storage and transportation, which as Dr.
19 Bartlett said, has been done many times, both at the storage
20 at reactor sites and transportation.

21 [Slide.]

22 MR. MILNER: This morning, I would talk a little
23 bit about the organization of the Office of Storage and
24 Transportation, just to show how it does fit into the overall

1 program. A little bit about our current year funding. How
2 the MRS affects the total system life cycle cost to the
3 program, and then move onto the status of the MRS and
4 transportation activity.

5 [Slide.]

6 MR. MILNER: First, the Office of Storage and
7 Transportation is made up of two divisions, the Storage
8 Division, headed by Vic Trebules, who is responsible for MRS
9 development, and Transportation and Logistics Division,
10 headed by Jim Carlson, which is responsible for
11 transportation systems development, as well as developing the
12 waste acceptable protocols with the utilities.

13 So, really between the two divisions, they really
14 have responsibility for development of the front end of the
15 waste management system, from the reactor interface through
16 the transportation to storage, ultimately transportation to
17 the repository.

18 [Slide.]

19 MR. MILNER: In fiscal '93, the MRS project, which
20 is comprised of the MRS facility to transportation system and
21 the waste acceptance activities, is level funded as compared
22 to '92. I am not sure whether that is a typo, or that stands
23 for micro millions, but in any event, that is out budget for
24 the current year.

1 It is level funded with '92 for good reason. One,
2 Congress, rightly so, has placed greater emphasis on site
3 characterization of Yucca Mountain. And also, it recognizes
4 the slower pace of activities until the MRS site is
5 identified.

6 [Slide.]

7 MR. MILNER: Just quickly, how the MRS effects the
8 total system cost to the program. Obviously, when you look
9 at just the federal expenditures for the program, the MRS
10 increases the costs out of the waste fund.

11 However, if you look at the total system, that is,
12 the cost of constructing, operating, maintaining, reactive
13 storage, be it pool storage or out of pool storage, those
14 costs of the total system are less within MRS than without.

15 Also, as would be intuitive, the earlier when MRS
16 comes on line, the greater the cost savings, simply because
17 you are constructing less storage, maintaining for a shorter
18 period of time.

19 We are going on to the status of the MRS
20 activities.

21 [Slide.]

22 MR. MILNER: As Dr. Pomrehn and Dr. Bartlett
23 mentioned, we have been and continue support the efforts of
24 the nuclear waste negotiator and the volunteer siting

1 efforts.

2 One aspect that is done in that regard is
3 administration of the MRS Feasibility Grant Program. The
4 program potentially interested hosts and received funds to
5 study various issues surrounding an MRS.

6 Currently in that program, we have seven active
7 grants. The Mescalero Apache Tribe in New Mexico has
8 completed their Phase I activity. I should back up a second
9 and say that the Feasibility Grant Program was divided into
10 two stages. Phase I was for \$100,000 to do some very
11 preliminary studies and Phase II up to 3 million for
12 additional, more detail studies.

13 So, the Mescalero's have completed their Phase I
14 activities, and are currently in their Phase II activities.

15 Skull Valley Goshute has recently completed their
16 Phase I activities, and award of their Phase II grant is
17 currently pending.

18 The remaining five, Prairie Island, Indian Nation
19 of Minnesota, the Eastern Shawnee and the Ponca Tribe of
20 Oklahoma, San Juan County in Utah, and the Fort McDermott
21 Indian Reservation in Oregon, are all under Phase I
22 activities at this time.

23 [Slide.]

24 MR. MILER: Over the course of the past year, we

1 have completed the conceptual design for the MRS, completed
2 and recently approved the conceptual design report.

3 That report looked at six different storage
4 concepts for the MRS, many of which are certainly compatible
5 with a multi-purpose canister system, for example.

6 Those concepts were vertical concrete storage
7 casts, modular vault storage -- many of the ones that Bob
8 Bernero covered before.

9 [Slide.]

10 MR. MILNER: That conceptual design is now
11 available for review by potential hosts, others that may be
12 interested. However, at this point, we don't plan on
13 undertaking further design work on the MRS facility itself,
14 until the site is identified.

15 One thing we are doing in that regard, however, is
16 completing a conceptual design of integration of the cask
17 maintenance facility, into the MRS facility. We expect that
18 effort to be completed late next month.

19 [Slide.]

20 MR. MILNER: One thing that we did undertake
21 towards the end of the conceptual design phase, was to do a
22 human factor's engineering review of the conceptual design.

23 First, the human factors were incorporated into the
24 design requirements for the program by adding to the system

1 requirements document. We then performed a preliminary
2 review. And I can stress that that was a very preliminary
3 review, based on the level of detail that was in
4 the conceptual design report.

5 No major show stoppers came out of that review.
6 However, we will need to do more detail review, once we begin
7 the SAR design stage.

8 [Slide.]

9 MR. MILNER: Other activities we recently completed
10 is a feasibility study of multi-purpose canisters. When we
11 use the term multi-purpose canisters, it is different from a
12 universal cask, or multi-purpose cask, it would be simply a
13 canister.

14 A cartridge, as Mr. Bernero put it, would be placed
15 into a transporter, or packed for shipment, a storage
16 overpack at the MRS, and ultimately, and hopefully, disposal
17 overpack for the repository.

18 The feasibility study that we recently completed
19 concluded really two things. One is that there are a number
20 of system benefits that can accrue from use of canisters.

21 Certainly it standardizes and goes a long way
22 towards standardizing the waste management system, beginning
23 after reactor and through disposal, certainly facilitates
24 compatibility of that reactor dry storage, with the federal

1 system allows direct acceptance of the spent fuel without
2 repackaging, minimizes waste handling, both at the MRS and
3 throughout the system, and reduces low level waste
4 generation.

5 Also, the study concluded that system costs may be
6 lower. System costs again, when you consider the total
7 system, reactor costs as well.

8 [Slide.]

9 MR. MILNER: I would like to stress, particularly
10 in terms of the costs, that also those are very preliminary
11 numbers. Jeff Williams is going to go into a little more
12 detail tomorrow morning, I believe, on the feasibility study
13 and the cost estimates that came out of that.

14 However, that study did point to the potential for
15 additional cost savings as the design matures. For example,
16 for lack of more detailed information, two assumptions were
17 made during the feasibility study.

18 One is, that you would not take credit for the
19 canisters, as far as the disposal part of the system, and
20 secondly, again for lack of more detailed information,
21 operational costs after repository were assumed to be remain
22 unchanged with the canisters.

23 Those are certainly areas that we looked as we go
24 further on the canister concept. We have briefed NRC staff

1 on the study in mid-December, and it would be fair to say
2 that they were generally supportive of that concept.

3 [Slide.]

4 MR. MILNER: Certainly, the canisters simplify the
5 overall waste management system, simplify the MRS facility
6 itself, by reducing fuel handling. It certainly permits
7 fewer transfer cells. even if we consider that some bare fuel
8 may have to be handled simply because certain reactors can't
9 characterize for physical limitations, and so forth.

10 We can have considerably fewer transfer operation.

11 Also, it would greatly simplify the cask maintenance
12 facility.

13 [Slide.]

14 MR. MILNER: On the environmental side, we
15 completed a draft technical guide for the environmental
16 assessment. That technical guide describes the scope that
17 would be encompassed by the EA and also provides guidance to
18 both DOE and host preparers, and by saying that, what I am
19 referring to is, that under the volunteer siting concept,
20 either a host or DOE or perhaps jointly, would prepare the
21 EA.

22 We are also initiating preparation of other
23 environmental documents, and environmental management plan,
24 which really takes the various environmental activities that

1 are required, and sets them in the context of the different
2 stages of project development.

3 Ultimately, that document would be incorporated in
4 the overall MRS project management.

5 Also initiated preparation of the site
6 investigation plan, which really details the data collection
7 of preparation for EIS.

8 [Slide.]

9 MR. MILNER: On the licensing side, as is the case
10 with the repository, or working through various iterations of
11 license application annotated outlines, both to facilitate
12 timely licensing, and pre-licensing interactions with the
13 NRC, and also to use it as a means for issue identification
14 and resolution.

15 We have submitted the original, and the first
16 revision, I believe, was submitted to the NRC in September,
17 and the second revision is now due in July.

18 [Slide.]

19 MR. MILNER: Do we want to pause before I go onto
20 to transportation activities?

21 DR. CANTLON: Go ahead.

22 DR. PRICE: Just go ahead.

23 [Slide.]

24 MR. MILNER: I know the Board is aware that over

1 the last several years, we have been proceeding in the
2 Transportation Cask Development Program, as a two-phase
3 program.

4 The first phase would be the casks that we would
5 use in the early years of operation of the MRS. Essentially,
6 we would be looking to acquire casks either that are existing
7 casks, or simply design enhancements to
8 existing casks, or perhaps, entirely new casks, using current
9 technology.

10 The second stage is really two casks that we have
11 had under development for a little longer. Much higher
12 capacity casks, using more advanced technology.

13 The two that are currently under development are
14 the legal weight truck casks being developed by General
15 Atomics, and a real barge cask by B&W.

16 DR. CHU: Excuse me, Ron. On that last view graph,
17 just for clarification. On that first line on RFP issued
18 October '93, is that --

19 MR. MILNER: Scheduled to be issued and -- yes.

20 [Slide.]

21 MR. MILNER: On the Phase II cask, over the course
22 of the development of those casks, there had been a number of
23 comments and concerns raised by various parties and industry.
24 As a result of that, we undertook an independent review of

1 those casks to determine whether or not we should go forward,
2 or what corrective actions we need to make to take on those
3 casks.

4 We looked at the capability of the casks with the
5 reactor sites, operational capabilities, also the feasibility
6 of the costs and schedule, which were pointed out as a
7 concern, particularly on the schedule side.

8 The review, which has been completed, identified a
9 number of concerns, a number of comments with regard to the
10 casks, which we are currently working through, and to ensure
11 that we have captured all of the comments -- not only by the
12 review group, but other comments, we have developed a
13 tracking system through our M&O, which is going to catalog
14 all of the responses in how we resolve those.

15 DR. PRICE: Are these Phase II casks?

16 MR. MILNER: Yes, this was a review of the Phase II
17 cask.

18 [Slide.]

19 MR. MILNER: On the transportation institutional
20 side, Section 180(c) of the Amendments Act required DOE to
21 provide funds and technical assistance to state and local
22 jurisdictions, and Indian tribes, and to provide emergency
23 response training.

24 We chose to undertake that in a very interactive

1 process with interested parties. We first went out to
2 develop a strategy for providing that assistance.

3 The strategy in this case simply means the strategy
4 for how we are going to go about developing the plan for
5 providing that training assistance. We had issued a draft of
6 our strategy some time ago, after receiving public comment.

7 And reviewing those, we finally issued the final
8 strategy in the November of last year. The next step will

9

10 be to using that strategy, work through the development of
11 the actual plan.

12 [Slide.]

13 MR. MILNER: On the transportation support systems
14 side, we've completed the FICA and NSTI studies, which are
15 serving as a basis for developing the Service Planning
16 Document, which we develop for each reactor site. To date,
17 we've completed 40 of those.

18 The next step beyond development of those documents
19 is development of the much more detailed Site Specific
20 Servicing Plans. That provides all of the detailed
21 information and procedures for each specific reactor.

22 Beyond that, we are in the early planning stages
23 for conducting durability testing of the light-weight trailer
24 which would be used to ship the lethal waste. That's being

1 developed by General Atomics.

2 That completes my remarks.

3 DR. PRICE: Okay. Any questions from the Board?

4 Yes.

5 DR. CANTLON: Cantlon, Board.

6 It seems, as one looks at the challenge of both
7 interim storage and transportation, that there -- as one
8 looks at the variation of the challenge of addressing those
9 two matters, that you have some outliers or oddball reactors
10 that look like they are putting a stress on the development
11 of the system.

12 To what extent has the agency thought about parsing
13 the system and designing a coherent system that looks at the
14 great bulk of the reactors and setting the oddballs aside?

15 MR. MILNER: Well, a couple of things: First of
16 all, certainly the multi-purpose canister, I think, would go
17 a long way towards the overall standardization of the system,
18 and that would really address the bulk of the fuel.

19 How the outliers are handled, how the -- using long
20 assemblies, short assemblies, and so forth, would be handled
21 -- they're all being dealt with in the waste acceptance
22 protocol-development process, which we have underway with the
23 utilities for about two years now, not completed at this
24 point.

1 DR. CANTLON: So, in your view, those outlier --
2 that outlier group is not providing a drag on the general
3 process of developing a coherent, more or less standardized
4 system?

5 MR. MILNER: No, I don't believe so, at this time.

6 DR. PRICE: Dr. North?

7 DR. NORTH: Warner North.

8 I'd like to ask you some questions about the total
9 system life-cycle cost, which you had in your fifth slide.
10 Is this basically cost to the Federal Government or cost to
11
12 everybody, as you were making those conclusions?

13 MR. MILNER: I was using, I guess, total system a
14 little bit interchangeably in the sense that there's
15 certainly a total system cost for the Federal system or the
16 Nuclear Waste Fund cost, if you will.

17 Also, you could look at the total system as the
18 cost to utilities for construction, maintenance, operation of
19 that reactor facility.

20 DR. NORTH: Well, we heard one of the DOE
21 initiatives is the potential for compensation for the
22 utilities if the waste cannot be accepted on time.

23 I'd like to ask the question: Supposing we were
24 able to resolve some of the issues of appropriate transfer of

1 money, if we just look at the question of what does it cost
2 for at-reactor storage versus the MRS, what do your
3 conclusions look like then in terms of, the earlier an MRS
4 comes on-line, the greater the cost savings?

5 Is that really true, if we count cost to everybody,
6 as opposed to just looking at the Federal portion of it?

7 [Slide.]

8 MR. MILNER: I don't know if this is going to help
9 answer your question or not, but if you look at this as MRS
10 capacity, the cost of the MRS itself, in essence, the total
11 Waste Fund cost, not just the MRS but repository

12

13 transportation and so forth, the cost of constructing at-
14 reactor storage, this is -- those numbers are based on
15 estimates provided by the utilities relative to the amount of
16 storage that would be required, discounting the cost of
17 maintaining and operating that storage at the reactor, that
18 being the total system cost, you can see that a system with
19 no MRS would be in this neighborhood, an MRS that came on-
20 line in 1998 would have the existing 15,000 MTU capacity,
21 would save about a billion dollars when you count the at-
22 reactor cost to it.

23 If you looked at an MRS that came on-line in the
24 year 2000 with the same 15,000 MTU capacity, the total system

1 cost is up there, but the savings is not as great, and so on.

2 DR. PRICE: Mr. Milner, could we have that slide
3 made for us?

4 MR. MILNER: Certainly.

5 DR. NORTH: Let me try a conclusion on you. I am
6 picking up the theme that Dr. Bartlett reiterated in his
7 talk, and that is how significant are the economics?

8 My sense, looking at your numbers there, given the
9 uncertainties involved, is that the economic issue of total
10 cost is much less important than the policy issue with regard
11 to who is going to take responsibility and pay for the
12 development of the storage that will be needed for the
13
14 spent fuel.

15 MR. MILNER: I would agree. I think that the
16 economics are not the driving factor. I think the benefits
17 to the system of implementing a simpler storage operation are
18 really the driving factor.

19 DR. NORTH: Let me ask some questions with regard
20 to the DOE initiative to look at Federal sites as a place to
21 put spent nuclear fuel.

22 I'd like to find out -- and perhaps Dr. Bartlett or
23 Dr. Pomrehn would be able to answer this question -- how much
24 has been done already or what plans you have in place to do

1 it, to look at issues having to do with the license
2 application and the environmental assessment in order to have
3 these sites available either in 1998 or as soon as possible,
4 what's involved in that process.

5 It would seem to me there would be a technical
6 dimension, the technical benefits of having, let's say, an
7 eastern site such as near Savannah River versus a western
8 site and the economic and technical analysis of those issues,
9 and then there is the acceptability side, the licensing
10 problems, including the effect of state and local government
11 and public risk perception, which might give some advantages
12 to some sites as compared to others.

13 You have a problem of licensing with the NRC, as
14 well, and I am wondering what has been done and what is
15
16 planned to be done in order to look at this expanded set of
17 sites and assess both the technical and non-technical
18 advantages and disadvantages of each.

19 MR. MILNER: First of all, let me say that very
20 little has been done in terms of actually looking at specific
21 sites. The Department has simply announced its intent to
22 begin looking at Federal siting.

23 So, there has not been a site or sites identified,
24 nor has there even been criteria for site selection

1 identified at this point.

2 Obviously, looking at a Federal site, you're going
3 to have to review what you may or may not do relative to
4 licensing. That's going to have to be done in conjunction
5 with the NRC. Obviously, you're going to follow the
6 environmental and EPA processes in looking at those sites.

7 I think that those sites -- speaking generically of
8 the sites, it would probably be fair to say that we certainly
9 have some advance information as far as environmental
10 documentation than we would at perhaps a site that had not
11 been used for that purpose before.

12 DR. PRICE: What is it that makes you optimistic
13 that Federal sites can be put into use more rapidly than some
14 other site, or do you have that optimism?

15 MR. MILNER: Certainly, I think one of the critical
16 factors as far as overall MRS development is the
17 whole environmental process. I think a Federal site has got
18 a lot of environmental background data, if you will,
19 available which we would not have on another site.

20 We think it could significantly shorten that
21 environmental time-line.

22 DR. POMREHN: Let me amplify a little bit the
23 comments that were made several weeks ago at the Commission
24 meeting we had. That is, I wasn't trying to characterize

1 Idaho or Savannah River as candidates that were on the top of
2 the list. Those just popped into my head quickly.

3 The Federal siting activities are so robust and
4 advantageous in two senses, the baselines that have been
5 established already environmentally -- we know what's there
6 in a lot of these cases -- and number two, the
7 infrastructures are there to move -- for transportation and
8 for storage capability and for security requirements.

9 In addition, there are a lot of these Federal sites
10 that are being cleaned up today, and the land-use studies in
11 that regard are underway in a lot of cases, and these interim
12 storage activities could be a nice supplement to those land-
13 use planning activities.

14 The policy issues we've just talked about may be
15 the limiting issues here in the sense of local and state
16 acceptance of fuel from somewhere else.

17 I think we've run astray using capital letters on
18 MRS, as opposed to looking at numerous sites across the
19 country, multiple sites across the country that can do this
20 job, beginning with each and every reactor that's shown a
21 proactive beginning at this storage problem, the catalog
22 which you've seen, and ending up with capital MRS, everyone
23 shipping their spent fuel to a place.

24 So, I think the possibilities are very robust, and

1 I think we have to start exploring those and what process we
2 need with the NRC and EPA and others and locals to come into
3 this party.

4 I think where we missed the boat early on is to
5 understand this is a national imperative. This has nothing
6 to do with storing the fuel from that reactor in that state.

7 This is as critical a national issue as was the
8 weapons and the waste and the problems we had at these
9 government sites and our suffering at these government sites
10 today, and we don't plan to go about it that way in the case
11 of commercial fuel interim and permanent storage.

12 So, I think if you look at the clean-up going on
13 and if you look at the military basis for restructuring and
14 being cleaned up and being assessed and if you look at the
15 existing, well-known Federal sites, we'll find some
16 opportunities there, I think, for some siting for these
17 interim storage capabilities.

18 So, I think it opens the possibilities greatly, and
19 we're working on that process right now as to what it's going
20 to take, what are the criteria, what are the licensing
21 involvements with the NRC, do we take ownership of the fuel
22 at the reactor site, and then what are our licensing
23 obligations with the NRC.

24 So, all these things have to be studied very

1 carefully, but I don't think that's a matter of years.
2 That's a matter of months to get a new baseline established
3 in that regard.

4 Let me characterize another thing in terms of the
5 robustness or the resource diversity, as John characterized
6 it.

7 There are off-site fuel responsibilities that the
8 Department of Energy has with our friendly nations across the
9 seas. Those fuels are some enriched, some lightly enriched.
10 We have obligations to take those back, I think.

11 We have a naval reactors program that needs
12 ultimate storage of highly-enriched materials, which are
13 another complexity.

14 We have, of course, Fort St. Vrain, did get shown
15 on the list, again a unique kind of a fuel activity.

16 Someone else mentioned South Texas, I think, which
17 has an unusual size configuration.

18 John has some fuel at West Valley I keep kidding
19 him about that needs to be taken care of.

20 So, there is, in the Department of Energy's world,
21 much broader of a source term here, size and capacity and
22 enrichment and all the other configurations, cladding,
23 aluminum cladding versus stainless versus zircalloy.

24 So, it's a very big system we deal with, not just

1 the commercial postures, and as we do our studies, we're
2 looking at those possibilities.

3 DR. NORTH: North.

4 If I can follow up on that, I think I heard you say
5 that it should be possible to address the technical questions
6 rather quickly, a matter of months.

7 I would certainly hope that you do that and that, a
8 couple of months from now, we and others interested can see a
9 discussion of those technical issues and feel confident that
10 you have them in hand.

11 It seems to me, however, you have some non-
12 technical issues of rather gigantic size that you are going
13 to have to deal with and that they, rather than the technical
14 issues, may be the driving force in your decisions as to what
15 technology and where, to use Dr. Bartlett's characterization.

16 I'd also like to hear a bit more, if you can, as to
17 how you propose to deal with the non-technical side and what
18 kinds of initiatives you may have in place as we go to a new
19 administration to try to sort this set of questions out.

20

21 DR. POMREHN: Do you want me to tell you my transition
22 story?

23 The transition team -- and we're waiting to discuss
24 these matters directly with the Secretary-designate, who has

1 lived some of these problems in her own backyard, if you
2 will. We're anxious to do that, and I'm sure she is aware of
3 some of these issues.

4 In her testimony, you can read some of the very
5 things we're talking about right here, last March and in her
6 last year or so with Northern States. So, I don't think
7 there's any secrets there.

8 I think the letter to Bennett Johnson from the
9 Secretary is very forthright in saying we need Congressional
10 help, we need the national governors' help. I think we've
11 got the industry help.

12 It's going to take all of those to make this work,
13 from a policy, political, local acceptance point of view.

14 We reiterated that this is a national imperative.
15 This has not got to do with a state taking on its own waste.

16 Witness the problems we're having just with low-level waste
17 site acceptance and approval.

18 That's not rocket science either from a technical
19 point of view, but it's public-acceptance difficulty that's
20 creating the problems that we have.

21

22 So, I think we're going to need all the
23 constituencies to come to this party, and we'll be laying
24 those things out with Bennett, with Congress, with the

1 national governors as we go down the road.

2 I think David Leroy has done a heck of a job
3 getting that understood, the complexities of that understood,
4 and we'll certainly be taking advantage of what he has
5 learned in his two years of beginning here trying to find a
6 site.

7 DR. PRICE: Dr. Bartlett, would you care to
8 comment?

9 DR. BARTLETT: I would like to comment a couple of
10 things that has been addressed here.

11 One, Dr. Pomrehn was mentioning the diversity of
12 waste forms and the diversity of sources.

13 The Energy Policy Act of 1992, in Section 803, has
14 directed the Department to take a look at that scope in terms
15 of quantities and types, and I can tell you that there are
16 over 200 waste forms that will have to be addressed
17 throughout the defense community, overseas, etcetera. Spent
18 fuel is the easy part.

19 All of that material, in one way or another, is
20 going to have to be what is commonly called on the
21 international scene conditioned for disposal, somehow
22 packaged so it has a high-integrity containment and disposal
23 circumstance.

24 The other thing I wanted to comment on was Dr.

1 North's comments about economics, coming back to that.

2 Tip O'Neill said all politics is local. So is
3 economics in this situation.

4 If you look in the aggregate at the numbers, as you
5 notice and many of us will notice, the differences are not
6 great, one billion out of 30 billion, something like that, no
7 big deal, but for the individual utilities facing actions
8 that might cause them to make duplicate expenditures to the
9 Waste Fund on behalf of the rate-payers and to capital
10 investments and whatever on behalf of the shareholders, these
11 are very, very important actions, and they face PUC reviews,
12 etcetera.

13 So, it's not adequate simply to look at the
14 aggregate on total life-cycle cost. You must consider the
15 impacts on the individual utilities as they face these
16 issues, have to deal with them, such as the Northern States
17 issue which Dr. Pomrehn mentioned. They are very significant
18 actions.

19 DR. PRICE: Dr. Cantlon, do you have a question?

20 DR. CANTLON: Yes. I was wondering what the nature
21 of the process will be in trying to reduce the number of
22 potential candidate Federal sites.

23 The more you have --you've got 50 states who are
24 anxious at the moment. There must be some way of reducing

1 that down to a much smaller set if you're trying to build a
2 political consensus to move. What activity is underway, or
3 is it too early to speak?

4 DR. POMREHN: I think it's a little too early to
5 try to describe that criteria, John, and I think we'll get t
6 that in the next few months, but to try to characterize it,
7 we really haven't done that kind of detail, thinking of how
8 we're going to partition these sites down to a reasonable
9 couple of handfuls.

10 DR. PRICE: Will east of the Mississippi, though,
11 be a dominant thought?

12 DR. POMREHN: I think that's a big first
13 characterization, yes.

14 DR. PRICE: Any other questions or comments from
15 the Board or staff?

16 [No response.]

17 DR. PRICE: Okay. If not, thank you very much, and
18 our next speaker is -- oh, that's right, we've got a break.

19 [Recess.]

20 DR. PRICE: I would like encourage you to stop your
21 conversation and let's gather around and continue.

22 [Pause.]

23 DR. PRICE: Next we have an update from the Office

24

1 of the Nuclear Waste Negotiator. Mr. Lempesis is Chief of
2 Staff in the Office of the Nuclear Waste Negotiator.

3 MR. LEMPESIS: Good morning. My name is Chuck
4 Lempesis. I serve as the Chief of the Staff of the Office of
5 Nuclear Waste Negotiator.

6 On behalf of David Leroy, I want to thank you for
7 the courtesy, Mr. Chairman, Mr. Under Secretary, for the
8 privilege of being here, members of the Board.

9 David wanted to be here very badly, and he could
10 not be, and I want to explain why. He had preplanned time to
11 spend with his children over the holidays, and I want to tell
12 you he is in Honolulu, Hawaii, today, visiting a pineapple
13 plantation.

14 I think that's important to know for one reason:
15 It at least exemplifies there is somebody in the Federal
16 Government, in my opinion, that has their priorities straight
17 and is capable of honoring a commitment, and I think that
18 this speaks well of David.

19 I want to talk about a number of things today.
20 David left a message for me at the hotel this morning. They
21 were nice enough to call me at four a.m. to give me the
22 message, and it said "Be brilliant in your remarks today,"
23 and I would have been if I could have gotten any sleep.

24 Actually, I wouldn't be, because that is a

1 theoretical impossibility to those of you that know me, but
2 for those of you who know me, I think you can also appreciate
3 that I will be honest, I will be forthright with you, and I
4 will be extremely candid, because I think if ever an issue in
5 this country called for candor, honesty, and a forthright
6 approach, this one certainly does.

7 In the very brief time that I am allotted this
8 morning, I'm going to talk about a number of things.

9 One, I want to update you as much as I possibly can
10 on the activities and progress of the Office of the Nuclear
11 Waste Negotiator.

12 I want to talk to you about some observations,
13 observations about the MRS, the voluntary process, and most
14 importantly, the public perception of Federal policy as it
15 relates to our program and what I particularly have learned
16 as I have visited now 36 states and literally conversed with
17 thousands of people.

18 I want to talk to for a few minutes specifically
19 about Indian tribes, because there is something in my heart I
20 want to share with you and clear the record about.

21 I also will make some very brief comments about the
22 Department of Energy's most recent public-relations effort,
23 and I'd like to clarify our office's position in that regard,
24 and finally, I hope to forecast for you where I think the

1 voluntary process is going and perhaps just offer some
2 conclusions which may or may not be of value.

3 For a lot of you, this is going to be repetitious.
4 We seem to see each other over and over again, but I really
5 don't care that it's repetitious.

6 I am reminded of a story about a Baptist preacher
7 that was called to a church in the midwest, and when he
8 assumed the pastory, for the first four weeks he talked about
9 tithing, and he'd get up there every week and he'd quote the
10 Book of Malachi and he'd talk about giving to the church,
11 giving to the church, giving to the church.

12 In the fifth week, one of the elders stood up on
13 behalf of a fairly disgruntled congregation and queried as to
14 when they might expect something new and much more
15 interesting, to which he responded, when you get this right,
16 I'll move along, and I want to suggest to you that, given the
17 events of the last several weeks, I would feel disingenuous
18 to suggest to you that there appears to me that there are
19 still some of us that just don't seem to get it, we just
20 don't seem to get it.

21 With respect to the Office of the Nuclear Waste
22 Negotiator, I think in order to judge any progress,
23 particularly given the history of the nuclear waste disposal
24 issue, that you have to put that into perspective, and that

1 perspective simply is this:

2 You have to judge from where we started from, not
3 only our office but as a people, and I don't offer that in
4 any way, shape, or form, ladies and gentlemen, as some sort
5 of making an excuse, because I'm going to tell you, there is
6 no excuse necessary.

7 The Office of the Nuclear Waste Negotiator, in my
8 opinion, has made superb progress and continues to be a model
9 of how public policy ought to be initiated in this country
10 today.

11 On December 2, 1942, there was a cryptic telephone
12 message between Arthur Compton, then Director of the Chicago
13 Metallurgical Project, and James Conant of Harvard
14 University, which marked the successful completion of the
15 first controlled nuclear chain reaction which occurred under
16 Stag Field Stadium at the University of Chicago.

17 The conversation that is credited with confirming
18 the birth of the nuclear age went something like this:

19 Compton said, "The Italian navigator has landed in
20 the New World," and Conant responded, "How were the natives?"
21 to which Compton responded, "Very friendly."

22 Not only is that telephone conversation in the
23 second year of the second World War in secret cryptic code
24 important because it connotes and denotes a date in time

1 specific for a specific historical scientific event but I
2 think it is far more prophetic to symbolize that, 50 years
3 later, the history of things nuclear have been rested, if you
4 will, in cryptic coded messages, and that was prophetic about
5 how we would handle this important scientific issue in terms
6 of public communication and public understanding, and I also
7 want to suggest to you that it's about time, 50 years later,
8 that we begin to answer the question that Conant posed, and
9 that is, "How were the natives?" and I am here to report to
10 you that they are not very friendly.

11 The Office of the Negotiator commenced in an
12 unusual environment. For 50 years -- and believe me, as I
13 have visited across the United States -- we have managed to
14 inform the American public very little, if anything, about
15 things nuclear.

16 It comes as no surprise to most of you, but it
17 bears repeating, that most Americans know very little about
18 anything nuclear.

19 It should come as no surprise that, today, given
20 all the resources we have expended, that most of the American
21 public makes no distinction between commercial nuclear spent
22 fuel and an atomic bomb; that most people today, in every
23 conversation we commence in every jurisdiction in the
24 country, the most utilitarian buzz words continue to be the

1 Cuban Missile Crisis, Nagasaki, Hiroshima, Three Mile Island,
2 and Chernobyl and that most people believe that anything
3 nuclear, frankly, is bad.

4 And we go out, as the Nuclear Waste Negotiator, as
5 a nation, and ask people to put nuclear waste in their
6 backyard for 10,000 years, and the people we're talking to
7 are the same boys and girls that, along with me and you, ran
8 under their desk for a duck-and-cover drill and were the
9 first things they knew about anything nuclear, and you know
10 what? David Leroy sent out an announcement in October of
11 1991, October of 1991, the first and only invitation to
12 participate in a dialogue, and you know what? We don't have
13 anybody signed, sealed, and delivered. I'm sorry. Now,
14 what's wrong with that picture?

15 There may be some other intervening factors from
16 which we want to judge from where we came. In the last 10
17 years of this 50-year nuclear cycle, other things have
18 happened in this country.

19 One is that you cannot overlook that, to some
20 people, the ongoing contest between the State of Nevada and
21 the Federal Government in Yucca Mountain does not send
22 positive signals for the sincerity of government in a
23 voluntary process. It's a fact.

24 The fact is that, in the last 10 years, the trust

1 and credibility of the Federal Government of this country is
2 at an all-time low.

3 The fact is that, when you go out to 36 states and
4 talk to human beings, that they have little or no confidence,
5 if Congress decides anything today, that they will commit to
6 anything in the future.

7 Recognizing all of that, in 1987, somebody thought
8 that, given the debacle which resulted in the purely
9 political decision to first characterize Yucca Mountain,
10 Nevada, that there might be a better way of doing business in
11 this country, that we might be able to reason together as the
12 character of the American people and reach out for a reasoned
13 solution, not that we could ever reach consensus but that, in
14 talking to one another, there might be a synthesis of opinion
15 that could lead to an acceptable solution.

16 David Leroy was appointed in August of 1990. The
17 office commenced on a card table in Boise, Idaho, on August
18 26th of 1990. The first formal correspondence from our
19 office occurred in May of 1991.

20 It was merely an introductory letter, which we
21 thought appropriate, to governors and tribal leaders to tell
22 them what we did for a living.

23 A lot of time was spent in the first year -- and I
24 think rightfully so -- going out and talking to people.

1 We talked to people in the industry, and we talked
2 to people in Government, but I think it was more important
3 that we went out and David Leroy approached public-interest
4 lobbies, opponent groups, concerned citizens, and decided how
5 you might go about not designing a perfect process but
6 beginning to design some process.

7

8 Let me tell you what our goals were to judge from
9 where we have come.

10 One was to be honest brokers of a truly voluntary
11 and truly bipartisan approach to controversial facility
12 siting. The only mission of the Nuclear Waste Negotiator is
13 to seek a truly voluntary host for either monitored
14 retrievable storage or a permanent repository.

15 Second was to provide a reasonably risk-free, if
16 there could possibly be such a thing, broad-based public
17 process that would encourage all prospective host
18 jurisdictions to become credibly informed prior to making a
19 decision, to encourage people to have accurate information
20 before they made a decision.

21 The third was to provide, through grants, a source
22 of information that people felt comfortable with, instead of
23 accepting the representations and promises of the Federal
24 Government, was to provide the funds that would be

1 customarily expended by the Government and put them in the
2 hands of people who could hire people they trusted and
3 explore the interests that they wanted to explore.

4 Fourth was to enhance the attributes of the
5 voluntary process to make it credible, if you will, by
6 respecting prospective hosts and terminating any activities
7 within a host jurisdiction upon the host's decision to
8 terminate the process.

9 Five was to treat all states and Indian tribes
10 equally and even fairly, always seeking willing hosts rather
11 than unwilling targets; to restore and build upon trust and
12 confidence in the Federal Government's willingness to find a
13 responsible solution to the waste issue and to honor its
14 commitment, past, present, and future; to create an
15 atmosphere where it might become, because it certainly is not
16 today, politically acceptable to obtain information, to
17 express interest, to have an honest evaluation that might
18 lead to the opportunity for political leaders of any host
19 jurisdiction merely to say maybe.

20 We also had a goal that we would zealously guide
21 the process consistent with the spirit and intent of the
22 legislation of Congress, and ultimately, our last and final
23 goal was to go out and seek to find a willing host who, upon
24 their terms and conditions, would be willing to help the

1 United States Government solve this problem. Those were our
2 goals.

3 What have we done?

4 Well, our office of 10 people has met with hundreds
5 if not thousands of interested and concerned individuals,
6 groups, institutions, agencies, and political leaders to
7 provide accurate and, we think, objective information, in
8 most instances, about the voluntary process that we are
9 trying to promote.

10 Second, we think we have constructed and
11 safeguarded a voluntary process that is predicated upon
12 public participation, encourages public input, and hopes to
13 lead to public understanding.

14 We involve ourselves in the preparation with the
15 Department of Energy of a grant solicitation which we think
16 has enabled interested persons to learn about this issue as a
17 precursor to making a decision and certainly a predicate to
18 the possibility of accepting storage.

19 We have articulated the proposition over and over
20 and over that the voluntary process represents a sincere
21 commitment, a sincere commitment of the United States
22 Government to seek a truly voluntary solution to the nuclear
23 waste issue.

24 What have been our results to date?

1 Since the announcement some 14 months ago, 21
2 applicants, 21 applicants in 21 separate jurisdictions,
3 applied for a grant that said we want to be interested in
4 seeking information.

5 Twenty-one jurisdictions, thus far, have applied
6 for grant funds to seek information about this process.

7 We believe that we have established a foothold of
8 credibility and trust in the integrity of the negotiator and
9 the integrity of Congress in reaching out for a reasoned
10 solution if one can be had.

11 Two grant applications, to date, have proceeded to
12 Phase II. That in no way indicates in any way, shape, or
13 form that there is a likelihood that either of those grant
14 applicants will accept or warrant either an MRS or a
15 repository.

16 Numerous additional contacts continue to build
17 acceptance. This is a process of building acceptability.

18 It is a process that reaches out in some viable
19 form and suggests to people that we can have a reasoned
20 national dialogue that gets over the initial hurdle of
21 permitting people to provide themselves with accurate
22 information and thereafter make a decision.

23 What else have we done?

24 Well, there have been citizens advisory groups in

1 two states that have prepared reports, and if you want to
2 understand what the public is thinking, I invite you to let
3 me know that you want a copy of these reports.

4 One is from Fremont County, Wyoming; one is from
5 Grant County, North Dakota.

6 In both of those instances, individual voluntary
7 citizens advisory groups, who studied this issue by visiting
8 the facilities that Mr. Bernero told you about, by hosting
9 speakers from both sides of the issues, reasoned that there
10 was no obvious health or safety impediment which deterred
11 further pursuing the process.

12 Let me also tell you that, in both of those
13 jurisdictions, the process was terminated. It was terminated
14 by the governor of the state in Wyoming, Mike Sullivan, and
15 in Grant County, North Dakota, all three of the county
16 commissioners were recalled.

17 Now, let me tell you something else that I think is
18 important.

19 When the process was terminated in Wyoming, we
20 left. When Grant County, North Dakota, decided not to pursue
21 it any further, we left, and that, too, is progress in
22 building the credibility and integrity of the voluntary
23 process.

24 Let me also suggest to you and commend for your

1 reading enjoyment the letter that Mike Sullivan sent -- I
2 think it is one of the most articulate and bright letters
3 ever written -- about why Wyoming didn't choose to continue
4 to pursue this process.

5 You won't agree with everything that's in it, but I
6 think you have to listen to the points that are raised. Let
7 me quote, in part.

8 "Does the national policy which was initially
9 designed to place the MRS in the east near the point of
10 origination of the waste and now appears to target the west
11 continue to make sense?"

12 "Point two, after five years and over a billion
13 dollars of investment and more billions to be spent, the
14 permanent repository at Yucca Mountain, Nevada, is neither
15 sited nor assured of its permanent status."

16 "Third, can we take comfort from the Department of
17 Energy record of nuclear facilities in the west?"

18 "And in summary, I simply do not endorse the wisdom
19 of the policy adopted by the Federal Government nor do I
20 trust the Federal Government or the nuclear industry to
21 assure our interest as a state or protect it," what Governor
22 Sullivan had to say. I think it's important news.

23 Activities in every jurisdiction to date have
24 helped to create an improved atmosphere that is making it

1 politically acceptable for others to come forward.

2 Our experience to date has indicated that every
3 time one might be shut down, more emerge, and I suggest to
4 you that there are numerous interested parties throughout
5 this country today seeking information who have not yet
6 applied for grants is the momentum and opportunity for us to
7 further explore a voluntary process that people begin to
8 learn is truly voluntary and, when terminated, we leave.

9 What's the effect of some of these activities? I
10 think we have created a national dialogue that has to occur
11 before we can have any hope of final solution.

12 I want to talk to you about several other things
13 that I think may be more important in really assessing our
14 progress and activities. It's what we've learned.

15 First of all, I want to specifically address issues
16 about Indian tribes. The statute passed by the Congress of
17 the United States requires the Negotiator to treat equally
18 and fairly the governors of each state and each Federally-
19 recognized Indian tribe in this country.

20 There have been numerous media reports,
21 commentaries, editorials, and castigation that, for some
22 reason, Indian tribes are being targeted. That is the
23 furthest thing from the truth.

24 The fact is there are 50 states, that three of

1 those states have had governors which, to date, have allowed
2 counties to come forward and explore this issue. There are
3 565 Indian tribes. Of those, 16 Indian tribes have applied
4 for grants thus far.

5 But most importantly and personally to me, we have
6 never solicited, in any separate or different fashion, we
7 have never focused upon or overtly contacted any Indian tribe
8 in this country. What we have done is treat them equally and
9 fairly, and we'll continue to do so.

10 To do anything other than honor and respect the
11 rights of 565 Federally-recognized tribes under the present
12 Nuclear Waste Policy Act Amendments, to solicit information,
13 become accurate informed, and be treated equally with the
14 governors of each state would be the epitome of bigotry.

15 I want to talk about the problem in the large. I'd
16 like to make some comments relative to the following areas of
17 participation.

18 In the previous presentation, you just heard the
19 catch phrase -- and I think it's a fair one -- that we need
20 help.

21 I want to talk about the industry for a moment. I
22 want to talk about the environmental public-interest lobbies.

23 I want to talk about opponent groups. I want to talk about
24 the Federal Government. I want to talk about Congress, and I

1 want to talk about the governors of states quickly.

2 With respect to industry, I want to tell you that
3 our experience to date has been that there are a few, a
4 select few people in industry who have worked closely with
5 this program not because they see it as any quick-fix to
6 their problem, because they genuinely appreciate from having
7 been there the value of a voluntary process in seeking a
8 long-term solution, to whom I'm deeply and morally grateful,
9 but I also want to suggest to you that there is something
10 wrong with this picture, that the majority of representatives
11 of industry and utilities have not actively participated in
12 finding a solution to this problem.

13 It has been at least my perception that the
14 majority of representatives of industry believe the
15
16 following: that they have made a deal with the Government,
17 that the Government now has a problem, that the Government
18 ought best solve it, they ought to solve it now, and if they
19 don't, they ought to get sued. What is wrong with that
20 picture?

21 In order to have a successful siting approach,
22 whether it be voluntary or otherwise, industry needs to be
23 credible proponents of their position. They cannot expect
24 the Federal Government unilaterally to resolve this problem.

1 With respect to environmental public-interest
2 lobbies, I am here to tell you, contrary to what you may have
3 as popular belief, we have been treated respectfully,
4 cordially, and been well-informed by the majority of
5 environmental public-interest lobbies and groups.

6 I will also share with you that opponents to
7 nuclear-waste issues and to nuclear power have, on balance,
8 treated us fairly and, in most cases, treated us honestly.

9 I also want to provide a brief message to those
10 that have not been that way. There are people who have no
11 other agenda than to stop nuclear power. That's okay.

12 But I want to suggest to those people who have
13 advanced the cause that certain jurisdictions ought not even
14 look to this, not even look to a study, not become informed,
15 let me suggest to you that the Federal Government isn't the
16 only entity who ought to respect the importance of trust and
17 credibility, that those opponents who suggest that a
18 jurisdiction or a governor should not even permit a study do
19 a disservice to the Federal Government's effort in the
20 voluntary process to make good on the commitment to conduct
21 business in a better manner. It is not becoming to the
22 interest of protecting the environment.

23 With respect to the Federal Government, it is past
24 the time to engage in the Pearl Harbor school of public

1 communication. Public policy on this issue or any issue
2 simply cannot occur in a vacuum.

3 I am not so much concerned with what we are doing
4 on this issue as how we are communicating it. We cannot have
5 it perceived that there is a policy-of-the-month club in
6 Washington, D.C., and we cannot speak expecting that, a week
7 later, we'll clarify what we really meant to say.

8 There is simply no margin for error left in the
9 business of communicating about nuclear-waste issues in this
10 country. We have used all of the mulligans we have.

11 This office takes no issue with the prospect that
12 interim storage on Federal facilities is within the purview
13 and right of the Department of Energy to pursue.

14 We take serious issue with the fact that it would
15 in any way imply or insinuate that the voluntary process has
16 failed, because such is very far from the truth.

17 Two problems are very evident. The first is we
18 have two parallel processes. The voluntary process was never
19 intended to take the place of or be intermixed with the other
20 approach to siting in this country. They are parallel
21 processes.

22 The voluntary process could never be expected nor
23 was it ever articulated by our office that it could be
24 expected to meet a 1998 date. We are not driven in a

1 voluntary process by artificial deadlines no matter how
2 important they are.

3 We have begun, in the last few weeks, to see what
4 is characteristic in this enterprise. We mixed the messages.

5 We suggest that, because the voluntary process hasn't
6 worked, we're going to try something else. That's simply not
7 meant to be the message.

8 The voluntary process is succeeding. What the
9 Federal Government or the Department may choose to do in the
10 alternative, in a parallel process, may affect this but is
11 not exclusive to this.

12 The second issue that I want to address is this
13 stupid 1998 deadline.

14 Ever since I have been in the Office of the
15 Negotiator, David Leroy and our office has made it incredibly
16 clear that 1998 would certainly be a goal, we certainly
17 recognize the importance of that deadline, but we made it
18 abundantly clear that these deadlines are killing our
19 opportunity for success.

20 They generate a false perception of optimism for
21 industry, an incredibly unrealistic goal for the Federal
22 Government, and most importantly, they create among citizens
23 interested in this issue a perception that we are hell-bent
24 to get somewhere, no matter how.

1 That does not bode well for the voluntary process,
2 and it can never bode well for final resolution of this
3 problem.

4 The TRB, in their report -- bless you -- notes --
5 and I won't quote it, because I can't, but you make sense in
6 suggesting that we are the only nation among those trying to
7 solve this problem that see some sort of interim storage
8 solution as a failure.

9 If we want to meet our deadlines in the future, if
10 we want to meet our goals as a country, we may have to slow
11 down.

12 That's not the good news, that doesn't win points,
13 that everyone in this room knows is a fact, and when we quit
14 talking about 1998, we've got a better shot at 1998 or 2008.

15 You know what it does to people in Ruidoso, New
16 Mexico? Let me tell you what I think it does to Ruidoso, New
17 Mexico, people who oppose this project.

18 It makes them believe, because 1998 is a deadline
19 to the Federal Government, that if the only people that are
20 at Phase II are the Mescalero Apaches, obviously they are
21 going to have an MRS, because we've got to put it somewhere
22 by 1998. Now that's ludicrous. It does a disservice.

23 Finally, let me say this while I can still leave
24 the room alive -- and I didn't even touch on Congress.

1 Let me suggest to you that this is a serious
2 composite problem which deserves better than lip service to
3 quick-fixes for which there is no singular fix and which will
4 take an abundant amount of time if it is to be handled
5 responsibly.

6 We pointed out today, over and over again -- you
7 saw the little pad with the 12 canisters -- technology is
8 really not a problem from what anybody can discern. You saw
9 people tell you about how safe transportation was. All that
10 becomes unimportant.

11 What's important is the public perception out
12 there. This is a composite problem that requires a composite
13 solution. What's wrong with the notion -- just ask
14 yourselves what's wrong with the notion that maybe we do need
15 some interim storage?

16 And I hope, if we look at interim storage on
17 Federal reservations, we can go about it in a way that will
18 not hallmark the next administration for some Yucca Mountain,
19 that there is a better way to approach that.

20 I also suggest that that may give time for a
21 voluntary process to work, which would be the best solution,
22 and it may even enable us to meet some reasonable goal in
23 finding a repository, and heaven forbid if Yucca Mountain
24 just doesn't prove to be the place, but I think public

1 confidence will be well-served by the fact that we are not in
2 a hurry to get nowhere.

3 I want to thank you very much for the courtesy you
4 have extended this office. I want to also say that I am here
5 to tell you that I believe the process works. I have no
6 interest in saying so, other than I believe.

7 I have watched us start from nowhere. I have sat
8 and visited with opponent groups, with proponent groups, and
9 both are learning.

10 Neither will ever be completely convinced, but the
11 one variable that we leave out in anything but a voluntary
12 process which seeks an honest dialogue is this prospect of
13 dealing with the people who were under their desk with me in
14 the Cuban Missile Crisis, and they may be the final
15 determiners of what an acceptable solution is.

16 I happen to be optimistic about the future of this
17 program. I truly believe that an MRS may be reasonable when
18 we can someday articulate why we need one.

19 I think it may be a component part of an overall
20 strategy for an integrated waste system, but folks, you have
21 a long way to go, so keep your pants on.

22 Thank you very much.

23 [Applause.]

24 DR. PRICE: Do we have volunteers from either side

1 of the Mississippi who would care to ask this speaker some
2 questions?

3 Warner?

4 DR. NORTH: Warner North.

5 I'd like to draw you out a little bit more with
6 respect to what might be done in the near term with respect
7 to the proposal to look at Federal facilities as a potential
8 interim site.

9 What advice would you provide for, let us say, the
10 incoming administration, as well as those of us whose
11 responsibility is scientific and technical oversight?

12 MR. LEMPESIS: In fairness to the very good people
13 at the Department of Energy who are as equally concerned
14 about this issue as I seem to be, it would be inappropriate
15 to comment on that specific proposal, but I will do so
16 generally.

17 Let me tell you about the incoming administration.

18 There was a mandate, if you will, of the American people
19 about one thing, and that was that there ought to be some new
20 way of doing business in this country, between Government and
21 the people.

22 Those were more than catchy buzz words. They
23 meant something to people in Post Falls, Idaho, or in
24 Nebraska or in Oklahoma or in Nevada. But it is very obvious

1 that we need to reach out and involve people in decision-
2 making. Those are laudatory things to do.

3 I think the days of the jack-boot approach may be
4 numbered. That's not because I think they are not necessary,
5 but the handwriting is on the wall.

6 If we are to go to Federal facilities, if we are
7 going to downtown XYZ city in whatever state it is, if we are
8 going to state facilities, we've got to do business in a
9 different manner which brings people along and inures to the
10 benefit of long-lasting cooperation, rather than litigation.

11 This administration, I believe, is committed to
12 that, I truly believe that, and I believe this program is the
13 hallmark of the type of program that this administration
14 would support.

15 So, I hope that there is some process that engages
16 in a dialogue, as opposed to decision-making in a vacuum.
17 That's the best I can do.

18 DR. NORTH: Thank you.

19 DR. CANTLON: Before you escape, you pointed out
20 you didn't comment on Congress. Would you care to make a
21 comment?

22 MR. LEMPESIS: Yes, I think it's fair to make a
23 comment about Congress.

24 I think there is a real revulsion and one I can

1 clearly understand to reexamining policy. There was
2 bloodshed in 1987. A lot of people spent a lot of capital.

3 A lot of people didn't necessarily like what
4 happened, but as the Under Secretary said, this is a crisis
5 of national proportion. Decisions have to be made.

6 But I think sometimes the best thing we can do as a
7 culture, if you talk about an American culture, is rethink
8 problems. That doesn't mean you have to shift gears, but it
9 may mean you have to make adjustments and reevaluations that
10 don't detract from your goals but further them.

11 And my only comment is I think that there may be a
12 hesitance, because of the experience of 1987, on some
13 members, as well as members' staff, to want to do that. I
14 don't blame them for it, but I think it's an impediment to
15 making ultimate progress on this issue.

16 DR. PRICE: Other questions or comments from the
17 Board

18 [No response.]

19 DR. PRICE: From the staff?

20 [No response.]

21 DR. PRICE: All right.

22 We have someone who has asked to make a comment,
23 Dr. Robert Walters, from the audience, and then, after his
24 comments, to whomsoever he addresses them, we will be opening

1 up the floor for additional comments.

2 MR. WALTERS: Thank you.

3 I am one of those Ruidosans who dived under the
4 desks when I was a kid, just like Chuck Lempeis did.

5 We have some concerns that the technical aspects of
6 the MRS proposal have not been adequately addressed and the
7 underlying economics that Dr. North was talking about earlier
8 seriously undermine our confidence in what's going on here.

9 The public perceptions of the DOE as a credible
10 source of information is that you have lied to us over and
11 over and over again. What makes us think you are not lying
12 to us now?

13 The other question that is substantive to this
14 issue and I don't think is really going to be addressed by
15 this Board is why is the Federal Government paying the costs
16 for essentially private enterprise problems.

17 Even though these private enterprise problems have
18 national scope, they are not public problems created in the
19 public interest. They are private enterprise problems
20 created for profit.

21 I have some questions I would like to address to
22 the Board, but I will limit my remarks and enter these into
23 the record.

24 Thank you for the time.

1

2 [The aforementioned document is attached as an
3 appendix.]

4 DR. PRICE: Thank you very much.

5 I think we will open up the floor for those who
6 would like to ask any questions from any of the speakers.

7 I know, in the interim, there was some discussion
8 that people brought to my attention, just to start things off
9 a little bit, for Dr. Bernero about the process for a
10 universal cask being -- with the NRC being divided in its
11 house, that one group would consider it for storage and one
12 group for transportation and one group for universal cask.
13 Is there a comment you'd like to make on that?

14 MR. BERNERO: Yes, I would.

15 When you say one group would consider it for
16 storage, one for transportation, and one for waste disposal,
17 that's technically true, but one group would consider all
18 three, and that's my office.

19 Those just happen to be functional elements within
20 the office which do those evaluations. I think it really
21 would be a unified consideration. They are substantially
22 different aspects.

23 We already work quite well together on the
24 transportation and the storage aspects, and the high-level

1 waste disposal aspects of it would be quite different and
2 quite complex, but we are not fragmented or splintered.

3 DR. PRICE: So, you don't see a cascading of time
4 to process.

5 MR. BERNERO: Oh, I see -- unless the high-level
6 waste would definitely go to some, I'll call it, over-pack
7 kind of situation, I think that would be a very complex
8 consideration.

9 If one tried to certify a multi-purpose canister as
10 a disposal device, as is, I think that would be rather
11 difficult.

12 DR. PRICE: Okay.

13 By the way, we will give DOE opportunities to
14 respond in any way you want to on these things. You know,
15 twitch your ear or indicate your bid somehow.

16 MR. STUART: Good morning. My name is Ivan Stuart.
17 I'm with the Nuclear Assurance Corporation.

18 I think it perhaps is not real unknown that I
19 support the dual-purpose cask idea, and I just wanted to ask
20 a question about that, to see if others did.

21 As I listened to this morning's presentations, it
22 seems to me I have heard the following points: first, that a
23 multi-use container or cask, whatever it's called, system has
24 benefits other than economics.

1 I have also heard that the economics, per se, is
2 not the driving force, and I have also heard that the -- at
3 least, the dual-purpose cask, in terms of storage and
4 transport, will not require new or special regulations from
5 the NRC.

6 It also seems that one conclusion is that the
7 containment requirements, pre- and post-disposal, are very
8 different and also, that the NRC feels that the dual-purpose
9 cask is in the horizon.

10 Now, if all those are true, then I would ask this
11 question of the Board and of the NRC and of Mr. Bartlett, as
12 the DOE: It seems to me the dual-purpose cask exists today.

13 It has gone through a lot of pain and a lot of suffering,
14 technically, to bring it to where it is.

15 If cost is not an issue, which I hear a lot of
16 people talk about, and if we don't know how to handle the
17 pre- and post-disposal containment issues, as I think Mr.
18 Bernero just referred to, and if, as Mr. Pomrehn says, he
19 wants to get on with the program, then why are we not
20 converging on the dual-purpose cask as the preferred system
21 at the moment, since it seems to meet all the requirements?

22 DR. PRICE: Would DOE care to respond?

23 DR. BARTLETT: I'll take a shot at it. John
24 Bartlett.

1 I think the dual-purpose cask is certainly one of
2 the technical possibilities that's available or about to be
3 available. I think Mr. Bernero can update us on the status
4 of licensing of that. Let me simply repeat a couple of
5 things I said to sort of set a perspective.

6 One is that there must be multiple technologies.

7 Secondly, in fact, there are significant economic
8 factors at the individual utility level and that the
9 aggregation of the total system cost over a 30-year span
10 doesn't show much difference, but there are significant
11 economic decisions to be made by individual utilities when
12 they face the need for action with regard to spent-fuel
13 storage.

14 I think the combination can and will act on
15 essentially a market basis to make available in the near
16 term, assuming the certification is there, the potential for
17 any utility, as it makes its determinations, to use a dual-
18 purpose cask.

19 There are other kinds of casks, such as you saw
20 pictures of, in use right now.

21 I think I would say that and emphasize, mention
22 that a concern for the Department, in the long haul, for the
23 administrator of this program, in the long haul, is
24 multiplicity of technologies, but they are available, and the

1 system will operate on a free-market basis.

2 To this point -- and again, Mr. Bernero might
3 comment -- the dual-purpose cask has not been certified, and
4 so, it's not, in effect, an available technology, as some
5 are, at this stage of the game, but it probably will emerge
6 in the near term, and it will be available for some of these
7 decisions by the utilities.

8 MR. BERNERO: The certification of the dual-purpose
9 cask -- I don't know the exact date, but it's quite
10 foreseeable, in the near future.

11 DR. PRICE: All right. Okay.

12 MR. STUART: I just wanted to make one comment I
13 forgot. I had it on my notes.

14 I have a feeling that people think about the dual-
15 purpose cask as a single cask which you can go kick the tires
16 and there are no other sizes. The dual-purpose cask comes in
17 all sizes and colors, as you saw on the slide, and it can fit
18 in any plant.

19 DR. PRICE: After that commercial note, is there
20 any other comment or question from the audience?

21 Senator Hickey. He's putting his coat on. Maybe
22 he should be taking it off.

23 SENATOR HICKEY: Maybe Mr. Lempeis should be
24 taking his coat off.

1 This is the first time I have had a chance to talk
2 to the Negotiator. I'm very interested in your comments
3 dealing with the treatment, and it was primarily an exchange
4 from Congress in dealing with Nevada and the perception that
5 is created across the United States.

6 Now, that's water over the dam, but what is your
7 suggestions to address these problems, and it looks to me, as
8 we go down our system, that constantly, when the project
9 bumps up into a wall or is stopped, that immediately the
10 first move is to go for Congressional action, and I think we
11 can cite numerous instances.

12 You as a negotiator, where do you fit into this,
13 and where do you -- what is your suggestions, and what is
14 your influence in the direction, since you're an arm of
15 Congress? That's my question.

16 MR. LEMPESIS: I want to answer your question as
17 specifically as possible, and I'm not sure -- don't leave
18 yet, because I'm not sure I understand all that I should.

19 Is your question relative particularly to the Yucca
20 Mountain in the State of Nevada?

21 SENATOR HICKEY: First of all, you stated it in a
22 general term, dealing with the United States as a perception
23 of what -- what happened with one state versus the
24 determination made -- a Congressional determination.

1 You can address Nevada specifically, but you have
2 even a bigger problem, because of what happened to Nevada,
3 that's going to continue to revisit this project. I think
4 you can address it on a national level, and then you can talk
5 about Nevada specifically.

6 I don't think what's gone over the dam, what's
7 already been achieved, can be changed.

8 MR. LEMPESIS: Well, I'm not sure I agree on that.

9 SENATOR HICKEY: Well, then I am very interested in
10 what you have to say.

11 MR. LEMPESIS: I think things can always be
12 changed. I think, most of the time, they can be changed for
13 the better. I truly believe that. Obviously, I endorse a
14 voluntary process.

15 Having had this particular life experience of
16 visiting with folks on this issue, I genuinely believe that,
17 if you want a lasting solution that does not engage and bring
18 in lawyers from the American Bar Association, one that breeds
19 some understanding which might even give a future to nuclear
20 power in this country, that there has to be a renewed
21 ability, put the emphasis on communication and public
22 involvement.

23 I don't suggest that there aren't good reasons, in
24 many cases, and no reasons in some, sir, that we failed

1 miserably at that. It's a changing world. We're changing
2 from a defense and a Cold War atmosphere. Civilian use
3 becomes of paramount importance.

4 But we didn't communicate, and people out there
5 don't understand this, and they are frankly scared to death.

6 I don't believe that happens overnight. It may not
7 happen in my lifetime, but I don't believe that you foreclose
8 the opportunity to do something in the positive merely
9 because it won't happen quickly.

10 I am not suggesting that you stop every other
11 option for siting in this country, but I am suggesting that
12 you have to keep alive a voluntary process.

13 It succeeds as long as it is there because it is a
14 viable option. It is an option that even Congress can point
15 to in deciding to take less favorable or publicly-acceptable
16 resolutions to problems.

17 I never addressed states, which I said I would, and
18 I think therein lies the answers.

19 If you have 50 governors in this country who may
20 know in their heart that a reasoned approach is to engage in
21 a dialogue, to sit at a table in a voluntary process that is
22 terminally ill, to become credibly informed and then make a
23 decision, I don't think that we would necessarily have the
24 problem we have today.

1 But because of the lack of public understanding,
2 governors and politicians tend to mirror their constituents,
3 as you well know, and I would suggest to you that most of the
4 problem may lie not only in the way that the Federal
5 Government has solved or managed this problem but in the lack
6 of intestinal fortitude in a country that today, the
7 governors of states adopt a position that they don't even
8 want to study an issue, that they are afraid to look at it
9 because of the political circumstances.

10 I think you have to change that mentality, and I am
11 not suggesting you wave a magic wand, but I am suggesting
12 that things we have done in the past and continue to do work
13 against them.

14 With respect to the State of Nevada, the Negotiator
15 has clearly made it evident from day one, publicly and
16 privately, that we would treat the State of Nevada as any
17 other state in the union.

18 I also believe that our office door would always
19 remain open to the State of Nevada, and I would like to
20 believe that we have the credibility with most of the groups
21 in this country that, if a dialogue were to ensue, they might
22 want to speak to us. We would at least hold out that olive
23 branch.

24 I suggest that the same may not be true for other

1 approaches in this situation.

2 SENATOR HICKEY: Just to continue this, we have
3 had, in the past, in our dealings, politically, with little
4 or no political clout within the areas of people that make
5 decisions, and I'm talking about the decisions that are made
6 in Congress.

7 In watching that process, what guarantees are you
8 going to give or can you give that you can follow through
9 with a volatile Congress whose reflexes are almost daily,
10 depending on their constituency.

11 My experience -- and I've had the experience with
12 them -- lies in often staff makes determinations above even
13 the Congress, any in-depth work done there.

14 I have a perception that is not very favorable. I
15 think, when I look at the results of the WIPP site and the
16 delays and the stall tactics used, it is almost indicative of
17 the problems of dealing with a Congress and the various egos
18 and the ins and outs of legislation. I deal with that
19 myself.

20 So, again, your mission as a negotiator --
21 certainly, you're very capable and articulate. That's fine.

22 But when the rubber hits the cement, when the
23 benefits or whatever issues may occur, other forces come into
24 play, and there is a real challenge for you, in my opinion,

1 unless we hear some concrete suggestions of how that is going
2 to be addressed and who we see and how you're going to make
3 it work, because as you know, that body changes and the
4 forces changes.

5 So, it raises real questions, and I applaud you on
6 your approach, but let me say you've got a doubting Tom here,
7 okay?

8 DR. PRICE: Others from the audience, please?

9 MR. GERVERS: I'm John Gervers with Latir Energy
10 Consultants, and I have worked for the last 14 years with
11 state and local governments, and I'd like to follow up on
12 something that Chuck Lempesis was saying.

13 The whole issue of trust and confidence is one of
14 great interest, obviously, to the state and local governments
15 and the people of the areas that are being asked to host
16 facilities, and recently, the Secretary of Energy Advisory
17 Board went to the extent of creating a task force whose
18 mandate was to look at the issue of trust and confidence, and
19 that report is now out in draft form and will, in fact, be
20 considered by the SEAB on Friday.

21 I think, from our perspective, we feel that an
22 honest effort was made by the Department to look at this
23 whole issue of trust and confidence.

24 I think my question for you, Chuck, now that you're

1 warmed up to the task, is what advice you would give to the
2 Congress to enable them to look at this issue of creating
3 trust and confidence among the people outside the Beltway,
4 because this is an area where perhaps there hasn't been quite
5 as much focus as there has been within the Department of
6 Energy.

7 MR. LEMPESIS: John, I really appreciate the
8 question, but I want to be very candid.

9 First of all, I did not come here with an abundance
10 of answers. I came with far more questions. And I also did
11 not come with the intent that I was going to give a lot of
12 advice to Congress.

13 In fairness, I think Congress does a reasonably
14 good job. I may be the only guy left in the country.

15 We keep running to criticize Congress, and I keep
16 going back to the fact that we elect these people every two
17 years and six years. They are us.

18 As far as trust and confidence goes, I think that's
19 a broader question than just Congress. How do we restore it
20 as a people?

21 I don't think we believe in anything. I don't
22 think we trust each other. We don't trust agents in the
23 Federal Government. We don't trust the Congress. We don't
24 trust churches. We don't trust lawyers. We don't trust

1 doctors.

2 Maybe, first of all, you just have to step out and
3 start talking to one another, and I think that's all we're
4 trying to. It's as basic and "Pollyanic" as that. I think
5 you have to have a dialogue in which trust can be had.

6 One thing that impairs any trust and confidence is
7 the rotation of players in the system. I mean it's good to
8 unload people every two years, four years, one year, six
9 months, but it is bizarre.

10 There is absolutely no continuity in the Federal
11 Government, and it's also been my observation -- and keep in
12 mind -- I mean I have been in the Federal system now two
13 years, speaking like I am supposed to be an expert.

14 I hardly am, but I will tell you what an outsider's
15 view from Post Falls, Idaho, is and that is not a lot gets
16 done, Government doesn't work half the time, especially
17 during an election cycle, but if you go out and talk to
18 people -- and I'm talking about sit in those rooms where
19 we're asking political figures to step out on a limb while
20 somebody is trying to saw it off, to meet with opponent
21 groups from coast to coast who didn't want you there in the
22 first place, trying to convince them that at least the
23 process is worth preserving, there is not a lot of trust and
24 confidence in anything, but the small increment of progress

1 that I think we're making has been based upon consistent
2 truth, credibility, and most importantly, a desire to have
3 some trust and confidence and rapport.

4 I really don't have an answer, but every time we go
5 to rip into Congress, I really have to look in the mirror and
6 go, you know, we're the only country in the world that truly
7 can say we are the government.

8 We're the government in this room, and I'm not sure
9 but the only way we restore trust and confidence in a
10 government that is us is to restore trust and confidence in
11 ourselves.

12 DR. PRICE: I trust there are some other comments,
13 questions?

14 DR. CANTLON: If not, we can break for lunch.

15 DR. POMREHN: Let me make one comment. In fact,
16 that report is right here, and the Advisory Board will be
17 meeting this week to discuss it with Admiral Watkins.

18 This trust and confidence issue is something on our
19 minds, and I have got to, I think, assure you, professionally
20 and in terms of my personal behavior, I'm a very honest
21 solider, I've been with nuclear power for 30-some years, and
22 there is no lying going on, as far as I know, to anyone in
23 this room, from anyone in this room, but these issues are
24 very complex.

1 I think the Admiral, as of four years ago, took on
2 an honesty and open and forthrightness that is a change in
3 the Department of Energy posture these last few years.

4 I think the new Secretary, the Secretary-designate,
5 will continue that and take advantage of this report and data
6 that we have on this trust and confidence issue of the
7 Department of Energy, of our waste management environment,
8 both government side and this commercial side, and carry
9 forward with the recommendations and ideas in this report.

10 We're changing our culture in the Department of
11 Energy.

12 It's just embedded in rock for so many years and so
13 many decades, since the war, possibly, when we were going
14 under the tables in the event of a nuclear threat, that it's
15
16 hard to change that culture and have it visible to all 200-
17 some million of us, but that's our goal, and that's our
18 dedicated Secretary's position on this matter. I think he
19 has made a significant change.

20 Now, whether this hiccup in the administration
21 changes that or not, I don't know. I don't think it will,
22 from the messages I am getting and from the wisdom of the new
23 Secretary-designate.

24 Hearing her testimony and hearing her

1 forthrightness in dealing in a nuclear utility, from which
2 she comes, I think we've got a great future here with this
3 waste-management possibility.

4 We have made a lot of progress in this last year,
5 physically, at the site.

6 We have made a lot of progress this year in, again,
7 defining this container system that we need for the future,
8 and we're dedicated, and if asked to serve on, you can bet
9 I'm going to be a part of the solution to this problem for
10 this country.

11 I know the staff is. The Federal employees that
12 are dealing with this with John and with Leo Duffy's
13 operation are dedicated to doing this job right and in
14 complete, honest, above the board approaches to dealing, as
15 the negotiator says, on a voluntary basis.

16 We are now meeting the laws of the land. That's a
17 major change in how we do business in the Department of
18 Energy in these last few years, including nuclear and
19 including environmental law of the land.

20 We're a partner in that now, and I think these
21 solutions are going to take constituency partnerships from
22 Congress, from the administration, from the private industry,
23 from the local and state governments that we have to deal
24 with.

1 Nothing is going to happen by one of those parties
2 driving a stake somewhere and trying to solve a problem. It
3 won't happen that way anymore.

4 The whole culture of the Department of Energy is
5 one of partnering now with universities, partnering now with
6 the commercial business folks, with laboratories who have to
7 re-definition of their missions, and certainly in this waste
8 problem.

9 It's a constituency partnership that has to be
10 forged to make these solutions come about. It's pure and
11 simple. That's what voluntarism is all about, but it's a
12 very difficult process, a very time-consuming process, and
13 with some probability, likely never to come to an answer.

14 And that's why we have opened the portfolio, if you
15 will, to the Federal sites. I think we can save time
16 therein. That is to say, we have infrastructure, we have
17 security systems, we have environmental baselines already
18 built on those sites.

19 So, we wanted to expand this opportunity to
20 consider those for this interim storage possibility, until we
21 find a repository that we can put this waste in permanently
22 if Yucca Mountain doesn't pan out.

23 I think, by the time we get to doing the annual
24 update to this broader waste-management problem in the

1 summer, we'll say we better go start looking for another
2 site, just to hedge our bet, for permanent waste.

3 We started out with a lot of sites, by the way.
4 Don't think Yucca Mountain was crammed down anybody's throat.

5 There was a very detailed site investigation process that
6 led to Yucca Mountain.

7 Now, the decision to go from five to two to one was
8 maybe an economic decision that was made, but there was a
9 pretty good site-selection process that preceded the
10 selection of Yucca Mountain, and if you look at the very
11 brief geology and information that was available on Yucca
12 Mountain, it was a logical choice for the first exploration,
13 and that's what's going on today.

14 I think you're going to hear about progress in that
15 regard from -- I think Carl Gertz is on the program tomorrow
16 to update where we are on that investigation to characterize
17 the mountain.

18 So, I'm agreeing with the Negotiator's office.
19 They've made a lot of progress, and so has this Civilian
20 Waste Management Program in the Department of Energy in the
21 last year, two years, and I am very proud of that progress.

22 DR. PRICE: Thank you very much, and I want to
23 thank all of the speakers for their time, for the
24 preparation, and for that which they delivered.

1 Mr. Lempesis --

2 MR. LEMPESIS: Yes, sir.

3 DR. PRICE: I'm sorry I mispronounced your name to
4 start with, and thank you very much for your frankness. We
5 appreciate it.

6 We're adjourned for lunch.

7 [Whereupon, at 12:23 p.m., the meeting adjourned
8 for lunch, to reconvene this same day, Tuesday, November 5,
9 1993, at 1:45 p.m.]

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1 utility system, and I think, as preface, I should say that
2 there are some 50 utilities that operate nuclear plants, and
3 the circumstances of each of those 50 is probably different
4 from every other.

5 The system from which I come is a fairly typical
6 nuclear utility in that we have a single plant with two
7 units. We're not like Commonwealth Edison, with 12 units,
8 nor are we like many of the entities that have a single unit.

9 Our nuclear units are of sort of average age. They
10 came on-line in the late '70s. So, they are roughly 15 years
11 old.

12 What I say today would be different were I
13 representing Gulf States utilities, where I used to work.
14 They had a single, relatively new unit.

15 It would be different if I were at a unit that was
16 25 years old, and so, you must understand that what I say
17 today, while having some characteristics that would be common
18 to many utilities, also has a number of characteristics that
19 are unique to my own company.

20 I think it's also fair to say that what I say with
21 respect to the Nuclear Waste Policy Act is reflective of the
22 position from which I come. People in this room come from a
23 wide variety of locations.

24 The Policy Act represents an opportunity for

1 manufacturers and renderers of various types of services.

2

3 It represents one thing to those people. It represents to
4 another -- another thing to someone like myself, who
5 represents the customers of utilities.

6 We have heard from other entities that have still
7 different viewpoints, but let me try to describe to you at
8 least what it looks like to me, representing American
9 Electric Power Company.

10 [Slide.]

11 MR. DRAPER: I think that there are certain
12 indisputable facts that everybody recognizes, that when the
13 Nuclear Waste Policy Act of 1982 was signed into law, I think
14 10 years ago this week, by President Reagan, it developed
15 certain responsibilities.

16 It was quite clear that it was the responsibility
17 of the Department of Energy to define and develop a
18 repository. At the time, there were two repositories to be
19 developed.

20 It said quite clearly that there was a contractual
21 relationship between the utility companies to pay the money,
22 the Federal Government to receive that money and develop a
23 repository, and while we have heard that we shouldn't have
24 hard-and-fast schedules, I will try to develop for you what

1 that means to a utility company.

2 As John Bartlett said, there is a lot of money
3 involved here, and it's uneven. Some utilities have big
4 responsibilities, others have small responsibilities, and the
5 impact that the deadline has on different utilities is quite
6 different, depending on what sort of capital expenditures
7 they have to make to delay the time at which their spent fuel
8 is transported from their possession to that of the Federal
9 Government.

10 In 1982 and 1983, it was said that the Department
11 of Energy was to study the feasibility of a non-retrievable
12 storage facility, and as I said, it was clear that it was to
13 be financed by the customers of electric utilities.

14 [Slide.]

15 MR. DRAPER: The Act was amended in 1989 to
16 eliminate the second repository and to study with diligence
17 the Yucca Mountain site, to build a non-retrievable storage
18 facility, and we have heard that the waste negotiator was to
19 be involved in the negotiation to find a suitable site, and
20 still, it was to be financed by the customers of the electric
21 utility.

22 [Slide.]

23 MR. DRAPER: We, as you, have noted the progress
24 toward the repository, and without saying why that has

1 occurred, we have seen that it is quite clear that the date
2 at which acceptance at a repository is scheduled has steadily
3 slipped.

4 Initially, it was to be in 1998, as we know, as
5 provided by the contract. Later, it became clear that the
6 repository would not be ready at that time, and there is some
7 dispute about what that was.

8 For the contractual obligations, it is my belief
9 that it is still the obligation of the Federal Government to
10 take possession in 1998, whether or not the repository is
11 ready.

12 [Slide.]

13 MR. DRAPER: To scale it for you for this typical
14 utility company, we operate one nuclear plant, as I said.
15 It's the D.C. Cook plant on Lake Michigan. It's two units,
16 roughly 1,100 megawatts each.

17 There is an ongoing 1-mil-per-kilowatt-hour fee
18 that is subject to escalation, and that means, for our
19 customers, it's some \$10 to \$13 million a year, depending on
20 how much the units run. To date, we have contributed \$101
21 million to the Nuclear Waste Fund.

22 In addition to that, we were in operation prior to
23 1983, so there is an obligation that currently has a value of
24 \$142 million for that prior-to-1983 operation.

1 So, it's big money, and as I said, it's uneven
2 among the utilities, but for this fairly average utility
3 company, it's \$140 million.

4 Now, I said that my company is an average one in
5 the nuclear business. It is not an average one in terms of
6 kilowatt-hour sales. We are the second-largest investor in a
7 utility in the United States in terms of kilowatt-hour sales.

8 About 90 percent of that is coal, but even for a
9 company as big as mine, the \$10 to \$13 million is a
10 significant sum of money each year, and we want to be sure
11 that our customers' money is well spent.

12 [Slide.]

13 MR. DRAPER: We know that there has been progress
14 on the monitored retrievable storage front. A number of
15 regions have accepted the money to study the feasibility.

16 It is also clear that the monitored retrievable
17 storage facility is not yet and, in all probability, will not
18 be able to accept spent fuel by the 1998 date. That's an
19 issue of some concern to us, because we still believe that
20 the DOE has that responsibility in 1998.

21 [Slide.]

22 MR. DRAPER: Our position -- and this is one of the
23 issues on which the utilities would come apart, I suspect --
24 our position is that the monitored retrievable storage

1 facility is not an important element of the waste program.

2 We think it's a diversion of attention and
3 resources. We think that it's not much more likely that an
4 MRS facility will be sited successfully than a permanent

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7 disposal facility.

8 We think that, if an MRS is built, it will have a
9 very uneven impact upon utilities, depending on their age and
10 what provision they have made for on-site storage either in
11 spent-fuel pools or in dry storage, and therefore, we believe
12 that an MRS is not required.

13 [Slide.]

14 MR. DRAPER: We saw recently, as did you, the new
15 initiative, and while there is some room for discussion about
16 what it really means with respect to the MRS, we think that
17 there are some elements of that proposed strategy that make
18 sense, and from our point of view, there are some that don't
19 make so much sense.

20 As we understood it then -- and perhaps that's
21 strange today -- there was to be increased emphasis on
22 standardized containers of some sort; whether that's the cask
23 or the canister is not totally clear.

24 We thought it meant that there would be a

1 termination of emphasis on the MRS, but there would be
2 investigations of interim storage at Federal sites, that the
3 Nuclear Waste Fund was to be taken off budget, and that there
4 was potential compensation from utility on-site storage.

5 As I said, we think some of those things are good,
6 and we are not so enthusiastic about others.

7

8 [Slide.]

9 MR. DRAPER: We think the good ideas include
10 standardized containers, and I am not here to say that I
11 believe that a cask -- that is, the ultimate container --
12 that has the finished or spent fuel in its canister needs to
13 be standardized, but at least some parts of the
14 containerization need to be standardized; whether that's at a
15 canister level or a cask level is subject to discussion.

16 We think it does make sense to take the Nuclear
17 Waste Fund off budget. There is a lot of gimmickry with
18 respect to balancing the budget, and that impacts the rate at
19 which expenditures can be made to this important program.

20 We just think it's too important, and by the way,
21 there is a fiduciary responsibility to spend our money
22 wisely, and so, it should not be part of the Federal budget-
23 balancing arguments every year.

24 We think it's a good idea to terminate work on the

1 monitored retrievable storage facilities for the reason that
2 I have told you and for reasons that are characteristic of my
3 company.

4 We think it is a bad idea to have interim storage
5 at Federal sites. We think that the storage can be better
6 done and more likely to be done on schedule and on budget if
7 it is done somehow at the utility sites until it's time to
8 ship the fuel for ultimate disposal.

9 Now, don't misunderstand me. That doesn't mean I
10 don't think the Department of Energy should take title in
11 1998, but I think arrangements can be worked out so that a
12 title transfer can be done at utility sites where we already
13 have licenses, where the environmental work is already done
14 and that sort of thing, rather than to try to ship it off
15 someplace else, very likely someplace else the Federal site
16 that has problems of its own that would get muddled up with
17 the handling of spent utility fuel. It just seems to me that
18 that is not a very good idea.

19 We also think it's a bad idea to have cash
20 compensation to utilities -- that is, payments made for on-
21 site storage -- and in our view there really, again, is
22 colored by our own situation.

23 We think that, if you begin to make compensation,
24 it will be very hard to do in an evenhanded way, because

1 people who, 10 years ago, re-racked their spent fuel pool,
2 where they made capital expenditures, how does that compare
3 with somebody who has built dry, on-site storage that is much
4 more costly?

5 We think that the utility ought to be on their own
6 until 1998.

7 At that time, the Federal Government, namely the
8 Department of Energy, should take title, and what they do
9 with it, in an arrangement with us, perhaps at our sites, is
10 up to them, but there shouldn't cash payments to the
11 utilities for what they have done prior to 1998.

12 We also are fully aware that the strategy may
13 change as we have a new Secretary of Energy and a new
14 President.

15 [Slide.]

16 MR. DRAPER: Let me just describe what has happened
17 at my plant, and that will give you some feeling for why I
18 come from where I do. We have spent-nuclear-fuel storage and
19 have for the past 15 years.

20 [Slide.]

21 MR. DRAPER: Originally, our spent-fuel capacity
22 was around 2,000 fuel assemblies. That was not the original
23 capacity. It was re-racked once in the late '60s, early --
24 or in the late '70s, early '80s.

1 It will be re-racked again this year, and we will
2 have a capacity of around 3,600 fuel assemblies when we're
3 finished.

4 We've spent a fair bit of money to do that. We
5 think that, in our case, that was the most cost-effective way
6 to go, and as you can see, our projection is that that will
7 carry us to roughly the year 2010.

8 We don't believe that we are responsible for all of
9 the fuel until 2010, but we can handle it in our pool if we
10 absolutely have to.

11 [Slide.]

12 MR. DRAPER: We evaluated the options at the time
13 we made the decision for the most recent re-racking.

14 We looked at dry casks or vaults. We looked at rod
15 consolidation to try to use the existing racks, and we
16 evaluated re-racking, and as I said, the latter was the most
17 cost-effective for us.

18 [Slide.]

19 MR. DRAPER: The dry cask or vault, for us, would
20 require licensing. It turned out that it was the most
21 expensive. It's something like \$30,000 a fuel assembly,
22 which is not inconsistent with the sorts of numbers we heard
23 this morning.

24 [Slide.]

1 MR. DRAPER: Rod consolidation is licensed and
2 demonstrated, but we would have had to re-rack anyway to do
3 that, and it certainly, for us, was not a practical or
4 economic thing to do when the alternative was a more standard
5 re-racking, common practice, reduce the spacing in the racks,
6 and the cost here was clearly the winner, something like
7 \$8,000 per fuel assembly.

8 [Slide.]

9 MR. DRAPER: The schedule at my place is that we
10 expect to have the installation complete later this year, and
11 as I said, it is our expectation that that will carry us
12 until roughly the year 2010.

13 [Slide.]

14 MR. DRAPER: Just to give you some feeling for the
15 elements of the cost if you have an interest, the analyses
16 and whatnot was about half-a-million bucks.

17 The fabrication and installation was the lion's
18 share of various overheads, and AFUDC added roughly \$4
19 million, and the total cost for us was about \$14 million, far
20 less costly than any of the alternatives.

21 I will say one more time, not to beat it to death,
22 but our circumstance is different from many others, but it's
23 our view that the most effective way to deal with spent fuel
24 is to do it at the individual plant sites, that the Federal

1 Government is responsible for taking title in 1998, and we
2 believe that arrangements can be made so that can be done at
3 the existing plant sites, and that will enure to the benefit
4 of the customers of the utilities and perhaps, ultimately, to
5 the taxpayer.

6 Mr. Chairman, those are my remarks. I'd be pleased
7 to respond to any questions.

8 DR. BREWER: Thank you very much, Mr. Draper.

9 Are there questions from members of the Board?

10 DR. CANTLON: You talked about having the capacity
11 to take you out to 2010. Does that leave you with enough
12 capacity in case you have an incident you have to empty the
13 existing reactors?

14 MR. DRAPER: Yes. We could have full core
15 discharge to within about a year or two of that 2010 date.
16 So, essentially, we could go well into the next century.

17 You might say, well if you can do it, so can
18 everybody else. That's not the case. Every reactor is
19 different. The core size is different. The seismic
20 conditions are different. The design loading is different.

21 So, while we are able to avail ourselves of this
22 particular fix, as you've seen, there are many other
23 utilities that have chosen a different path, and that was --
24 for them, what they chose was the most cost-effective.

1 DR. BREWER: Other questions from the Board?

2 Warner?

3 DR. NORTH: Given that there may be some limitation
4 at the rate at which the Federal Government takes title to
5 the fuel in 1998 and given your experience with the new Clean
6 Air Act Amendments of 1990 and emissions trailing, what would
7 your views be on some kind of market mechanism as a way of
8 dealing with the problems within the utility industry of
9 different costs involved with fuel storage and, therefore,
10 different priorities or importance ascribed to getting the
11 fuel under the Federal Government's ownership?

12 MR. DRAPER: Well, that's an interesting question.

13 I must say I hadn't thought much about it. It depends on
14 what the limitation is with respect to the receipt by the
15 Federal Government.

16 If a strategy that has some of the elements that I
17 have suggested -- that is, that we're going to do it at the
18 reactor site and just transfer the responsibility and the
19 ownership -- is the scheme that's followed, then presumably
20 the limitation, were there to be one, would have something to
21 do with the way that DOE stored it at the site, casks or
22 modules or what have you.

23 If you believe that's the right strategy and you
24 start now, there is no reason why you couldn't do whatever

1 you needed between now and 1998. So, that shouldn't be a
2 problem unless we dither around and don't decide that that's
3 what we're going to do until 1997.

4 If, for whatever reason, we get up to 1998 and
5 there are real physical limitations on what can be done, then
6 I suppose it's theoretically possible that you might make use
7 of one spent-fuel pool to solve a problem somewhere else for
8 a short time, but it would be compensate somehow, and the
9 entity that would do the compensation, I would suggest, would
10 not be the utility that had the full pool but the Department
11 of Energy that had not lived up to its responsibilities.

12 The argument can be made that we're adhering to an
13 artificial schedule, it's totally unreasonable, and what
14
15 have you, and I recognize that there are lots of reasons that
16 the Federal Government's program has been delayed,
17 particularly with respect to the repository.

18 On the other hand, you have a contract, and the
19 contract was entered into by both parties, and the
20 expectation was that you could count on that in doing your
21 capital forecasting.

22 Now, if the deal is off, then new arrangements have
23 to be made, and you can't wait until the last minute to do
24 that. I mean building one of these dry storage facilities is

1 not a cheap or short-term undertaking, and we need to get on
2 about it.

3 But I suppose there are, at least theoretically,
4 ways that you can work around the problem if you really got
5 in a bind.

6 It seems to me, though, that we would see that
7 there is this problem of receipt in 1993, and we've got five
8 years to solve the problem. That ought to be time enough if
9 we had the determination to do it.

10 DR. NORTH: Would you see any other alternative
11 mechanisms where the utility industry, collectively, could
12 make an agreement among itself as to who would get the right
13 to transfer fuel to the Federal Government given that it's
14 not all transferred at the 1998 date?

15 MR. DRAPER: Well, the scheme that is now in place
16 is oldest first, and that may or may not turn out to make
17 sense, but I would say that it really depends on what the
18 transfer means whether you want to change that mechanism or
19 not.

20 My position would be that the transfer of title
21 would occur in 1998 no matter what. I mean, whether the
22 repository is ready or not, you would simply make some other
23 arrangements for storage until we are ready to put it in a
24 repository.

1 DR. BREWER: Other questions from the Board?

2 [No response.]

3 DR. BREWER: Are there questions from the staff?

4 [No response.]

5 DR. CANTLON: Cantlon again.

6 I seem to recall an exchange of letters, I think
7 involving the legal division of DOE, in which they argue that
8 the language in the 1998 act really stipulates if a
9 repository is available and have essentially asserted their
10 position, and I shouldn't be speaking for DOE here,
11 obviously, but I think I recall letters such as that coming
12 out of the Secretary's office. Does that ring any bells for
13 you?

14 MR. DRAPER: Well, I have seen at least two letters
15 that address the issue, and the thrust is not totally
16 congruent. I would simply say that, regardless of
17 what DOE's position is, my position would be that they do
18 have an obligation.

19 DR. CANTLON: Yes, I understand.

20 DR. BREWER: We have some time. We can open up the
21 questioning to members of the audience.

22 [No response.]

23 DR. BREWER: If not, Mr. Draper, thank you very
24 much.

1 MR. DRAPER: Thank you very much.

2 DR. BREWER: As I said at the beginning of the
3 session and for benefit of others, Dan Reicher from the NRDC
4 unfortunately had to cancel at the last minute.

5 Our next presenter to the Board is Lynn Shishido-
6 Topel. She is from the National Association of Regulatory
7 Utility Commissioners. She chairs their Subcommittee on
8 Nuclear Waste Disposal Issues.

9 MS. SHISHIDO-TOPEL: Thank you. Good afternoon. I
10 am extremely pleased to participate in these discussions on
11 interim storage today. I have already found the discussions
12 to be very worthwhile.

13 I am here today as a member of the National
14 Association of Regulatory Utility Commissioners, known as
15 NARUC, as well as a public utility commissioner from the
16 Illinois Commerce Commission.

17 The NARUC, for those of you who aren't familiar
18 with it, is a quasi-governmental, non-profit organization of
19 the governmental agencies engages in the regulation of public
20 utilities and carriers located in all 50 states, the District
21 of Columbia, Puerto Rico, and the Virgin Islands.

22 The chief objective of the organization is to serve
23 the consumer interest by seeking to improve the quality and
24 effectiveness of public regulation in America.

1 Rate-payers are the primary source of revenue for
2 the Nuclear Waste Disposal Fund. It is therefore in their
3 interest that the national effort to safely and efficiently
4 dispose of high-level waste and spent nuclear fuel be
5 successful and timely.

6 NARUC has made it a priority, since 1984, to follow
7 the progress being made in developing a disposal system for
8 commercial spent nuclear fuel through a Subcommittee on
9 Nuclear Waste and/or Issues.

10 I am the current chairman of that committee, having
11 just recently succeeded Cas Robinson of Georgia.

12 Being relatively new to the subcommittee, I have
13 spent some time reviewing minutes and reports, including Ron
14 Callen's remarks to you two years ago regarding at-reactor
15 storage.

16 This reading revealed that, unfortunately, many of
17 the past concerns regarding cost effectiveness and timeliness
18 of the program still remain unresolved.

19 Two years ago, former subcommittee chairman Mike
20 Wilson despaired that there may be a fitting analogy between
21 the waste disposal problem and Dickens' Bleak House, where an
22 agonizing lawsuit called Jarndyce goes on and on perennially
23 hopeless.

24 Indeed, although some progress has been made, the

1 level of frustration and concern about the waste disposal
2 program today has only increased.

3 The recent fury over whether DOE has an obligation
4 to accept nuclear waste by 1998 reflects the mounting
5 frustration of regulators and, I think, of all concerned that
6 rate-payers may receive very little in return for their
7 enormous payments into the Nuclear Waste Fund.

8 However, I believe that state regulators and rate-
9 payers should be encouraged by two recent events.

10 First is DOE's new initiative. The initiative is
11 responsive to many of NARUC's concerns and provides a new
12 opportunity for all stake-holders to work together toward
13 efficient waste storage.

14 Second is the nomination of Hazel O'Leary for
15 Secretary of Energy.

16 While I do not know her personally, Ms. O'Leary's
17 familiarity with nuclear waste disposal issues, including
18 interim on-site and off-site storage, and with state
19 regulator concerns make her a very promising successor to
20 Secretary Watkins.

21 For example, in testimony recently before the U.S.
22 Senate Committee on Energy and Natural Resources, Ms. O'Leary
23 addressed the need for Federal interim waste storage.

24 In addition, Ms. O'Leary joined NARUC in urging

1 that the Nuclear Waste Trust Fund be taken off budget in the
2 same manner as the Social Security Trust Fund and in
3 supporting the FY '93 DOE budget request for the waste
4 storage program.

5 My job today, I think, is to present a regulator's
6 point of view on interim storage. I will try to do this by
7 providing a little background on the concerns and views
8 recently voiced by the NARUC on interim storage.

9 In addition, I want to provide some personal
10 preliminary comments regarding DOE's new initiative, but
11 first, a relevant bit of background.

12 NARUC is planning a conference to be held at the
13 beginning of our February meeting in Washington, D.C. The
14 agenda will include a concerted review of waste issues,
15 including interim storage.

16 The conference will be coordinated by the newly-
17 established NARUC Nuclear Waste Office, directed by Cas
18 Robinson, and funded by a cooperative agreement with DOE.

19 The goal of the conference is to provide
20

1 sufficient information and discussion in order to develop a
2 specific list of desired Congressional and NARUC actions
3 regarding issues such as interim storage.

4 So, today's discussions and the DOE new initiative
5 could not be more timely. My intent today is to learn as
6 much as possible from all of you.

7 The NARUC is deeply concerned that interim storage
8 will impose greater and greater costs and repairs in the
9 future. Utility rate-payers have, to date, accepted the
10 responsibility of paying for disposal of waste created by
11 nuclear power plants.

12 The critical question from a rate-payer's and
13 NARUC's perspective, however, is how much is reasonable to
14 pay for such disposal?

15 It is now clear that there can be no permanent
16 receipt of high-level waste and spent nuclear fuel before the
17 year 2010.

18 As a NARUC resolution passed in November outlined,
19 approximately 30 percent of the nation's spent-fuel pools
20 will reach capacity by 1998, and approximately 80 percent of
21 the nation's pools will reach capacity by the year 2010.

22 If nothing changes, there will continue to be over
23 70 little MRS's in the country.

24 An increasing number of rate-payers may therefore

1 have to pay twice to store the same waste, once for the yet-
2 to-be-built repository and MRS through the millage fee and
3 again in higher rates for additional at-reactor storage to
4 accommodate waste that has nowhere else to go. This is not a
5 desirable situation.

6 In addition to the obvious cost dilemma for rate-
7 payers, on-site storage is problematic because it could
8 complicate reactor decommissioning or license-renewal
9 processes.

10 It is also not consistent with past national policy
11 and can detract from the credibility of the disposal process.

12 At our last meeting in November, the NARUC issued
13 resolution encouraging efforts and activities that promote
14 cost-effective off-site receipt of high-level waste and spent
15 nuclear fuel by 1998.

16 In 1991, another NARUC resolution recognized, one,
17 that an MRS could be advantageous to the nation's rate-payers
18 if it helps to reduce the total cost of storing and disposing
19 of nuclear waste, including the cost of additional at-reactor
20 storage, and two, that an MRS could, among other things,
21 accelerate the removal of spent nuclear fuel from the nuclear
22 reactors and help in coordinating the transportation of spent
23 fuel.

24 The NARUC therefore supported the de-linking of the

1 schedules for licensing and constructing the permanent

2

1 repository and the monitored retrievable storage facility.

2 However, the resolution made clear that the NARUC
3 "has not and does not take a position in favor of or opposing
4 the MRS, since it has not been demonstrated whether or not an
5 MRS would be cost-effective to the nation's rate-payers."

6 In other words, while the NARUC sees a value to
7 rate-payers of off-site interim storage, the NARUC also finds
8 it in the rate-payers' interest that such storage be cost-
9 effective and reasonably priced.

10 Thus, as the date for permanent receipt of high-
11 level waste and spent nuclear fuel recedes into the future,
12 the NARUC is concerned that interim storage measures taken,
13 be they off-site or on-site, are consistent with rate-payer
14 interests.

15 At our February conference, the focus on interim
16 storage will therefore be twofold.

17 First, we will discuss short-term actions required
18 to deal with high-level waste and spent-nuclear-fuel disposal
19 before 2010, including methods of payments for at-reactor
20 storage, and second, we will address the feasibility and
21 desirability of an MRS and the roles of the DOE and the
22 Nuclear Waste Negotiator.

23 The DOE initiative is therefore extremely relevant
24 to NARUC's concerns, and I have just a few comments about

25

1 the initiative at this time. My thoughts here are strictly
2 personal, since it is premature to comment as a
3 representative of NARUC.

4 As you've heard, the initiative involves four
5 things.

6 One, it refocuses spent-fuel container design
7 activities on development of a standardized system with
8 capability for receipt, dry storage transport, and disposal
9 of spent fuel.

10 The purpose of this activity is to reduce costs and
11 provide more efficient storage at both an interim storage
12 site and nuclear plant sites. It would also simplify the
13 design of a storage facility.

14 Two, it plans for use of Federal Government sites for
15 interim storage by 1998, if authorized and required by
16 Congress, to select a site by December 31, 1993.

17 Third, it recommends that the Nuclear Waste Fund be
18 taken off budget, and fourth, it begins the exploration, as a
19 contingency action, of possible concepts for compensation and
20 resolution of utility equity issues regarding on-site
21 storage.

22 Let me frame my remarks here with a reference to Saint
23 Dennis who, after being beheaded, is said to have walked a
24 great distance carrying his head in his hands. This was

1 truly remarkable.

2 As a wise man observed, however, the length of the
3 journey was not so remarkable as the first step.

4 The DOE's initiative is similarly a remarkable and
5 important first step toward addressing the immediate concerns
6 surrounding the nuclear waste problem, but where we go after
7 this first step is what's really important.

8 Regulators need to know where we are headed, how we
9 will get there, and how much the trip will cost.

10 For example, for the reasons stated before, I am
11 concerned that the initiative not automatically default to
12 at-reactor, on-site interim storage. Rather, the costs of
13 on-site interim storage should be compared carefully with the
14 costs of off-site interim storage.

15 In addition, I think regulators would like to know
16 the answers to the following types of questions, some of
17 which have been addressed already today.

18 One, how does a multi-purpose system affect the
19 design and cost of an MRS? What are the cost savings likely
20 to be of an MRS system using the multi-purpose container
21 system relative to an MRS system without the multi-purpose
22 container system and relative to on-site storage?

23 Second, the Monitored Retrievable Storage Review
24 Commission reported in 1989 that the net benefits of an off-

1 site MRS relative to on-site interim storage increase the
2 longer the permanent repository is delayed and the faster the
3 MRS could begin to accept waste.

4 So, the question is how are cost savings of the MRS
5 affected with respect to changes in waste acceptance dates at
6 the MRS?

7 Third, what is the process envisioned for siting an
8 MRS on Federal lands?

9 Fourth, what are the limitations of the multi-
10 purpose container system?

11 Fifth, what is the expected cost of these
12 containers, and who will pay for them?

13 Sixth, what effect on decommissioning and license-
14 removal processes and costs will or could the multi-purpose
15 container system have?

16 Seventh, how does a multi-purpose container system
17 impact transportation issues, and finally, in the event that
18 Yucca Mountain is not characterized, how able will the multi-
19 purpose cask system be in meeting the resulting storage
20 demands both on an absolute and relative basis?

21 As a social scientist, I know that questions such
22 as these can never be answered with absolute certainty, and
23 the quest to do so would be doomed to failure and much too
24 expensive. However, reasonable decisions can be made with

1 reasonable estimates provided by rigorous analysis.

2 In this regard, since the Technical Review Board is
3 the body empowered by Congress to evaluate the technical and
4 scientific validity of activities undertaken in this area,
5 the NARUC and I are particularly interested in its expert
6 advice and analysis.

7 In closing, I again wish to thank the TRB for the
8 opportunity to participate in this very timely discussion,
9 and I look forward to further discussions with all of you on
10 this and related subjects.

11 In addition, as I mentioned before, the NARUC
12 Nuclear Waste Office, headed by Cas Robinson, is now
13 established. With this extra resource, the NARUC hopes to
14 work more closely with all of you to reach our common goal of
15 safe and efficient nuclear waste disposal.

16 Thank you.

17 DR. BREWER: Thank you.

18 Would you please just -- questions from the Board
19 and then we'll have questions also from the audience, if you
20 don't mind, Lynn. Thank you.

21 Are there questions from the Board?

22 [No response.]

23 DR. BREWER: I have one, as chairman.

24 I was wondering if you could characterize, very

1 briefly, the research of the analytic component of NARUC,
2 whether you have a permanent staff, whether you have a
3 budget, because the list of questions that you posed -- I
4 mean those are the right questions, and what is your
5 organization doing to answer them?

6 MS. SHISHIDO-TOPEL: I think that the staff of the
7 NARUC would not be one that would be equipped to deal with
8 all the technical aspects of those questions, but what we are
9 hoping to do is to provide a forum for appropriate discussion
10 and information to be exchanged, so that these answers --
11 these questions can be addressed.

12 We'd like to also be able to address these
13 questions at the conference.

14 DR. BREWER: So, you're not generating, really, the
15 analysis yourself, but you're a broker and consumer of the
16 analysis. Is that what you're saying?

17 MS. SHISHIDO-TOPEL: Right.

18 DR. BREWER: Okay.

19 Other members of the Board?

20 Warner?

21 DR. NORTH: Mr. Draper characterized the diversity
22 of opinion among the nuclear utilities. I wonder if you
23 would comment on the extent of the diversity of opinion among
24 the various utility commissions.

1 MS. SHISHIDO-TOPEL: Just as there are many grains
2 of sand, I think that, certainly, there is a lot of diversity
3 in the opinions, but I think it might have been Chuck
4 Lempeis who talked about the need to communicate so that
5 there could be a synthesis, because I think this
6 problem is so big we cannot deal with it one person at a time
7 or one group at a time.

8 So, even though there is a diversity, I think that
9 there ways to reach a synthesis of opinion.

10 DR. BREWER: Warner?

11 DR. NORTH: If I could follow up with the same
12 question I asked Mr. Draper on essentially NARUC's view of
13 economic or market mechanisms to try to deal with the
14 diversity of technical problems facing the various nuclear
15 utilities, presence or absence of large overhead cranes,
16 other specific issues that may make it relatively expensive
17 to store or remove the fuel from some nuclear power plants
18 compared to others.

19 Oldest first is the rule that's on the books. A
20 whole variety of other proposals might be advanced. Have you
21 considered this issue, and are there any conclusions you
22 might share with us?

23 MS. SHISHIDO-TOPEL: What was the issue that you
24 wanted me to answer?

1 DR. NORTH: Basically, the problem of different
2 costs for acceptance of spent fuel, making it perhaps much
3 more valuable to some nuclear utilities than others to have
4 the Federal Government accept it and take over the
5 responsibility for.

6 I can imagine that, just as Mr. Draper described,
7 for some of the utilities that have very old nuclear power
8 plants or are running out of capacity rapidly, for them it
9 would be worth a great deal to be able to get the Federal
10 Government to accept their fuel.

11 For other utilities that have lots of storage
12 capability or an ability to bring in new technology, whether
13 it's re-racking or dry cask storage, the benefits might be
14 nowhere near as large.

15 So, I would imagine, within the utility
16 commissions, this is an important subject, because basically
17 it's a situation where what the Federal Government does could
18 provide benefit to one set of rate-payers but not another or
19 at least in very differing amounts.

20 MS. SHISHIDO-TOPEL: I can't say that we have
21 really addressed that issue yet, but I think it's an
22 important issue to address.

23 DR. BREWER: Other questions from members of the
24 Board?

1 [No response.]

2 DR. BREWER: I have a question. You list again an
3 interesting set of questions and I wonder if either your
4 official role or your personal role which you separated in
5 your presentation you could identify the question that's most
6 important of that list.

7 What do you personally find to be the most
8 important issue that should be confronted, dealt with,
9 answered?

10 MS. SHISHIDO-TOPEL: I can't really say which one
11 is most important but I suppose that the most immediate ones
12 would be setting of the analysis of where we see the cost
13 savings and how it is affected in terms of sensitivity
14 analysis of the timing of the receipt of the waste.

15 DR. BREWER: So it's a cost and timing issue?

16 MS. SHISHIDO-TOPEL: Right.

17 DR. BREWER: You heard much discussion this morning
18 about public trust and confidence and so on and I was
19 wondering if that had entered into the thinking of your group
20 or your own thinking on this problem where the issue of cost
21 was given much less weight in terms of relative importance?

22 MS. SHISHIDO-TOPEL: Well, I think that the
23 credibility of the program is also very important. It's not
24 something that you can quantify in terms of costs but I

1 focused in on the cost problem because it is such a visible
2 issue.

3 DR. BREWER: Okay. Any questions from Staff?
4 Woody?

5 DR. CHU: Yes. This is Woody Chu on the Staff.

6 I have a question related to that. That is about
7 the capabilities of the Illinois Commission. That is,
8 suppose Commonwealth Edison comes in with a proposal. Does
9 the Illinois Commission have the capabilities of determining
10 what would be the most cost effective, let's say, measure for
11 Commonwealth Edison to take, especially Commonwealth Edison
12 as some 12 power plants, so it could potentially call in a
13 great deal of economy of scale and so on.

14 MS. SHISHIDO-TOPEL: Are you asking whether or not
15 the Commission has oversight over those expenses?

16 DR. CHU: Yes. The individual Commission itself,
17 does that have some kind of analytical capability to oversee
18 the rate, the Applicant's suggestions.

19 MS. SHISHIDO-TOPEL: I think that the issue is
20 whether or not the Commission has the oversight to determine
21 whether or not expenses of the utility are reasonable.

22 DR. CHU: Yes.

23 MS. SHISHIDO-TOPEL: And I think that in that
24 context or in that setting that the expenses of the utility

1 in terms of meeting its storage requirements would come under
2 our authority.

3 DR. CHU: My question was kind of one step beyond -
4 - that is, not just whether the proposed expenditures were
5 reasonable but whether given the top down look of let's say
6 the Commonwealth Edison system, to use that as a hypothetical
7 example, whether that may be one of the more cost effective
8 measures.

9

10 Does the Commission have that capability to do
11 that?

12 MS. SHISHIDO-TOPEL: Are you saying in terms of
13 whether or not that they should -- what kind of way that they
14 should deal with the waste disposal problem, whether or not
15 we --

16 DR. CHU: For storage.

17 MS. SHISHIDO-TOPEL: Would they come to us and say,
18 okay, we are going to be doing this, do you think this is the
19 right way to go or --

20 DR. CHU: Yes, yes.

21 MS. SHISHIDO-TOPEL: Well, that really hasn't come
22 up in that context before. It's just generally been sort of
23 presented as expenses in rate cases for example, but there
24 may be new situations for every occasion -- but it has not

1 really come to us in that context before.

2 DR. BREWER: John?

3 DR. CANTLON: Does the Commission, and now again
4 speaking in terms of the Illinois Commission, does it play
5 any role in facilitating a utility in application for
6 expansion of onsite storage, something like the Minnesota
7 case? Does the Commission play any kind of a role in that in
8 Illinois?

9 MS. SHISHIDO-TOPEL: I think that would have to
10 come before us but there has not been that same situation so
11 far.

12 DR. BREWER: Any questions from members of the
13 audience?

14 MR. SCOVILLE: Yes, please.

15 DR. BREWER: Please identify yourself.

16 MR. SCOVILLE: My name is Jerry Scoville. I am a
17 consultant in the nuclear waste business.

18 I primarily have been associated with low level
19 waste in the past and that led me into public acceptance and
20 so I am associated with the nuclear waste negotiator's office
21 now as a consultant.

22 However I am speaking here just as an individual. I
23 had a particular question though that because of my knowledge
24 of the low level waste field it's perhaps appropriate for our

1 speaker because she comes from Illinois. Illinois just
2 recently suffered one of the biggest debacles in the history
3 of low level waste siting and cost the consumers of
4 electricity a great deal of money in Illinois and it's back
5 to zero and we'll start over again, I gather.

6 Now while we are talking here about high level
7 waste, it still nevertheless seems to me that it is the same
8 issue from the regulatory community's point of view and that
9 is, is money spent on siting facilities for waste disposal,
10 is the consumer being protected in all of that?

11 Since the regulatory community is attempting here
12 to protect the expenditures of the consumer's funds it seems
13 there should be a role to play because the consumer is of
14 course the person whose acceptance we need in order to site
15 these facilities.

16 Do you see any greater or expanded role for the
17 public utility commission in helping, perhaps by allowing
18 costs incurred by utilities to help generate public
19 acceptance? Is there a role to be played by the regulatory
20 community?

21 MS. SHISHIDO-TOPEL: In terms of providing the
22 consumers with information about what waste disposal is, sort
23 of the technology and that sort of thing?

24 MR. SCOVILLE: I think that if I had a concrete

1 plan I would be able to frame the question better but it
2 seems like we are talking about the same public here, whose
3 interests you are trying to protect in the rate-paying arena
4 and whose acceptance we need in the siting arena and there
5 should be a connection that could be beneficial and discharge
6 your responsibility to the ratepayer and make our job easier,
7 and just as I spoke I thought perhaps utilities could be
8 encouraged to launch programs of education and public
9 acceptance and I know my utility colleagues are going to beat
10 up on me for this but they do a lot of that and I know those
11 costs are sometimes allowed.

12 Would they be encouraged to do more and perhaps
13 could that encouragement come from you?

14 MS. SHISHIDO-TOPEL: I guess that would be up to
15 each Commission.

16 MR. SCOVILLE: What is your feeling?

17 MS. SHISHIDO-TOPEL: I'd have to see the proposal.

18 DR. BREWER: Any other questions from the audience?

19 [No response.]

20 DR. BREWER: Okay, Lynne. Thank you very, very
21 much. We are moving very efficiently and what I would like
22 to propose is that we take a break until about five minutes
23 until 3:00, at which point we'll then continue with the
24 discussion from Virginia and Duke Power.

1 Reconvene at five minutes to 3:00, please.

2 [Brief recess.]

3 DR. BREWER: Ladies and gentlemen, would you please
4 take a seat so that we can reconvene.

5 [Pause.]

6 DR. BREWER: Reconvene so that we can get the
7 session going this afternoon.

8 [Pause.]

9 DR. BREWER: The concluding group of speakers for
10 the Afternoon Session -- come on, guys -- the concluding
11 speakers for the afternoon session are Mr. Kenneth Moore from
12 Virginia Power, Mr. Robert Rasmussen of Duke Power, Mr.

13

1 Marvin Smith of Virginia Power.

2 Mr. Moore, who is the Vice President of Virginia
3 Power, will take the lead and introduce his colleagues in
4 turn.

5 [Slide.]

6 MR. MOORE: Thank you, Mr. Chairman, and members of
7 the Board. It's good to be here today. I come not as an
8 employee of Virginia Power so much as one of the
9 representatives of the EEI/UWASTE Steering Committee and I
10 serve both on the steering committee and its executive
11 committee and as I think the Board knows the EEI/UWASTE
12 organization is made up not only of the investor-owned
13 utilities who have nuclear stations but also other including
14 public power agencies which have nuclear stations who come
15 together to discuss the aspects of both high level and low
16 level waste and transportation issues.

17 At any rate, what we intend to do is to brief you
18 on where the EEI worked on, what we term the universal
19 containment system for spent fuel storage, transportation and
20 disposal, currently stands. I'll cover some background and
21 general observations on that system and Marvin Smith of
22 Virginia Power will briefly contrast the UCS system with what
23 the DOE currently plans in its conventional system for out of
24 pool reactor fuel handling and then Bob Rasmussen, who headed

1 a working group which the EEI steering committee had in
2 active work last year, will discuss some of the benefits and
3 further industry recommendations on the matter.

4 [Slide.]

5 MR. MOORE: For a brief background, clearly many
6 utilities will require expanded storage at utility sites.
7 Three now have on-site out of pool storage and service. A
8 number of others are in the active development of decision-
9 making and licensing stages for such systems and there will
10 be a fairly large number of utilities by the year 2000 which
11 will have exceeded their in-pool storage capability.

12 There's been discussion about MRS I understand
13 earlier this morning but its capacity for development would
14 be limited by law to about 10,000 metric tons of uranium and
15 clearly the completion date of such a facility we believe
16 from the industry perspective is currently uncertain.

17 Currently the storage, transportation and disposal
18 technologies have been developing, it appears to us, in a
19 fairly fragmentary manner and we think there is a good deal
20 of necessity for integration and simplification of those
21 systems. Marvin Smith is going to explain that further.

22 [Slide.]

23 MR. MOORE: A graphic comparison here of the spent
24 fuel development and off-load rate roughly to projected MRS

1 capacity if there is a limit of about 10,000 metric tons and
2 if that capacity is taken up over a period of about ten
3 years, so the spent fuel discharge rate that domestic
4 utilities are currently generating is clearly in excess of
5 what an MRS with its current limitations could accept,
6 certainly in the short term before a repository is licensed.

7 [Slide.]

8 MR. MOORE: The results of this situation really is
9 that most utilities have reactor storage problems that are
10 not resolved. As Mr. Draper said, some have ample in-pool
11 capacity for numbers of years; others do not. We are in
12 that situation with one unit already using on-site out-of-
13 pool storage and the other two units North Anna facing that
14 situation in about 1998.

15 But even if an MRS were to operate and DOE were
16 able to remove spent fuel from utilities starting in '98 and
17 if the repository was to be in service by 2010, more
18 utilities will probably wind up paying twice in the interim
19 simply because there will be a necessity in that interim
20 certainly before 2010 for more utilities to develop on-site
21 storage and at the same time pay into the waste fund.

22 Additionally, the total handling system from the
23 reactor pool to the repository is necessarily complex,
24 perhaps overly so, and costly and there needs to be efforts

1 to get those costs down.

2 [Slide.]

3 MR. MOORE: With that background in mind, we did
4 within EEI/UWASTE ask a group of our technical people to work
5 in the context of a system task force which was established
6 in late '91 to study integrated storage, transportation and
7 disposal systems. That task group, by the way, was made up
8 and was open to membership, to all of the membership of
9 EEI/UWASTE, typically employees who had to do with some facet
10 of out-of-pool storage and disposal. It also included people
11 on the EEI staff.

12 In the mid-summer this past year the concept paper
13 was developed recommending DOE development of a universal
14 container system and that was finalized this fall. The
15 EEI/UWASTE Steering Committee adopted a resolution supporting
16 that concept at its December meeting.

17 [Slide.]

18 MR. MOORE: In your package I have the text of that
19 resolution for you and I am not going to try to read it but
20 fundamentally we believe it ought to be done as part of the
21 overall integrated system for spent fuel storage,
22 transportation and disposal, that the MRS and regulatory
23 design should be reviewed to determine how the cost and
24 complexity of the whole system can be reduced, and that the

1 fundamental design work that has gone on heretofore ought to
2 be modified to get it into a system that leads clearly toward
3 satisfying the public policy of deep geologic disposal with
4 minimum cost along the way.

5 Some of the steps that are somewhat at variance
6 with what Mr. Draper said is that the committee as a whole
7 felt that DOE ought to provide such containers if they could
8 be successfully developed and in no case should the DOE
9 impose the use of such containers on utilities because some
10 utilities may for reasons either of limited capacity of
11 cranes or other facilities at the sites or just limitations
12 of the site itself be unable to store in the kind of
13 containers that this system envisions at the site.

14 [Slide.]

15 MR. MOORE: At any rate, subsequent to that
16 meeting, and I think you have heard from people within the
17 DOE today, the DOE has apparently decided to begin to work
18 strongly on the idea of multiple purpose and standardized
19 container systems.

20 This quote is from attachments to a letter dated
21 12/17 from the Secretary of Energy to Senator Bennett
22 Johnson. The EEI group I think it's fair to say is pleased
23 that the DOE has planned a backup strategy to meet the 1998
24 obligation. I think it is clear to all of us that while the

1 details of how the DOE meets that obligation may be
2 debatable. It's fairly clear that everyone thought the DOE
3 by that date, at least to my personal thinking, everyone
4 believed that DOE was fully expected to begin to take care of
5 spent nuclear fuel in early 1998.

6 The search for a federal site where one might store
7 spent fuel should proceed we think in parallel with the look
8 for a monitored retrievable storage location under the
9 nuclear waste negotiators' efforts and also with regard to
10 some of the proposal DOE has recently put forward, clearly
11 DOE's recommendation to take the nuclear waste fund off the
12 federal budget into a revolving fund or something similar has
13 much merit because it's of necessity for consistent funding.

14 Finally I think that the DOE's consider to begin to
15 provide compensation to utilities to avoid the need to pay
16 twice after '98 is something that almost all nuclear
17 utilities would clearly favor.

18 [Slide.]

19 MR. MOORE: Some of the requirements that we
20 believe are necessary for an effective universal container
21 system would include the requirements that DOE provide the
22 containers or the rights to them independent of an MRS or
23 repository schedule. Hopefully by 1996 I think and most
24 people in the industry apparently think on an oldest fuel

1 first priority basis if for no other reason than that's the
2 rule today.

3 My personal belief and I think it's shared by most
4 EEI members is that there is little merit in trying to upset
5 that fundamental setup.

6

1 Thirdly, the containers, if they can be developed,
2 should be provided at a rate that is somewhat above the
3 industry spent fuel generation rate.

4 At reactor use of the containers should be option
5 al with the utilities, as I said, and utilities could trade
6 rights to receive the containers.

7 In short, what we really see is if the containers
8 could be fundamentally and properly technically developed, it
9 would be likely that a two-tier allocation system would
10 develop so that people could develop the rights to take
11 containers earlier and on perhaps a differing timing basis
12 than the right provided under the contract for DOE to
13 actually take spent fuel off-site.

14 Spent fuel acceptance by the DOE would occur upon
15 shipment from the utility. That is my company's view,
16 different from what Mr. Draper said, and also is the view of
17 the EEI Steering Committee as a whole.

18 [Slide.]

19 MR. MOORE: We believe that DOE should utilize
20 cooperative agreements with utilities and vendors to develop
21 this concept. The use of cooperative agreements has been a
22 proven and successful approach in the past. It provides for
23 utility input for compatibility with utility operations as
24 well as the regulations require the license of such a device.

25

1 Fundamentally we believe that the inclusion of
2 successful NRC licensing for both storage and transportation
3 ought to be fundamental to anybody who worked with the DOE in
4 a cooperative agreement of the type we have in mind and in
5 fact my company intends to propose such an arrangement for
6 universal container systems design and development to the DOE
7 before this month is out.

8 In general though we also believe that DOE ought to
9 provide, ought to proceed with container licensing as part of
10 repository licensing for the purposes of eventual geologic
11 emplacement. We think that the repository design ought to
12 focus on drift versus bore hole emplacement and that the
13 early use of prototype containers for heat tests in the
14 repository could demonstrate the thermal performance of that
15 repository and the kind of container we have in mind.

16 Marvin Smith is going to take you through some
17 other aspects of this.

18 [Slide.]

19 [Pause.]

20 MR. SMITH: I would like to talk a little bit about
21 what the conventional DOE plan has been. I say "has been"
22 because it appears that they are changing that and we label
23 this the conventional plan rather than current.

24 Basically you require specialized containers for

1 each of the functions of utility site storage,
2 transportation to the MRS repository, MRS storage, or any
3 other federal site storage and disposal at the repository.
4 That implies that you have to handle each and every fuel
5 assembly, of which there are an estimated 300,000 that will
6 be created, several times. Each fuel assembly must be
7 loaded and unloaded from these specialized containers and all
8 of this handling would have to be done at either underwater
9 or special hot cell type facilities.

10 [Slide.]

11 MR. SMITH: This slide is meant to illustrate the
12 steps that could be involved in this plan. The slide looks a
13 little bit confusing perhaps but it shows that you can have
14 quite a few operations involved between the time the spent
15 fuel is created and the time that it goes into the final
16 disposal at the repository.

17 [Slide.]

18 MR. SMITH: What we have looked at in the universal
19 container system task force would be an integrated approach
20 for spent nuclear fuel storage transport and disposal. You
21 would load the spent fuel into a universal container system
22 at either the reactor or the MRS, particularly for those
23 reactors that could not load directly at their reactor site,
24 and you would leave the spent fuel in that container.

25

1 You would use overpacks on that container for
2 storage, transport and disposal.

3 [Slide.]

4 MR. SMITH: So this just illustrates that you would
5 have container system that would hold we believe a
6 reasonable number of fuel assemblies in each of those
7 containers.

8 [Slide.]

9 MR. SMITH: You would use overpacks for the
10 storage, transport and disposal operations. We think
11 probably a concrete overpack of some type would be the most
12 appropriate for storage, which would be replaced with a metal
13 type of overpack for transport and disposal.

14 [Slide.]

15 MR. SMITH: That is illustrated in the next figure
16 that shows that you basically, once you load that interim
17 container you transfer containers from overpack to overpack
18 rather than having to open those containers and handle each
19 individual fuel assembly.

20 [Slide.]

21 MR. SMITH: We think this can provide a simplified
22 system that reduces spent fuel handling and transportation
23 impacts because it would use the same containers at
24 utilities, federal central facilities and repository sites.

1 We think also very importantly that it can provide
2 if properly designed a robust long-lived waste disposal
3 package. It can solve the utility site storage problem and
4 eliminates the problem of what utilities consider basically
5 paying twice for the same service -- you know, paying the DOE
6 for the fee and then again paying for interim storage.

7 [Slide.]

8 MR. SMITH: The system would basically work that
9 from the utility pool you would load into a utility dry
10 storage system. We think primarily that would involve then
11 train transport to an MRS site, and followed by train
12 transport to a repository.

13 [Slide.]

14 MR. SMITH: As Mr. Moore mentioned, we think one of
15 the things that you would want to look at would be placing an
16 emphasis on emplacing these containers, which we think in the
17 repository mode would basically be a self-shielded waste
18 package in the repository drifts as opposed to the borehole
19 method.

20 [Slide.]

21 MR. SMITH: As we indicated, we think that these
22 containers should be provided at a rate in excess of the
23 spent fuel generation rate so that you could begin to start
24 to work off some of the backlog of spent fuel that is

1 accumulated at various utility sites.

2 [Slide.]

3 MR. SMITH: There's been a lot of discussion of
4 public perception and we certainly think that's a key item.
5 We think this is a very simple, safe, passive system. We
6 have had a dry storage facility at Surry and we have had
7 quite a few tours of people that have come through from many,
8 many different organizations. I think the one unanimous
9 opinion is that it is a very boring facility and that's
10 certainly something that we agree with but it really shows
11 that this is a very simple, safe, very passive system.

12 We think you can limit handling of spent fuel. I
13 know a lot of the communities that have considered hosting
14 the MRS as a voluntary site have expressed the desire to do
15 that and we think it can provide a superior waste disposal
16 package that can address some of the concerns to balance
17 reliance on geology and engineered barriers, as has been
18 suggested we think by the Nuclear Waste Technical Review
19 Board on several occasions.

20 [Slide.]

21 MR. SMITH: Bob Rasmussen will deal with the rest
22 of the presentation.

23 [Slide.]

24 MR. RASMUSSEN: Thanks, Bob. I think what I would

1 like to do is wrap up this presentation with kind of a
2 reflection or reiteration of some of the logistics and then
3 talk about specifically some of the issues that we see are
4 ahead of us with this particular concept and what some of our
5 plans are down the road as far as working within the utility
6 industry and working hand-in-hand with the Department of
7 Energy.

8 Just to kind of pull it all together, we anticipate
9 working between the utilities and DOE on the UCS system
10 logistically. We anticipate that the universal containers
11 would be delivered to the utilities on an oldest fuel first
12 basis. That has been said earlier.

13 We would allow early delivery with utility paying
14 financing costs from delivery date to allocation date. In
15 other words, any utilities that do not have allocations, we'd
16 still like to include them in the ability to receive some of
17 these universal containers.

18 Of course the utility provides the storage overpack
19 during the on-site storage mode. That's no different from
20 what we are dealing with right now on our reactor sites so we
21 feel like that's a fairly equitable way to handle the system
22 and of course I've got the words "if needed" in there, which
23 means that there's certainly the option to ship fuel directly
24 to DOE for some of those allocations that are immediately

1 available whereby you skip the overpack, the storage
2 overpack, and go directly to the transport overpack which is
3 discussed in the next step.

4 Finally, we anticipate that DOE would provide the
5 transportation and the eventual MRS and repository disposal
6 overpacks.

7 [Slide.]

8 MR. RASMUSSEN: Again, some of these have been
9 mentioned earlier. I'll just try to collectively summarize
10 all of the benefits of the UCS system. I would like to focus
11 really on a couple of them.

12 First of all, the minimization of the diversity
13 among dry storage technologies -- that's been discussed a
14 little bit earlier. Bob Bernero mentioned -- I think he got
15 a question actually -- regarding the fact that there is a lot
16 of diversity developing with storage systems and we feel like
17 the universal container approach will help to curb that, help
18 to focus the industry on a smaller amount or smaller
19 collection of storage concepts, which will certainly help in
20 the eventual interface between the utility industry and the
21 Department of Energy.

22 The second one I wanted to point to which I don't
23 believe anything has been said too much about today is the
24 eventual post-shutdown operating cost savings. There has been

1 a lot of discussion, a lot of studies done regarding the fact
2 that a shut down reactor that still has spent fuel stored on
3 site is a very expensive situation for a utility and if you
4 are not generating any electricity, which you have still got
5 to provide, some active systems to support that spent fuel
6 storage.

7 We feel like a well thought-out universal container
8 system will actually allow a utility to shut down that spent
9 fuel pool and operate specifically for the dry storage mode
10 and not have to continue maintaining spent fuel pool systems
11 which are fairly expensive.

12 We have seen costs in the range anywhere from six
13 or eight million dollars per year all the way up to twenty
14 million dollars a year just to keep a spent fuel pool
15 operational. Ideally with a universal container system you
16 can shut down that pool and store your fuel on-site, dry,
17 anticipating a direct shipment to DOE.

18 That is pretty much what the SMUD program that has
19 been mentioned earlier has been trying to achieve is the
20 ability to pull a few out of the spent fuel pool and put it
21 directly into dry storage with the anticipation of shipping
22 it to DOE without going back through the spent fuel pools.

23 [Slide.]

24 MR. RASMUSSEN: There has been some talk about the

1 fact that there are a lot of different fuel types out there
2 that we have got to deal with and certainly we recognize that
3 there are some people that either will refuse to or will not
4 be able to technically handle this whole UCS system. As part
5 of the concept paper that we put together this summer, we
6 reviewed and studied some of the options

7

1 that would be available to those situations for people not
2 able to handle the UCS system.

3 Here is a quick listing of those options.

4 First of all, we can get into a small to large cask
5 transfer situation. There has been some discussion about a
6 demonstrate of that.

7 Of course the heavy haul of the UCS to a rail
8 access -- a lot of the utilities out there do not have rail
9 access. Duke Power is one example of that at our Oconee
10 facility and we have looked into the possibility of hauling
11 to a rail access to be able to move that larger container to
12 a rail access.

13 There is also the possibility of just including a
14 smaller container that could be of the truck size versus the
15 rail size in what we end up considering as the family of UCS
16 containers.

17 Of course you can always ship directly your bare
18 fuel assemblies to an MRS facility and let the transfer to
19 the UCS occur at the MRS. That is certainly an option we
20 feel that needs to be addressed for those situations.

21 Finally, for those facilities that may not be able
22 to handle some of the larger container sizes that we are
23 considering for a universal system, we can always consider
24 the possibility of upgrading those systems, putting larger

1 capacity cranes or making other spent fuel handling
2 equipment modifications.

3 [Slide.]

4 MR. RASMUSSEN: The bulk of the tail end of the
5 presentation is really to look at what are the issues to be
6 addressed as we head down the path of looking closer into the
7 universal container concept. I have got a list here
8 basically to run through them.

9 We have got to develop a listing or a feel for what
10 the container design requirements really are. That's a
11 technical step that we have not yet taken but obviously it
12 needs to be taken fairly soon so we can start focusing in on
13 some container designs and ultimately some container
14 fabrication.

15 The same goes for the overpack design. That
16 includes the storage and the transportation overpacks and
17 ultimately the repository overpacks.

18 Timing of implementation -- how soon do we feel
19 comfortable with saying that from Point A forward we can
20 start implementing this system, start putting these types of
21 containers on the storage sites of the utilities.

22 Impact on program activities underway -- there's
23 been some discussion on that. The MRS design work has been
24 going on for a couple of years now without the benefit of

1 including a UCS system. We have got to consider the fact
2 that some of those activities have gone on. How do we change
3 or modify those efforts to incorporate the whole UCS concept
4 and also what programs or initiatives do we need to do away
5 with or add into the system to incorporate the universal
6 container.

7 Of course the obvious question -- what is the true
8 cost savings? There's been a lot of qualitative discussion
9 about the fact that we anticipate some cost savings and fuel
10 handling savings but nobody's really sat down yet and done
11 some specific number-crunching as to what the quantitative
12 aspects of the cost-savings are.

13 Pool fuel deliveries, the question is if somebody wants
14 to ship fuel directly to DOE out of their spent fuel pool,
15 how does the universal container system mesh in with that
16 situation? I think the more obvious situation we are
17 anticipating is when a utility has had to go to dry storage
18 anyway and therefore has put quite a few of these universal
19 containers into dry storage that might then be available for
20 direct shipment to DOE, but there is certainly the need to
21 look at direct shipments out of the spent fuel pool. Do we
22 want to put those assemblies into a container? Should the
23 container be shipped welded or bolted? A lot of those issues
24 need to be addressed.

1 Of course, reimbursement and equity, the whole
2 issue of who supplies and pays for these containers, we see
3 this again at least on the utility side as an opportunity for
4 DOE to reimburse some of the waste fund by supplying at least
5 partially if not entirely the cost of these containers to the
6 utilities that are choosing to use them.

7 Finally, there are some NRC and IAEA requirements
8 that we need to be careful don't sneak up on us as we start
9 to proceed forward with licensing of these systems and
10 eventual implementation and fabrication.

11 [Slide.]

12 MR. RASMUSSEN: I want to hit the actual technical
13 issues that we see are ahead of us. I think it's safe to say
14 that the real challenging technical issues are related to the
15 repository and that the transportation and storage related
16 technical issues are things that I think we either have
17 already solved or we feel like there's a pretty readily
18 available solution to those issues, but the focus on the
19 repository -- Bob Williams is going to be talking a little
20 bit about that tomorrow morning I believe. He'll get into
21 that a little bit more but basically you have got the impact
22 of the UCS on the repository emplacement requirements. How
23 big are the boreholes? How big is the ramp or the tunnel
24 that gets you into the repository?

1 If we are suddenly talking about a container that's
2 got multiple fuel assemblies versus individual or just a few
3 fuel assemblies, those are some things that need to be
4 brought into consideration when you are designing that
5 repository -- certainly from an inflation standpoint.

6 Secondly, the whole thermal loading issue, thermal
7 performance of the repository -- we view that as one of the
8 bigger issues related to the container system. We actually
9 had a meeting with some of the folks out in Nevada with the
10 container design or the repository package design people.
11 Again, the whole question is does the fact that you are now
12 looking at potentially a system that almost exclusively has
13 multiple fuel assemblies in a single package and therefore a
14 good bit more heat load in a single package, does that drive
15 the design of the repository in a certain direction that you
16 either can or cannot handle?

17 We had some very successful discussions with the
18 package design folks out there in Las Vegas and hopefully we
19 will continue trying to resolve that issue as we head down
20 that path. The whole question is does the repository end up
21 being a cold versus a hot repository and how does the UCS
22 impact that whole issue.

23 The obvious issues on transportation and storage
24 are certainly the container and the overpack designs and

1 basically how do those individual components of the universal
2 container system end up interfacing with each other. That has
3 been, even before this concept was dreamed up, that's been a
4 concern of the utility industry all along, as we continue to
5 develop additional dry storage technologies how do we
6 guarantee or look ahead to the ability to interface with some
7 future DOE transportation and disposal systems with these dry
8 storage systems

9 MR. RASMUSSEN: I'll kind of close it up. We see
10 as some recommendations that we continue with DOE-utility
11 dialogue that has gone on so far. We have been very pleased
12 with the amount of cooperation and the interest from both the
13 utility and the DOE side on this whole issue and again Jeff
14 Williams tomorrow morning will give you a little bit more
15 information, an update on the DOE side of their studies of
16 what DOE calls an MPC -- whatever that stands for!

17 We also feel like we need at this point, now that
18 we have individually decided that this makes sense to move
19 forward at least in terms of some additional studies, we
20 would like to see the two parties come together in some kind
21 of a joint committee and consolidate their efforts as opposed
22 to meeting periodically and comparing notes and I think DOE
23 will agree that we are ready to move into that position at
24 this point and we are planning to meet with them next week on

1 that particular issue.

2 We need to further qualify the merits of the
3 universal container system. Basically that means that we see
4 on the surface some pretty obvious, hopefully obvious
5 advantages. Now it's time to really dig in and make sure we
6 can convince ourselves that those advantages from a cost and
7 a handling standpoint are definitely there, that this whole
8 approach really does make sense.

9 Finally, from a technical standpoint we do need to
10 establish design criteria for the universal container and
11 that includes the containers themselves as well as the
12 overpacks and some of the interface issues that have to be
13 dealt with there. We again feel like this is a technology
14 that is available to us today. It shouldn't be a real
15 difficult process. It's going to be more of an effort to get
16 people to agree on what kinds of technical criteria need to
17 go into these individual containers.

18 That pretty much wraps up the discussion. Again I
19 want to thank the DOE folks and we recognize the enthusiasm
20 they've shown as well as the industry side and working
21 together on this and we look forward to more of the same as
22 we go down the path here.

23 DR. BREWER: Thank you very much. Mr. Rasmussen,
24 would you just wait for a moment. Clarence has a question.

1 DR. ALLEN: Well, it may be addressed to any of the
2 three of you.

3 I don't fully understand why this is such a great
4 idea now or why it's such a great idea now and it wasn't ten
5 or fifteen years ago.

6 What's changed? Has the technology changed? Has
7 the regulatory attitude changed? Has the DOE atmosphere
8 changed? Are the utilities finally getting their act
9 together? I mean why is it such a great idea now and it
10 wasn't ten years ago?

11 MR. RASMUSSEN: I'll give you my comments. Maybe
12 Marve and Kenny can chime in as well.

13 I think a couple things that have occurred in the
14 past years that maybe weren't in existence ten years ago --
15 we hit on it earlier -- is the fact that maybe it looks like
16 we are not going to meet the 1998 date or, you know, any time
17 soon having some relief.

18 It's a good opportunity to get some relief from the
19 program in terms of providing the costs or at least providing
20 the containers that would be used for dry storage.

21 I think an important one that exists today is the
22 fact that over the last ten years, eight years, we have
23 started to see a lot of utilities go into dry storage and as
24 you look ahead there's going to be plenty more of that ahead

1 of us.

2 The real incentive, one of the big incentives to a
3 universal container system, and I stress the word "system,"
4 is that you start to encourage a little bit more focus, a
5 little bit more compatibility in those storage systems so
6 that let's say twenty years from now when we finally do have
7 either a repository or an MRS to ship to, you are not forced
8 to deal with 27 or 57 different dry storage systems and
9 containers and casks. With the DOE process you are hopefully
10 going to be dealing with a smaller family of systems that
11 will ultimately be easier to deal with, easier to interface
12 with technically, and obviously that can only result in cost
13 savings to both parties in the overall system.

14 Another issue, and I'll turn it over to Marv, as I
15 mentioned, people are starting to realize that this whole dry
16 storage issue as it relates to shutdown reactors is becoming
17 important in terms of the cost of keeping the pool
18 operational.

19 The universal container as I mentioned hopefully
20 will allow you to shut those spent fuel pools down. As folks
21 like Yankee and Rancho Seco can speak to, there is a lot of
22 desire to get out of that spent fuel pool and get into a
23 system that you can anticipate being able to ship directly to
24 DOE from, rather than having to come back into the spent fuel

1 pool.

2 These are just two of probably many issues I think
3 are current today, weren't really in the forefront ten years
4 ago.

5 I think maybe Marv can add a few more to that.

6 DR. PRICE: Before you proceed, may I ask a
7 question? Dennis Price.

8 How much agreement is there in the industry now?

9

10 MR. MOORE: Let me try to answer that. The
11 agreement that exists is best embodied in the resolution that
12 you had in the presentation. The majority of people who are
13 represented on the EEI/UWASTE Steering Committee did vote
14 affirmatively to support that position.

15 I would be remiss if I indicated that there was
16 total universal consensus on all the details but I think
17 there is a strong consensus that the industry and DOE
18 together need to move in a direction that allows a way from
19 pool shipment to proceed in a systemic manner rather than to
20 handle a great number of options.

21 Perhaps to add to what Bob said about why is the
22 system looked at with more favor now than it was years ago,
23 it's fairly clear to me, although I have not been dealing
24 with the issue for ten years, that ten years ago people

1 thought that a repository should be operable. Certainly it is
2 significantly earlier than 2010 that we're talking about now,
3 which meant that there were a lesser number of utilities who
4 would have outdistanced their in-pool at reactor storage
5 capability, in addition to which if you introduce a necessity
6 to go through some interim off-site facility, an MRS or as
7 DOE is currently calling it, an independent interim storage
8 facility, then you have got the incremental cost of the
9 technology to handle and manage and store items at that site.

10

11 If you can make it systemic and simple we believe
12 it can cut costs that way. That doesn't even get through the
13 repository issue.

14 DR. CANTLON: Let me take it back, Ken, to your
15 first -- it's Cantlon.

16 You commented that the majority of the members that
17 were involved in this operation endorse it certainly in
18 general principles. Does EEI really involve all of the
19 utility industry in the US?

20 MR. MOORE: There are I believe, and perhaps
21 someone here from EEI can give me the right count, there are
22 only two or three current licensees who are not paying into
23 EEI/UWASTE. If somebody may confirm that number for me?

24 MR. HENKEL: Chris Henkel, EEI. There's actually

1 four -- Illinois Power, Consumers Power, LILCO and SMUD, the
2 Sacramento Municipality Utility District.

3 MR. SMITH: Let me just mention a couple of
4 technical points and I certainly agree with everything that
5 Bob and Kenny said but of course the universal container
6 system idea has been around for ten years.

7 A couple of technical changes really in the
8 repository I think also have made a difference in how this
9 system is looked at.

10 One is that frankly with the encouragement of the
11 Nuclear Waste Technical Review Board they have gone to a
12 ramp entrance to the repository. That certainly facilitates
13 handling a larger size package. If you look back a few years
14 ago when the repository had a shaft type entrance, it would
15 have been much more difficult to handle a large package that
16 would be the type of package we are talking about.

17 Secondly, and I think equally importantly, I think
18 a few years ago people assumed that there would be very
19 little reliance in the repository on any type of engineered
20 barrier system, that almost all of the reliance would be
21 placed upon the geology. I do believe that now there is a
22 more balanced approach to that and people are looking at
23 perhaps a more robust engineered barrier.

24 Really there are two ways to go to that. In

1 essence, you know, you can simply take the package you have
2 and the system you have and go to a more robust barrier which
3 will only add cost to the repository, but we believe with
4 this type of UCS system that one of the outgrowths of that is
5 a much more robust, better repository package that if it is
6 part of the overall integrated system we think actually would
7 reduce the overall cost, so in essence you go from a system
8 that doesn't rely very much at all on any type of engineered
9 barrier to one with we think a potentially a much better
10 engineered barrier and rather than seeing that increase the
11 overall system cost we think it can actually
12
13 reduce it.

14 DR. BREWER: Other questions from the Board?

15 DR. PRICE: Dennis Price, excuse me.

16 DR. BREWER: Yes, Dennis?

17 DR. PRICE: Your definition of acceptance of fuel,
18 how does that relate to the 1998 date contract? That is,
19 acceptance is when it is shipped from the utility?

20 MR. MOORE: We purposefully did not tie it to a
21 date. The expectation would be that event of acceptance
22 would occur when DOE physically removes the fuel from the
23 site in whatever package.

24 DR. PRICE: Then how does that affect the contract?

1 MR. MOORE: I am not sure that I can give you an
2 exact answer to that but the fundamental essence of the
3 contract was that DOE is responsible to accept the fuel into
4 transportation packages which it would provide on a
5 allocation basis that is determined in accordance with the
6 procedures which are now evolving.

7 There is a sequence of queue spots if you will
8 based on oldest fuel first and consistent with the ability of
9 DOE to remove spent fuel which itself, in my view,
10 independent of the fact that I think DOE has an obligation to
11 '98 to begin in '98, my own personal opinion is that the law
12 and the contract also makes it clear that a facility

13

1 must exist for DOE to take the fuel into.

2 It may not have been foreseen when the law was
3 passed and the contract signed. I think my own reading today
4 says that's absolutely required.

5 DR. BREWER: Yes?

6 DR. NORTH: I would like to ask some more questions
7 about the concept in the schedule.

8 I look at the first paragraph in the resolution
9 from the EEI/UWASTE and it talks about DOE proceeding with
10 the design and development of the UCS system and then the MRS
11 and repository design should be reviewed to determine how the
12 cost and complexity of these systems can be reduced with the
13 UCS container, and then I go a couple of pages further on and
14 you are talking about having that container designed, ready
15 to go, so that it can be provided to the utilities by 1998 at
16 the latest.

17 Now I read this and I would like you to clarify the
18 point. Am I reading it correctly, that this means that you
19 have to proceed with considerable and deliberate speed in
20 order to do these things that the program really hasn't done
21 yet -- the assessment of the cost and complexity at Yucca
22 Mountain of the altered design from the site characterization
23 plan baseline and the development of the universal container
24 system, given that the DOE has not been putting very much

1 money into that aspect of the program.

2 Am I correct in reading what I think you have tried
3 to say?

4 MR. MOORE: Yes, you are. The expectation would be
5 as far as what the EEI group saw that the need to proceed
6 with developing hardware that could work, hopefully all the
7 way to emplacement package, was sufficiently strong that it
8 makes sense we think for DOE to begin to work with utility
9 involvement hopefully to design and demonstrate and license
10 containers which could be used for certainly and demonstrably
11 on the current regulations, the storage and transportation
12 with the expectation that in parallel with that work on the
13 repository would move in a direction that would allow better
14 quantification of how do you use a particular container
15 system as an emplacement container and what is the cost of
16 that combination container and modification, if any, of the
17 repository due to total system cost.

18 You don't necessarily have that end answer before
19 the first ones are produced or provided because ultimately as
20 I understand the law and the procedure and the licensing
21 expectations is that the repository as it is currently
22 envisioned will only be licensed finally when the total
23 system is evaluated and licensed.

24 DR. NORTH: I would interpret what you just told me

1 as a suggestion that DOE should reallocate its budget
2
3 from the plans that have been discussed with us and I suspect
4 a consequence of that might be a delay in the schedule in
5 terms of whether the repository can be ready by 2010.

6 Is that something that you as a representative of
7 the utility industry see as potentially acceptable, to have
8 the container but perhaps at the cost of delay in the
9 schedule of when the repository becomes operational?

10 MR. MOORE: I am not current enough on the
11 discussion with DOE as to the repository schedule to comment
12 in detail on that, Dr. North.

13 DR. NORTH: I saw in an earlier viewgraph 2010 for
14 1989's date and then 1993 question mark, I believe.

15 MR. MOORE: I believe that was Mr. Draper's. I
16 think it's a fair question.

17 DR. BREWER: Dennis, do you have another fair
18 question?

19 DR. PRICE: Well, this is just kind of a follow-up.
20 Is this perceived by EEI as a -- this may be a very
21 poor choice of words -- a crash program that is going to
22 receive a top priority kind of a thing and if so how is DOE,
23 your perception of DOE's reaction?

24 MR. MOORE: I'm going to ask Bob to discuss DOE's

1 reaction because the task group that the Steering Committee

2

1 chartered and has had a number of discussions with DOE and I
2 personally have had none.

3 I do think that it is fair to say that we believe
4 there needs to be an ordering of priorities within the DOE
5 program to allow some emphasis which I think has been
6 neglected or at least certainly not given top priority here
7 today on how do you systematize the total transportation and
8 interim storage if necessary and emplacement question.

9 So to the degree that that would represent a
10 reprioritization I believe it is fair to say EEI thinks that
11 is a useful and necessary thing to do.

12 As to whether it would be a crash program at least
13 to the design and the licensing aspect, several groups have
14 at least gotten storage containers licensed in the time frame
15 of what, Marve, two to three years? Bob? Eighteen months?

16 MR. SMITH: Eighteen months.

17 MR. MOORE: That range, so I wouldn't necessarily
18 characterize it as crash. Clearly this is somewhat more
19 complex because you are dealing with more sites and you are
20 dealing with more containers but perhaps you can elaborate on
21 the question of the interaction and what you think DOE
22 believes.

23 MR. RASMUSSEN: I think it is safe to say from our
24 experience so far in working with DOE, and again we are

1

2 going to hear from Jeff Williams tomorrow, on their study
3 that the enthusiasm is there. They recognize that this might
4 need to be a refocusing of some of the efforts or some of the
5 studies, some of the activities that have gone on within the
6 department.

7

8 A good example of that is the fact that DOE
9 realized back -- I guess it was October or September time
10 frame -- that they needed to do a study, an assessment of the
11 whole UCS approach. They jumped right on that study. They
12 got their M&O contractors lined up, put together a very good
13 group of folks from the M&O to study the whole concept, and
14 my understanding is that that study was on about a two month
15 schedule and that it is about to wrap up at this point.

16

17 The fact that such a study was pulled together and
18 performed in such a short period of time tells me that DOE at
19 least sees this as a viable thing to be looking at at this
20 point.

21

22 I don't think it's something that anybody has
23 decided one hundred percent that it's the way to go but at
24 least continued review and assessment of the approach from
the utility and DOE side seems to be desirable, something
that both parties are at least willing to continue moving
forward with, so again the enthusiasm I think is there.

1 The recognition that it could be a good approach to
2 take is certainly there on both sides.

3 DR. BREWER: John?

4 DR. CANTLON: Yes, I'd like address this to Kenneth
5 Moore from John Cantlon, to discuss a little bit this idea of
6 trading rights among utilities and receipt of canisters that
7 you mentioned starting. How would that process work?

8 MR. MOORE: I don't think anybody's given a lot of
9 discussion about that but clearly there are a number of
10 utilities who have ample storage and would have relatively no
11 interest in early receipt of a right to a cask or a container
12 if that was the backbone system.

13 Others, if faced with a choice of doing numbers of
14 things from reracking to developing their own independent dry
15 on-site storage facility, might be relatively -- it might
16 have a relatively high value to them, so markets have a way
17 of working themselves out and while nobody has similarly
18 decided as far as I know exactly how the ability to trade
19 rights, shipping rights let us say, is going to work, the
20 contemplation that problem will work itself out over the time
21 between now and shipping begins I think is fairly confidently
22 held among most utilities.

23 DR. CANTLON: This would address Linn Draper's
24 concern that he expressed earlier that some utilities found

1 no benefit to moving aggressively in this area and in this

2

1 case oldest fuel first they could in fact get an economic
2 benefit from accepting those canisters and trading -- it's an
3 equity question among utilities.

4 MR. MOORE: I think that's the way it should work
5 and clearly if the concept has technical merit, I believe
6 that the economic decision-making within a small set of
7 choices will sort itself out.

8 DR. BREWER: Other questions from the Board?
9 Warner?

10 DR. NORTH: I had to ask that question of several
11 previous speakers about setting up essentially a market and
12 in this case it would be a market for the right to the
13 containers as they come off through the DOE system and that
14 presumably could be essentially an auction system or even put
15 on the Chicago Board of Trade like sulfur dioxide emissions
16 rights?

17 MR. MOORE: Whatever. Maybe it's a standing offer
18 or bulletin board system, something -- I mean there are a
19 number of ways this could conceivably work but I say again if
20 the system has technical merit and definition in terms of
21 people can proceed with confidence that hardware will be
22 available then I believe the marketplace will force people or
23 allow people to assign values and trade rights.

24 MR. SMITH: I think that's a very important aspect

1 of the equity.

2 DR. NORTH: Could you give sort of an expansion
3 from Linn Draper's comments about the diversity within the
4 electric utility industry of how well you think this kind of
5 a mechanism might work? Are rights based on oldest fuel
6 first but opportunity for sowing those rights in a market
7 mechanism so that whatever utility finds it most valuable
8 might bid up to the point where they get the next container?

9 MR. MOORE: I don't really feel capable of
10 characterizing how much agreement there might be on that
11 point.

12 DR. NORTH: Has there been much discussion within
13 UWASTE?

14 MR. MOORE: There has not been a significant
15 amount. There's been some but there's not been a long
16 discussion of that issue.

17 I do think it clearly provides a way to resolve the
18 equity issue. I say that personally I am in favor of
19 continuing oldest fuel first because that is the rule and
20 people have accepted that.

21 That view is not necessarily universally held as I
22 think you know but since it's that it seems to me that
23 economic means ought to alter the order of either acceptances
24 of shipping rights or if this concept comes to fruition to

1 receive containers. Clearly some people, as Bob Rasmussen
2 has said, who've now shut down reactors have an
3 urgent need driven by high expense to maintain a wet pool in
4 the system that you must also maintain to allow that wet pool
5 to stay in operation.

6 DR. NORTH: So my understanding is they would be
7 highly motivated to buy the rights to those containers
8 because of the large savings they would realize by being able
9 to shut down pool storage for a reactor that was no longer
10 operating?

11 MR. MOORE: I would certainly think it would move
12 in that direction, yes, sir.

13 MR. SMITH: One thing I wanted to mention is that
14 one of the concepts we'd looked at would be the idea that if
15 you for example had a need that was in advance of your
16 allocation you also would have the option of paying for the
17 incremental or financing costs to DOE to obtain containers
18 ahead of the date.

19 I think what we viewed that as really would be in
20 essence a mechanism that would have set a price on early
21 delivery and that in fact most of the trading that might
22 occur would be based on that sort of pricing mechanism.

23 DR. NORTH: This is assuming the manufacturing
24 capacity can be put in place to allow early delivery.

1 MR. SMITH: Correct.

2 DR. NORTH: So in addition to the Chicago Board of
3 Trade maybe we get a futures market going as well.

4 [Laughter.]

5 DR. BREWER: Yes. Clarence Allen has got a
6 question.

7 DR. ALLEN: Let's assume that a few years down the
8 line Yucca Mountain is found to be unsuitable or unlicencable
9 and we must necessarily turn to a different repository,
10 presumably below the water table, different rocks and so
11 forth. Are we in danger of having committed ourselves to a
12 white elephant in terms of a package that is not suitable to
13 a completely different chemical, physical, thermal
14 environment?

15 MR. RASMUSSEN: I think the way we have looked at
16 that is in two ways. One would be that you would design the
17 system to provide for the flexibility of putting an overpack
18 on for disposal so that that overpack would be a mechanism
19 that you would use to tailor the package to the repository
20 media, particularly if there was a change in that media.

21 Certainly I think there is a recognition that there
22 is at least the possibility that you might have the wrong
23 capacity or some other problem that a change in repository
24 would require potentially unloading some of these containers

1 and transferring them to another package but I think there is
2 a feeling that you can design in and engineer in a great deal
3 of flexibility that would limit that potential.

4

5 DR. BREWER: Other questions from the Board? Yes,
6 Ed?

7 DR. CORDING: Ed Cording. I wondered what ranges
8 of size and weight you have been looking at or considering,
9 particularly for the repository overpack with the container
10 itself?

11 MR. RASMUSSEN: I think it is a little early yet to
12 give some definite numbers there but certainly based on the
13 discussions we had in Las Vegas with the repository package
14 people out there, the first indication is that a upper limit
15 to a container size from a PWR standpoint might be in the 20-
16 22 assembly range, something like that -- maybe a notch or
17 two lower than some of the container sizes we're looking at
18 right now for normal on-site dry storage.

19 As far as a minimum, I guess you could envision it
20 going all the way down to 3 or 4 assemblies.

21 Ideally you want to get that minimum up as high as
22 possible to take advantage of the economies of scale
23 associated with a bigger, higher capacity package but again
24 I'd stress it's a little early now to give some definite

1 numbers. The only indicate we have seen so far from a
2 physical dimensional size standpoint would be our discussions
3 out in Las Vegas back in the fall and that is looking like a
4 20-22 assembly package size.

5 MR. SMITH: And I want to mention here to that
6 this is a somewhat personal opinion but I think it is at
7 least shared to some degree by the group and that is that we
8 would really like to see this involve some prototypes that
9 would be used for perhaps thermal tests in a repository host
10 rock environment, some physical tests perhaps for transport
11 and this type of thing.

12 Personally I believe that when you are designing
13 and developing a system like this, you are looking at a
14 system that would perhaps require 10,000 of these containers
15 if they are roughly the size that we are considering -- it
16 certainly would make sense to build some actual prototypes
17 and do some testing of those as part of that design and
18 development effort.

19 Hopefully that would help address some of the very
20 questions that you are answering better than strictly doing
21 it on a pure analysis basis to actually do some physical
22 testing.

23 DR. BREWER: John Cantlon wanted to follow.

24 DR. CANTLON: Yes, I wanted to follow up with you,

1 Bob. This 20 to 21 canister or fuel assembly limit, is that
2 a weight-based decision primarily?

3 MR. RASMUSSEN: No. The discussions we had were
4 primarily related to dimension.

5 DR. CANTLON: Dimension.

6 MR. RASMUSSEN: Right, and I would like to add --
7 I should have when I made that statement -- that another
8 charter I guess of the task force that we have agreed on
9 internally is to not lose sight of the fact that there are
10 some systems out there today being used and we'd like at
11 least to take a shot at some technical criteria that allow us
12 to include those systems.

13 I want to make sure I say that. I wouldn't want to
14 lose some of the friends I've got in the audience.

15 So that is an important factor that we are going to
16 include, but that particular discussion was dimensional
17 specific.

18 DR. CANTLON: Following up on that, since long term
19 mobility of these nuclides, out in the 10-12 thousand years
20 is really related to oxidation of the fuel.

21 And, if there are ways of really slowing fuel
22 oxidation by using different filler materials, as the
23 Europeans are doing in their canisters, has any thought been
24 given to different fillers to put in that, which again, is a

1 weight issue? What is going on in the filler area?

2 MR. SMITH: I don't think we have looked at that to
3 a great deal of detail. But certainly, again, what we would
4 like to do would be to consider that up front in the design
5 process, and allow, in that design of the container, for the
6 possibility of using a filler material.

7 Certainly, we know that is something could be
8 important for limiting migration, and perhaps would help
9 address criticality in other types of issues in a long term
10 environment.

11 So, yes, I think you would certainly want to make
12 that one of your design criteria in developing such a system.

13 DR. BREWER: Other questions?

14 MR. RASMUSSEN: I have one point of clarification.
15 What was the range of steady state operating costs for
16 shutdown reactor, but keeping the pools going? That seemed
17 to be an issue. Was it 6 to 20 million a year? Was that
18 roughly it?

19 DR. BREWER: That was about 8 to 20.

20 MR. RASMUSSEN: Eight to 20.

21 DR. BREWER: Right. And those are based on
22 different utilities.

23 MR. RASMUSSEN: Yes. I understand. But it was the
24 rough ball park.

1 DR. BREWER: Right.

2 MR. RASMUSSEN: That is what I was looking for.

3 DR. BREWER: That is correct. Are there other
4 questions from the Board or staff? All right, Carl.

5 MR. DI BELLA: This is Carl Di Bella of the staff.

6 You just mentioned that dimension limitation in the
7 repository -- do you remember specifically what that

8

9 limitation was, and more particularly, why?

10 MR. RASMUSSEN: Okay. Marv mentions that a lot of
11 limitation really was a thermal related limitation, rather
12 than dimensional.

13 My thinking on the dimensional was that you have
14 got a certain size tunnel ramp, or what have you, that you
15 have got to deal with.

16 But again, in dealing with some of the thermal
17 loading people, the package design people out there, Marv
18 refreshes my memory that really was -- the ultimate limit was
19 based on a thermal loading, or a maximum thermal load
20 consideration.

21 MR. SMITH: Yes. I think there was some
22 dimensional considerations in terms of overall weight, but
23 really, in terms of tunnel size, the interesting thing about
24 this type of concept is that it would allow a substantially

1 smaller tunneling.

2 Because with the current concept of placing the
3 packages in a borehole, you know, fuel assemblies are very
4 thin and tall. So, you end up with actually a very high
5 tunnel height, in order to be able to take those assemblies
6 in vertically.

7 What we would be looking at would be, these
8 containers would be brought in horizontally, and simply
9 placed on the floor of the tunnel. And so, in fact, it
10 would be, perhaps as much as a 50 percent reduction in the
11 tunneling.

12 DR. BREWER: Warner?

13 DR. NORTH: Could I suggest as possible an addition
14 to that, put them on rails, so you can vary the spacing over
15 time, on the thermal loading issue?

16 MR. SMITH: I think there are a lot of ways of
17 dealing with the thermal loading issue, but, you know,
18 certainly, it is one of the aspects that could limit
19 capacity.

20 DR. NORTH: I would like to ask the question about
21 the limitation from the thermal loading issue also, given
22 that the thermal load changes over time, especially as the
23 fuel goes through its first decades of aging.

24 If you restrict to rather old fuel, where we can

1 define that later on, does the limitation of the thermal
2 loading, with respect to the size change?

3 MR. SMITH: I am sure it would. And that is what I
4 say. I think there are several ways of looking at thermal
5 loading.

6 Also, the question is, do you really need to
7 backfill around these containers. They are very substantial
8 containers.

9 One of the things that you would want to do in our
10 view, would be to maintain a much easier retrievability.
11 And so, in our view, you probably would want to look, and I
12 think in our discussions with the package design people, the
13 repository now is starting to very much look at, if you go
14 away from a borehole emplacement, do you really have a reason
15 to backfill around these packages.

16 And, of course, that affects the potential for
17 thermal as well. So, you know, I think there are a lot of
18 ways of dealing with a thermal and sizing issues, but, you
19 know, they certainly are an area that potentially limits the
20 size and capacity, and one that needs to be looked at very
21 early on.

22 DR. BREWER: Other questions.

23 [No response.]

24 DR. BREWER: Other questions from the audience?

1 MR. HALSTEAD: Thank you. Bob Halstead, State of
2 Nevada. I have two questions. One an easy one, and one that
3 is probably not so easy. I think they are fair. But not so
4 easy, unfortunately. The second one. The first one is easy.

5 Can we assume that you assumed five or ten year old
6 spent fuel? I didn't hear any discussion, other than in the
7 thermal output discussion, about what your minimum age for
8 the PWR's and the USC would be.

9 MR. RASMUSSEN: I will take that, if it is the easy
10 one. Similar to the way we choose fuel for normal dry

11

1 storage at our reactor sites, I think we would like to
2 assume that what you put into these universal containers
3 would be your five to ten year old, your older fuel.

4 That you wouldn't try to move some of the fresher
5 fuel out there, that the obvious advantage being that, from
6 a design standpoint, it is a cheaper system, if you are
7 allowed to assume ten years or older fuel.

8 And that would, of course, carry on into the other
9 phases of the MRS and the certainly the repository as well.

10 No plans to try to design this thing to handle
11 something less than five definitely and possibly, even less
12 than ten years. That's a design criteria that still needs
13 to be worked out between DOE and the vendors, and the
14 utilities, etc.

15 MR. HALSTEAD: Well, I assume your plans from
16 trade-offs study on the way that age burn up physical
17 dimensions, weight, and thermal loading.

18 MS. RASMUSSEN: I think it is important to point
19 out too that, as you get out beyond ten years, the amount of
20 decrease in heat load really does fall off considerably, so
21 that the difference between a 10 and 20 isn't all that
22 great, and certainly as you get out to 50 and 100, you are
23 just not seeing the kind of decreases that you might
24 anticipate, certainly, that you would see between five and

1 ten years.

2 MR. HALSTEAD: Yes, I would agree the question is
3 between five and ten.

4 MR. RASMUSSEN: Right, right.

5 MR. HALSTEAD: However, the one that may be more
6 difficult is the whole question of what assumptions you are
7 making about the amount of time that is going to be
8 necessary for licensing this system, since we are talking
9 about trying to have something that can be delivered to
10 utility sites, no later than '98, and, you know, I was kind
11 of assuming some optimism in your schedule there, that maybe
12 some would be delivered early.

13 I know my experience with a couple of licensing
14 dockets that I followed is that the NRC has been awfully
15 tough on licensing casks for storage only. And, I think the
16 reason we don't have a dual purpose cask licensed already, is
17 probably a reflection of the rigors of that licensing
18 process.

19 And I am curious whether you have done any, say, a
20 probabilistic assessment of how many months or years you are
21 going to need, from the time you are ready to put a license
22 into the NRC, and frankly, whether it is really realistic to
23 think that you could have a three part certification for
24 storage transport and disposal, in time to meet that 1998

1 deadline or target date, pardon me.

2 MR. SMITH: Let me try to address that question.

3 We have looked at the schedules, and I think, first
4 of all let me say that our viewpoint would be that the
5 emphasis from a licensing prospective initially would be on
6 the storage and transport.

7 I think we feel like you are right in terms of the
8 repository licensing, but certainly the repository licensing
9 would be of the entire system, including the overpack.

10 And so, what we are looking at would be proceeding
11 with the storage and transport licensing by '98, starting on
12 the repository licensing of the inner container, but
13 recognizing that you have to provide in that, the flexibility
14 for filler materials, for overpacks, for other things to
15 really address the repository licensing, which would not, in
16 our view, necessarily, you know, certainly the complete
17 package would not occur by 1998. But that you would go
18 through and complete the first two steps of that.

19 MR. HALSTEAD: We will probably have some more
20 comments after the DOE/MPC proposal tomorrow on this issue,
21 but I think it is important to not lose sight of the fact
22 that there isn't any free lunch in this business, and any
23 time you think you are dealing with licensing risks through
24 one approach, you may be incurring some in another -- and I

1 think the issue about the final approval of use of universal
2 containment system of one of any number of different
3 concepts.

4 And some of us have been following this since, you
5 know, the mid'-70's, late '80's, when the TVA project came
6 through.

7 And I think there still are some very difficult
8 timing issues, forgetting it in '98, but hopefully, we will
9 have a better basis after we hear the DOE presentations to
10 discuss it tomorrow.

11 DR. BREWER: Is there anyone in the audience from
12 the NRC, who might be able to comment on the timing and
13 licensing?

14 MR. HAUGHNEY: This is Haughney. It is completely
15 speculative at this stage, to talk in any detail about
16 licensing schedules. And I think Mr. Halstead raised an
17 issue that is quite valid.

18 Now, I might say that certainly for the storage and
19 transport phases, we have the licensing regulations, the
20 regulatory guides, mechanisms in place to start with that
21 activity today, if we had an application.

22 That doesn't mean that that particular application
23 wouldn't run across a number of difficult points. But even
24 in the cases of difficult points that we have had in the

1 past, we generally finished.

2 But the schedules have been quite variable. And
3 sometimes technical issue have tripped people up for a
4 significant period of time.

5 But having said that, I don't want to discourage
6 this concept.

7 MR. HALSTEAD: Nor do I. I don't want to leave
8 that impression.

9 MR. HAUGHNEY: No. It is just that I think people
10 need to walk into it with their eyes open, and I am sure that
11 the people at this table understand that fully, because they
12 have been in licensing issues in other forums, besides the
13 '72 and '73 dockets.

14 DR. BREWER: Thank you very much.

15 MR. HAUGHNEY: You are welcome.

16 MR. HALSTEAD: Can I just do a clarification? The
17 reason I raised this is, again, I don't want to get into my
18 comments until I hear the other presentations tomorrow.

19 But, the position we have taken at the Nuclear Waste
20 Project Office for the State of Nevada in our review of the
21 Transportation Cask Program, is that we have tried to be
22 careful not to commit the same mistakes of technical
23 optimism, that we have unfortunately, had to criticize other
24 parties for, in deciding whether we would advocate

1 reorienting the DOE Cask Program to a dual purpose cask, as
2 opposed to universal cask.

3 And, the way we decided to approach that was to
4 argue for an immediate redirection of the program when we
5 made our comments. That was over two years.

6 Now we would like to see an immediate redirection
7 in favor of the dual purpose cask. And we would like to see
8 aggressive research on the universal cask concept, because we
9 think it is a really valuable concept.

10 But we are somewhat dubious about the timetable for
11 licensing. So, I will have more to say tomorrow.

12 DR. BREWER: Thank you. Any other questions from
13 the audience? Carl Gertz?

14 MR. GERTZ: I am Carl Gertz, DOE's Yucca Mountain
15 Project Manager. Really, not a question, but just a
16 statement to follow up on some of the questions that the
17 Board had to Marv and Bob.

18 One, we consider repository design and engineering
19 barrier system design just beginning on the project now.
20 That is part of what we call advance conceptual design. And
21 in both those activities, we are looking at the options that
22 include the multi-purpose containers.

23 However, I do want to point out that we do consider
24 retrievability an absolute essential aspect of our repository

1 design. And that retrievability with three containers just
2 means you have to move them around a little a bit, and your
3 ability to do that.

4 Whether you have to side step them or move them out
5 of railroad tracks, if you have enough room to do that. But,
6 that is all part of the initial studies that are really
7 just beginning for repository design and ESF design. And
8 they have to be coordinated very closely with our
9 transportation system and our MRS design.

10 And I know that I have worked with Marv a long ago
11 when we first started dry cask storage at Surry, and we did
12 the demonstrations at Idaho. And I know that he is aware of
13 those things, and both Bob and Marv have talked to our staff
14 out at the project.

15 But, we are really in the very early stages. So,
16 if we are hesitant to provide you design answers, it is
17 because we don't have them. And I know that Bob and Marv
18 don't have them, just yet either.

19 But they are great ideas that we are looking for.
20 And frankly, we are moving towards in-drift emplacement.
21 That may be the most appropriate way to do a repository
22 design, and manage thermal loading, retrievability and
23 overall costs, and everything.

24 DR. BREWER: Carl, if you wait, I think Warner has

1 a question here.

2 DR. NORTH: I would like to follow up on your
3 comment about retrievability. It would seem that what we are
4 discussing now about a dual or universal cask makes the
5 problem of retrievability far simpler than the base case plan
6 with a vertical borehole emplacement that is in the site
7 characterization plan.

8 Now I wonder if you could describe the extent to
9 which you are thinking, and the many study plans and
10 activities have veered around toward the horizontal drift
11 emplacement of a robust canister, as opposed to the thin wall
12 vertical emplacement.

13 MR. GERTZ: I won't discuss in detail, because the
14 M&O team is here, and they are just starting that design. I
15 mean, that is who is doing the engineering barrier system and
16 the repository design, is Fluor Daniel, Inc.(AE) and Babcock
17 & Wilcox, MK Associates and Duke Engineering.

18 But, let me just say from my background, and from
19 what we saw at Climax. We didn't consider retrievability in
20 boreholes very difficult, or an engineering challenge beyond
21 simplified solution. You required a machine.

22 But we think taking out boreholes at Yucca
23 Mountain, if the mountain is as stable as we believe it is,
24 would not have been a problem.

1 We did look at retrievable for long horizontal
2 boreholes, and we had some difficulty with trying to prove
3 that retrievability with long horizontal boreholes, or with
4 very deep, vertical boreholes. But the SCP conceptual design
5 was not an engineering challenge.

6 I don't think in-drift emplacement is an
7 engineering challenge at all. It's fairly simple. It's just
8 a matter of getting a machine that will move one cask
9 by another, or developing some kind of switching mechanism
10 that you can move them all out, to get to the one you want.

11 But I think we have to be able to assure to the
12 regulator that we can get to the one we want, in a reasonable
13 amount of time, without any exposure to the workers, or to
14 the individuals, beyond regulatory limits.

15 So, my thoughts are, we just have to keep in mind,
16 either way it is retrievable, we could sure retrieve 16 or 21
17 assemblies a lot quicker this way probably, than you could
18 retrieve them in vertical boreholes.

19 But it is a matter of how you move that cask back
20 up to where you need to move it. The only reason I would
21 retrieve it is if there is something going wrong with the
22 cask, or something is going wrong in the tunnel.

23 MR. GERTZ: Did I answer you questions?

24 DR. NORTH: More to the retrievability issue. I

1 think the question has been raised by various interested
2 parties.

3 Supposing you found out you have a technology that
4 is some way flawed or, much less effective than a new
5 technology that is developed, and you have to pull out a
6 thousand or ten thousand of these canisters. That is
7 retrievability on a very different scale.

8 MR. GERTZ: Now we are just brainstorming, but
9 certainly with an overpack when we are going to put it into a
10 repository, I would assume our design is a self-shielding
11 container. So therefore, if you had it in the tunnel, you
12 could easily store it above ground on a pad, much like you
13 saw at Surry.

14 So, you can remove them all, and bring them up the
15 ramp, and put them on a pad. Maybe I am simplifying it, but
16 --

17 DR. NORTH: Let's just, as an example, we decide
18 some years from now that having an oxygen getter is really
19 important, and the initial set of canisters in place didn't
20 have that.

21 So, it would seem to me that the ease and cost of
22 retrievability on a substantial scale might be one factor to
23 take into account.

24 How easy would it be to take the corrective action,

1 that some future generation in this long program might decide
2 is important to do?

3 MR. GERTZ: Intuitively, without knowing design
4 details, it appears to me that moving a container with 21 to
5 24 assemblies, up to a hot cell, would be easier than moving
6 21, or whatever it is -- six -- I guess we are going to put
7 three PWR's emplacement container, than moving seven of them.
8 It just is a matter of distance and time, and handling
9 operations.

10 DR. NORTH: And if you have something that is self-
11 shielding, and doesn't have to be extracted from a hole by a
12 rather complicated machine, it would seem far easy.

13 MR. GERTZ: I agree.

14 DR. BREWER: Thanks. Any other questions from the
15 floor Please identify yourself.

16 MR. STUART: My name is Ivan Stuart from Nuclear
17 Assurance Corporation. I have a question for Marvin.

18 Marvin, this is a question that you might think
19 goes along the lines of, if it looks like a duck and quacks
20 like a duck, it is probably a duck.

21 But, knowing as much as you do about the licensing
22 process, as I do, do you really feel that the universal
23 container will look very much different from the present
24 multi-purpose container, that we call dual purpose today,

1 when you recognize all of the scenarios that it has to go
2 through, and all of the events that it must withstand, such
3 as shielding inertability, monitorability, re-inerting, if
4 necessary, transport storage tipover, all of those things?

5 Will your duck look like my duck when it is all
6 over, or will it really be different? And if it is
7 different, will it really be any cheaper, when you look at
8 all the parts of your duck, versus my duck?

9 MR. SMITH: Well, let me address a couple of
10 technical points. I think one of the reasons we stress this
11 overpack issue is that again, I think to maintain flexibility
12 in the repository regime, number one, you would not want a
13 multi-purpose cask versus a container system that, for
14 example, would incorporate into its design, perhaps something
15 like neutron shielding.

16 Neutron shielding materials that are typically used
17 in a dual purpose cask would be necessary for transport. But
18 I am not sure the same Neutron shielding materials that you
19 would want to use for transport would be the same materials
20 that you would want to have in a disposal situation.

21 So, I think there are some technical differences.
22 I think there are a lot of technical similarities. But I
23 think there are some differences as well.

24 And I think again, the sealing operation for the

1 repository is different than would be the case for simple
2 storage and transport.

3 DR. BREWER: Any other questions from the floor?
4 Please come forward. Identify yourself please.

5 MR. LEE: I am Bill Lee with Sierra Nuclear and as
6 part of a response to Ivan Stuart, we are the suppliers of the
7 VSC system to the Palisades plant that you discussed this
8 morning.

9 But, the VSC system is the start of what you are
10 talking about as a UCS system. We do have a concrete
11 overpack. We do have a seal container, and we do have a
12 preliminary design for a metal transport cask.

13 We don't have a disposal overpack because of the
14 repository uncertainties, or anything like that, but as a
15 response to Ivan, yes, our duck looks a lot different from
16 your duck. And also, our duck is a lot cheaper than your
17 duck.

18 But it is -- what we already have is something that
19 is being licensed for storage right now, and you heard from
20 the NRC that we are in the final stages of getting that
21 certification. I just want to remind you, we already have
22 been approved under the topical report.

23 DR. BREWER: Thank you. Any other commentary from
24 the floor, or small commercial announcements.

1 [No response.]

2 DR. BREWER: If not, many thanks to the three of
3 you and to everyone this afternoon for a very, very enjoyable
4 session. We will adjourn as a Board until 9:00 tomorrow
5 morning. Thank you all very much.

6 [Whereupon, at 4:25 p.m., the meeting recessed, to
7 reconvene at 9:00 a.m. on Wednesday, January 6, 1993.]

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