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UNITED STATES NUCLEAR REGULATORY COMMISSION'S

ADVISORY COMMITTEE ON NUCLEAR WASTE

May 24, 2006

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

1 UNITED STATES OF AMERICA

2 NUCLEAR REGULATORY COMMISSION

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4 ADVISORY COMMITTEE ON NUCLEAR WASTE

5 + + + + +

6 170TH MEETING

7 + + + + +

8 WEDNESDAY,

9 MAY 24, 2006

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11 ROCKVILLE, MARYLAND

12 + + + + +

13 The Committee met in Room T2 B3 of the

14 U.S. Nuclear Regulatory Commission, One White Flint

15 North, 11555 Rockville Pike, Rockville, Maryland, at

16 8:30 a.m., Michael T. Ryan, Chair, presiding.

17 PRESENT:

18 MICHAEL T. RYAN	ACNW Chairman
19 ALLEN G. CROFF	ACNW Vice Chairman
20 RUTH F. WEINER	ACNW Member
21 JAMES H. CLARKE	ACNW Member
22 WILLIAM J. HINZE	ACNW Member

23

24

25

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4 Industry Roundtable Discussion

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6 Julie Clements 20

7 Dr. Joseph Ring 32

8 Steve Romano 44

9 Todd Lovinger 52

10 Henry Porter 64

11 Public Input:

12 Jim Lieberman 72

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

2 (8:31 a.m.)

3 CHAIRMAN RYAN: All right. Can we come to
4 order, please?
5 The meeting will come to order. This is
6 the second day of the 170th meeting of the Advisory
7 Committee on Nuclear Waste.
8 My name is Michael Ryan, Chairman of the
9 ACNW. The other members of the committee present are
10 Allen Croff, Vice Chair, and Ruth Weiner, James
11 Clarke, and William Hinze.
12 During today's meeting the committee will
13 continue to conduct a working group meeting on low
14 level radioactive waste management issues.
15 Mike Lee is the Designated Federal
16 Official for today's initial session.
17 The meeting is being conducted in
18 accordance with the provisions of the Federal Advisory
19 Committee Act. We have received no written comments
20 or requests for time to make oral statements, save
21 one, which I'll mention in a minute, from members of
22 the public regarding today's session. Should anyone
23 wish to address the committee, please make their
24 wishes known to the committee staff.
25 It is requested that speakers use one of

1 the microphones, identify themselves, and speak with
2 sufficient clarity and volume so they can be readily
3 heard. It is also requested that if you have cell
4 phones or pagers you kindly turn them off.
5 Thank you very much.
6 We have had one request to make a short
7 presentation to the committee from Jim Lieberman, and
8 that will occur after our first panel discussion. Jim
9 ha asked for a few minutes to present some information
10 relative to very low activity waste, and we'll be
11 happy to hear his points of views.
12 A couple of items on the panels today. On
13 Panel 1, Bill Sinclair from Utah is not able to be
14 with us today, and so he is not here.
15 Panel 2, Mike Elsen also has had other
16 schedule changes that preclude him from being here,
17 and we're happy that Dr. Judith Johnsrud is back from
18 some travel in Russia and Europe and will be with us
19 on Panel 2.
20 So that's an update. An item from
21 yesterday. For anyone that wants a copy of the low
22 level waste white paper that we transmitted to the
23 Commission, please make your wishes known to Mike Lee.
24 I also mentioned briefly yesterday that we
25 are having an expanded discussion of the NRC's de

1 minimis position as it was presented some years ago.
2 New appendices which we've added summarizing DOE
3 approaches to managing defense low level waste. We've
4 completed the appendix on the recent staff technical
5 assistance projects in bibliographic form.
6 We've added for reference the Advisory
7 Committee on Reactor Safeguards' letters that they've
8 written on low level waste over the year, of which
9 there are 12, and we've corrected some typos and the
10 usual editorial items that one finds.
11 The committee will issue a NUREG. It will
12 be No. 1853, some time in the summer of 2006, which
13 will be the historical information on low level
14 radioactive waste in the United States.
15 I might also mention that Todd Lovinger
16 from the Low Level Waste Forum is sitting in for Bill
17 Sinclair and is joining us and will be a participant
18 on this panel, and we'll be happy to take any
19 information back to the forum and other members and
20 inform us of anything that he might want to follow up
21 on thereafter.
22 Welcome and thanks very much for sitting
23 in. We appreciate your being with us.
24 For this morning's panel, what I thought
25 I would do first is remind everybody of the questions

1 that we've put forward to try and address the panel,
2 and let me finish introducing everybody on the panel
3 first.
4 Mark Carver from Energy. Mark is here to
5 the left.
6 Julie Clements from the U.S. Army Corps of
7 Engineers. Julie, welcome. We're happy to have you
8 here.
9 Joseph Ring from Harvard University. Joe,
10 welcome.
11 Steve Romano, whom you all from yesterday
12 from U.S. Ecology, and having report, again, from
13 South Carolina, is here on this morning's panel.
14 These are the couple that we'll have today.
15 Come on. I love it when computers take
16 time to warm up.
17 Okay. The questions that we developed in
18 our prospectus for this working group, were there any
19 actions, regulatory or industry initiated that can or
20 should be taken with regard to specific issues and low
21 level waste?
22 We've touched on a few yesterday. First
23 is greater than Class C waste, sealed sources, and the
24 items of storage, disposal, tracking, and security
25 came up. Class B and Class C low level waste,

1 disposal availability and cost. We heard a number of
2 comments in that area. Depleted uranium, disposal
3 options for those kinds of materials.
4 We've talked and touched on the issues of
5 extended storage of low level waste, low activity
6 waste, and very low activity waste disposal options.
7 We'll hear a little bit about that from Mr. Lieberman
8 in a while. On site disposal, waste dilution. We
9 heard a couple of comments on that subject, and
10 anything else you might think the committee would
11 benefit by hearing.
12 What actions could be taken by the NRC and
13 other federal and state authorities for that matter,
14 as well as by private industry and national scientific
15 and technical organizations to optimize the current
16 management system of commercial low level waste and
17 improve the future outlook.
18 Which of the following investments in time
19 and resources would like yield the best benefit,
20 changes in regulations, changes in guidance, changes
21 in industry practices or other. I think we referred
22 to that at least in part yesterday, and I'll be
23 curious to see if it's reinforced; that it's best to
24 keep it simple and do the simple things first, which
25 is change guidance, change license conditions and

1 permits and have individual submittals for specific
2 issues and problems, those kinds of things, but we'll
3 explore that some more today.
4 What are the key safety and cost drivers
5 and/or concerns for your organization relative to low
6 level waste disposal?
7 Fourth, what are the unintended
8 consequences that might result from postulated changes
9 identified in the questions above? And that's
10 sometimes hard to read, but I think it's helpful and
11 important for the staff of NMSS to have any insights
12 you might have of how things might be linked.
13 We all know that the low level waste
14 definitions are linked to many other regulations. So
15 whatever we come up with is a good idea, will have to
16 be explored and tested to see if there are any
17 unintended consequences. So any insights you can
18 offer there I think would be helpful.
19 Lastly, if you assume that the legislative
20 and regulatory framework remains unchanged, what would
21 you expect the future to look like regarding the types
22 and volumes of low level waste streams and the
23 availability of disposal options for Class A, B, C,
24 and greater than Class C waste, say, five years from
25 now or 20 years from now?

1 I think we've got some insight at least
2 from the power industry, from Ralph Anderson
3 yesterday, who presented some projections for the
4 nuclear power industry, including decommissioning now
5 later out in time in the 2030 time frame and beyond.
6 So we had both cost and volumetric information at
7 least for that segment. But others who deal with
8 other segments of waste generation might have some
9 additional insights.
10 And finally, how might potential future
11 disposal scenarios affect low level waste in disposing
12 in the United States in terms of the regulatory
13 system's reliability, predictability, and
14 adaptability, the regulatory burdens, including cost
15 on generators, and safety, security, and protection of
16 the environment?
17 So pretty broad questions to finish up,
18 but I offer those to you to think about as you make
19 your comments, and I hope each of you will make a
20 short presentation. Let's see. Just to kind of set
21 the stage, we're now at about two hours and 15
22 minutes. So if you each wanted to take ten or 15
23 minutes and then open it up for discussion and
24 dialogue and questions from committee members and so
25 forth, we'd be happy to do that.

1 In no particular order, other than
2 alphabetical I was going to suggest, Mark, if you
3 would lead us off, we'd be happy to hear from you.
4 Again, Mark is from Energy, and we'll hear
5 his views.
6 MR. CARVER: Do you want me at the podium
7 or does it matter?
8 CHAIRMAN RYAN: If you're comfortable in
9 your chair, that's fine. As long as we can hear you
10 in the microphone, we're off to the races.
11 Thank you.
12 MR. CARVER: Okay. Can everybody hear me?
13 I was asked to come to speak and discuss
14 the utility perspective for low level radioactive
15 waste. As a big utility fleet of ten reactors, we
16 have several issues when it comes to low level
17 radioactive waste as well as the dry fuel storage.
18 The cover page discuss background information, waste
19 disposal availability, our RAD waste liability,
20 strategic outlook and scenarios that we have, the
21 prerequisites for effective implementation for our
22 utility, initiatives including storage initiatives,
23 large component and irradiated hardware issues, and a
24 summary.
25 The background information. Everybody

1 knows most everything that's been covered yesterday,
2 but we deal with New York and Massachusetts who don't
3 have a compact affiliation. Arkansas, Louisiana,
4 Vermont, Mississippi are in three different compacts.
5 Barnwell is due to close in 2008. Currently
6 EnergySolutions accepts Class A waste, not all Class
7 A waste.
8 Numerous state processors throughout the
9 U.S. can provide consolidation to some activities.
10 You're right. Again, there's a little
11 echoed affiliation, Pilgrim, Massachusetts, ANO,
12 Central Interstate Compact, Fitzpatrick, River Bend,
13 the three Indian Points utilities, Vermont Yankee and
14 the Texas Compact,Grand Gulf, which is in the
15 Southeast Compact, and Waterford 3 in the Central
16 Interstate Compact.
17 Several issues with the compacts we
18 discussed on Monday. They provide a lot of insights
19 to where we've been and where we're going.
20 As far as waste disposal availability, I
21 don't want to belabor all of this, but Class A waste,
22 Barnwell and EnergySolutions; Class B and C at
23 Barnwell for the utilities I deal with; closure
24 Barnwell, 2008; Southeast Compact, no potential site;
25 Texas Compact, license no earlier, construction no

1 earlier than 2009; Central Interstate Compact, we're
2 finishing up with some litigation settlement within
3 the State of Nebraska and the Interstate Compact
4 Commission.
5 A little bit of too many graphics provided
6 there.
7 (Laughter.)
8 MR. CARVER: As a utility with Sarbanes-
9 Oxley, we've been very aware of what goes on to make
10 sure we maintain and provide a RAD waste liability to
11 the upper management of our utility as combined
12 through plant costs and the increases that have
13 occurred since 1998 and in some cases have doubled.
14 Tracking procedurally based, we provide
15 waste generation reconciled monthly for each utility
16 based on what we ship to processors and what we have
17 stored on site, and we do have liability goals that
18 are set for each utility.
19 We have strategic scenarios. These are
20 basically scenarios that are placed out there for each
21 one of us to look at as far as initiatives, and we
22 built specific initiatives from each scenario:
23 Barnwell closure in 2008; EnergySolutions obtains
24 license for accepting all classes of waste. It's
25 probably the best scenario for us right now, but it's

1 probably very low probability.

2 Scenario 2, the Barnwell closure in 2008,

3 no more compacts open at disposal site.

4 Scenario 3, we discussed Barnwell closure

5 only.

6 Scenario 4, no disposal available or due

7 to economical decisions. So utility decides not to

8 ship waste. That is in both case, whether Barnwell

9 closes or not.

10 Scenario 5, Barnwell allows continued

11 access, business as usual.

12 From there we built our initiatives. For

13 that we decided we would have some prerequisites for

14 effective implementation. Along with that was utility

15 had to have adequate budgeted funds, consolidated

16 approach for implementation of our strategies,

17 consolidated use of long term contracts. We felt that

18 was very important. An aggressive schedule for

19 disposition of waste. Management support for whatever

20 appropriate strategy is utilized at the utility.

21 Review and oversight of the implementation

22 by upper management is very important for us. We have

23 a focus peer group that involves every utility.

24 Proactive leadership in the development of disposal

25 options, and aggressive programs within our utilities

1 focusing on RAD waste reduction and standardizing our
2 practices.
3 Then from there we developed our
4 initiatives, the long term agreements for processing
5 and disposal. We're maximizing our Class B and C
6 shipments to Barnwell, especially irradiated hardware.
7 Storage capacity and volume evaluation for each site
8 was done to the end of life, including Class B and C
9 waste, irradiated hardware, and Class A waste.
10 Also, we've determined that we have a very
11 low amount of mixed waste, but it may be an issue
12 later on.
13 Storage facility construction or
14 modification. We have storage facilities at each one
15 of our utilities for all wastes up to a certain level
16 of combined Class B/C waste storage. We have one
17 utility that would need to take into consideration
18 within five years to start looking at building or
19 constructing a disposal, well, actually a storage
20 facility on site.
21 We had looked at storage for decay option,
22 activity distribution over a larger media, which meant
23 we would run our filter medias at a shorter frequency
24 to basically maintain it as a Class A waste so that we
25 did have an option for disposal or processing, and a

1 perpetual waste minimization program at each site.

2 Part of the NEI team that was operating

3 last year and continues to slowly work towards helping

4 the industry as far as initiatives on low level

5 radioactive waste strategy, working with EPRI on some

6 source term initiatives as well, which may affect

7 that.

8 And as far as everything goes as far as

9 the utility goes, we feel that supporting initiatives

10 on changing guidance, updating guidance to make things

11 easier for the utilities as far as the Class B and C

12 waste goes would probably be the best, as you

13 mentioned earlier.

14 What we did was we looked at and evaluated

15 the Class B and C residents and filters, storage of

16 those filters on site based on dose rates and activity

17 levels. We considered the fence line considerations.

18 We looked at whether we would store

19 processed or unprocessed waste. We also looked at the

20 possibility of storage at another one of our sites.

21 One utility has done that. It's something that is

22 being led by our corporate office in White Plains. It

23 could provide some savings as far as storage and

24 transportation goes.

25 Large components. We also looked at that

1 as well. Utilities have a mixed bag of what actually
2 occurs in the industry. We have a large component
3 issue at Entergy in the most part because we do store
4 a lot of them on site. We don't get rid of them.
5 The decisions have been mandated and
6 evaluated through our utility. We haven't been
7 standardized, but we're looking to standardize that.
8 So we're looking at projects to utilize more effective
9 decision making, different options in evaluating the
10 use or partial use of decommissioning funds.
11 The other potential options are areas that
12 we've been looking at, including foreign companies to
13 come in as well to help us with that, as well as the
14 U.S. processors that exist currently in the United
15 States.
16 Rated hardware. We do periodically
17 inventory that for a RAD waste liability standpoint.
18 It's continuously completed at each utility. The
19 stored liability is based on equivalent volume of
20 today's disposal cost, basically what it would take at
21 Barnwell to dispose of the waste.
22 And each utility ranges from a few hundred
23 thousand to more than a million, and currently we're
24 doing an irradiated hardware campaign at Pilgrim,
25 followed by Vermont Yankee, and then we have two more

1 in 2007. This is mainly a BWR, a boiling water
2 reactor, issue.
3 I do have a few other slides that were in
4 summary. I guess I'll try and go back to it. I'm
5 having some difficult with the slides.
6 (Pause in proceedings.)
7 CHAIRMAN RYAN: Chris, rather than have
8 you just kind of read to us, why don't we just go
9 ahead and take a few minutes break in place and we'll
10 just reconvene at nine. That will give Theron a
11 chance to figure out what happened.
12 So take about a seven minute break here
13 and come right back at nine o'clock.
14 (Whereupon, the foregoing matter went off
15 the record at 8:50 a.m. and went back on
16 the record at 8:58 a.m.)
17 CHAIRMAN RYAN: I've been reminded to
18 speak directly into the microphone myself. So I would
19 ask others to lean in so everybody can hear. The room
20 is full, and it's helpful if we do that so everybody
21 can hear.
22 And let me turn it back to you, sir, Mark,
23 and take us away.
24 MR. CARVER: Okay. I'm going to try. I'm
25 not going to try and go back to it because it might be

1 a little bit more difficult, but the slide that had
2 the irradiated hardware, it did mention the few
3 hundred thousand to more than one million, and I just
4 wanted to make sure everybody understood that was in
5 reference to dollars as far as liability goes.
6 CHAIRMAN RYAN: And dollars for disposal?
7 MR. CARVER: Correct, and equivalent
8 dollars to today's disposal prices. That's correct.
9 And I got off the summary slide you got me
10 on, but I apologize for that. So here it is, the
11 third bullet. That should be dollars.
12 Under the summary, I know that this first
13 one is probably going to be something that even from
14 Monday's meeting that I attended may impact a lot of
15 people as far as how they feel, but as a nuclear
16 utility we felt that we have large pockets, but we do
17 know that there's risk to everything that we do, and
18 there are some issues as far as whether we feel
19 there's immediate waste disposal capacity issues.
20 And as far as no immediate issues, I meant
21 that till June 2008 that's the first time that Class
22 B and C will be a stretch for us to get rid of and at
23 least process and store. That is the first major
24 capacity loss for us as a utility.
25 The ongoing initiatives that we have going

1 on for now range in a five to ten-year plan. So we
2 feel like we've been planning for this throughout the
3 years. We continue to update our five and ten-year
4 plans to make sure that we can mitigate issues that
5 come up, such as this issue with Barnwell's closure.
6 We also maintain the outlook for further
7 disposal capacity. We understand that we provide a
8 good bit of support to the industry for initiatives
9 that are ongoing. We know that the capacity for
10 compact intervention as well as federal intervention
11 may be a time limiting issue. So we look to support
12 other groups that help us with regulatory changes as
13 well in that arena.
14 We know that energy solutions, capacity is
15 not fully unlimited. We know that there is some
16 intervention that needs to be occurring at the federal
17 level. We utilized NEI. We have supported EPRI in
18 their efforts for collecting the data for the GAO. We
19 look to our vendors as well for strategies that they
20 may support us with, as well sa the United States, as
21 well as the vendors from abroad.
22 Compacts. We are within the Texas
23 compact, and we know that no activities that we
24 discuss with them there go beyond disposal,
25 construction, and licensing for the Vermont and Texas

1 utilities.

2 We also looked to the other companies to

3 help generate those potential disposal sites or

4 disposal options.

5 And that's my presentation. It took a

6 little more than ten minutes. I had to break.

7 CHAIRMAN RYAN: Oh, that's okay. No

8 problems. That's fine.

9 Next up, Julie Clements from the U.S. Army

10 Corps of Engineers.

11 MS. CLEMENTS: Thanks.

12 Good morning, all. I'm going to discuss

13 with you, I guess, the other end of the RAD waste

14 spectrum. Mark talked about what I'll consider the

15 upper end, the B, the C, and this presentation is

16 going to be on the way other end. Specifically, I'm

17 going to talk about the Corps' experiences dealing

18 with disposal of low activity radioactive waste.

19 This is a quote from NCRP Report 139.

20 "The RAD waste classification system is complex. It

21 is not transparent to the public who are increasingly

22 involved in decisions about management and disposal of

23 waste, and it is not understandable by anyone but a

24 studied expert."

25 I love this quote. I think it pretty much

1 sums up the RAD waste classification system, at least
2 on the lower end that we have to deal with.
3 Now, if you're one of these studied
4 experts, you might be thinking to yourself, "Well,
5 what's the big deal? I've definitely got job
6 security," right? But if you're a waste generator
7 like the Army Corps of Engineers is, you'll know that
8 the classification system is extremely difficult to
9 navigate and could be improved.
10 A quick outline of what I'm going to go
11 over. If you're not familiar with who we are, I
12 thought it would be helpful just to spend a minute or
13 two talking about USACE, U.S. Army Corps of Engineers,
14 what we do, our site remediation framework, and then
15 challenges that we encounter when we try to classify
16 waste streams.
17 To try and put this in perspective, I'm
18 going to go through at least one example of a low
19 activity RAD waste classification scenario, and then
20 I'm going to discuss changes that we'd like to see to
21 the current waste classification system.
22 USACE is a major Army command. We are led
23 by the Chief of Engineers who is a staff officer at
24 the Pentagon. We're organized geographically into
25 eight divisions within the United States, but we've

1 got 41 districts worldwide.

2 We either support or we manage numerous

3 environmental missions. This is one of the five broad

4 areas of work that the Army Corps of Engineers does.

5 I'm going to give some examples of environmental

6 missions that we support.

7 We support, for example, EPA in its Super

8 Fund program. We support the Base Realignment and

9 Closure Program, but there are other environmental

10 missions that we manage. We manage the FUSRAP

11 Program, the Formally Utilized Sites Remedial Action

12 Program, and we manage FUDS, and FUDS is Formally Used

13 Defense Sites.

14 In the course of all of this environmental

15 work that the Corps of Engineers does, we generate

16 very large volumes of low activity RAD waste that we

17 dispose on an annual basis. I think it's safe to say

18 we're one of the largest generators of LARW out there,

19 at least in the U.S.

20 Common radionuclides that we deal with are

21 uranium, radium, thorium, sometimes some 11-E1s, such

22 as Cesium 137, Strontium 90. Typically the physical

23 format we deal with is we're working with contaminated

24 soils, and in some cases contaminated building debris.

25 This is the framework that we conduct most

1 of our remedial actions within. Most of our work is
2 performed in accordance with CERCLA and its
3 implementing regulation, the National Contingency
4 Plan. Often we execute this work as the lead federal
5 agency. This is particularly true when we're
6 responding to releases at a DoD site, and it is often
7 true at our FUSRAP sites.
8 If you're familiar with CERCLA, if you're
9 familiar with the MARSSIM process, you understand that
10 there's a lot of similarities between the two, the
11 remedial processes in the two frameworks. This was
12 not an accident. The authors of MARSSIM did this
13 intentionally.
14 Both the CERCLA remedial process and the
15 process outlined in MARSSIM starts with some sort of
16 a preliminary site assessment where you look at a site
17 and you look at the site history. You might make some
18 initial conclusions about whether or not there's
19 contamination at the site. If you determine at least
20 preliminarily that there's unacceptable amounts of RAD
21 contamination at your site, your next step is usually
22 site characterization.
23 And it's at this point, the site
24 characterization point, where waste streams are at
25 least initially identified and where we at least

1 preliminarily start to attempt waste classification.

2 Waste classification is so important

3 because that's the step that's required to determine

4 what laws and what regs apply to that material, and we

5 must do that to figure out how we can legally dispose

6 the material.

7 If we're ever able to classify the

8 material and dispose it off site, then we use MARSSIM

9 to demonstrate site closeout.

10 Waste classification for us at least at

11 this low end of the spectrum is so difficult because

12 it's a two-step process. It's not enough just to look

13 at the analytical data that's available about a waste

14 stream. It's not enough just to look at what

15 radionuclides are present and in what amount. We must

16 also look at the historical information that's

17 available about a site. We must determine how the

18 waste was produced, when it was produced, et cetera.

19 Because it's important to know the source

20 of the contamination at your site to determine the

21 waste classification, the NCRP and others have

22 described this system as a source based system. We

23 have to know the source of the contamination. We have

24 to know where it came from.

25 As you'll see when I go through the one

1 example that I have, there's a lot of shortcomings to
2 having a source based system. It's complex, as I
3 alluded to in the NCRP quote. At least for the Army
4 Corps of Engineers it has not been an efficient use of
5 our resources. We spend a lot of time and money on
6 waste classification.
7 As you'll see when I go through my example
8 as well, the current system can't be defended on the
9 grounds of human health protection. You'll see wastes
10 within a single category don't represent similar
11 risks.
12 All of this can have adverse impacts on
13 competition, which affects our costs, which also
14 affects our project schedule, and in some cases,
15 you'll see where unnecessarily utilizing valuable
16 facility capacity at Part 61 licensed facilities.
17 There was a lot of examples I could have
18 gone through. I started off with three examples, and
19 I narrowed it down to one in the interest of time.
20 This example is from one of our FUSRAP sites, the
21 Maywood Super Fund site in Maywood, New Jersey. Short
22 and sweet, here's the history of the site.
23 Approximately 100 years ago the site operator began
24 some processing operations. He processed material for
25 the rare earth content and in some cases materials

1 were processed for their thorium content.

2 As a result, buildings were contaminated.

3 Waste lagoons were created, and material was

4 transported off site. Sometimes this was done

5 intentionally, and some of these off-site releases

6 were unintentional.

7 The NRC licensed site operations in 1954.

8 Shortly thereafter, in 1957, the site owner stopped

9 producing thorium processing residuals. That

10 particular operation ceased. The site operator

11 conducted some clean-up operations, and he

12 consolidated the wastes that were generated during the

13 clean-up into three on-site burial pits. These three

14 pits were licensed in 1978 by the NRC, whereas

15 previously the old license covered thorium processing

16 operations. In '78, that old processing license was

17 narrowed in scope to cover just these three burial

18 pits.

19 In 1983, the EPA put the Maywood site on

20 the NPL, and just shortly after that, Congress placed

21 the Maywood site into the FUSRAP Program.

22 So the Army Corps of Engineers is tasked

23 with cleaning up this site, and as I said, one of the

24 steps that we have to go through is waste

25 classification. If you look at the history of the

1 site, one could argue that the residuals that are
2 present at the site are thorium processing residuals,
3 and therefore, the waste that we generate should be
4 classified as tailings or 11(e)(2) material.
5 But if you look at the analytical data at
6 least for some of the contaminated soils at the site,
7 you'll see that the uranium and thorium content in
8 those soils is greater than 0.05 weight percent. So
9 based on the analytical data, this could be source
10 material as well.
11 We got some clarification ultimately from
12 the NRC in a letter in 2001 where they agreed that the
13 material could be 11(e)(2) based on the history of the
14 site. Material also could be classified as LLRW based
15 on its source material content.
16 Rather than impose two sets of legal
17 requirements on the same material, we'll call all of
18 the material tailings for all of the 11(e)(2)
19 material, for purposes of disposal regardless of the
20 source material content.
21 As I said, some of the tailings had been
22 transported off site in the 100 years that have
23 transpired, and as a result there are some soils out
24 there that are contaminated with 11(e)(2). So these
25 aren't just processing residuals, but rather soils

1 contaminated with processing residuals.

2 So the bottom line is we've got 11(e)(2)

3 material with much lower specific activity than

4 typical tailings, for example, tailings out of the

5 mill. In fact, the specific activity for a lot of

6 these soils is much less than the waste acceptance

7 criteria at U.S. Ecology at Idaho.

8 USACE stepped back and looked and realized

9 that, in fact, we are currently sending similar or

10 identical material to U.S. Ecology, Idaho, similar or

11 identical in terms of the physical, chemical an

12 radiological properties.

13 So it made sense to us to pursue a 10 CFR

14 20, 2002 request. We've heard from the NRC that what

15 we have out there is licensed 11(e)(2) material. This

16 material, however, is very low in specific activity.

17 It could meet U.S. Ecology's or it does meet U.S.

18 Ecology's waste acceptance criteria. So all of this

19 made sense to us.

20 We spent, again, some time and money

21 assembling a 2002 request to dispose this material at

22 U.S. Ecology, Idaho. We estimated dose and dose rate

23 using TSD dose and Microshield. We determined that

24 our critical receptor is actually the worker at U.S.

25 Ecology's rail transfer facility who's involved with

1 transferring material from a gondola and placing it
2 into trucks and then trucking it to the site. He's
3 our critical receptor.
4 Using the most conservative assumptions in
5 our modeling, we estimate that dose to this worker,
6 the total effective dose equivalent would be 4.7
7 millirem per year. Again, this is our most
8 conservative assumption. This is assuming that all of
9 the waste we sent to the facility was at U.S.
10 Ecology's WAC.
11 But, in fact, when you look at the
12 material that we've been sending off site for the
13 years 2001 to 2004, the average activity in the
14 material we're disclosing off site is only at 25
15 percent of U.S. Ecology's waste acceptance criteria.
16 So we expect the total dose equivalent to the -- our
17 critical receptor to actually be much less than one
18 millirem per year.
19 Just last month the NRC responded to our
20 2002 request, and the response that we got wasn't what
21 we wanted, but nonetheless the response was because
22 the Army Corps of Engineers is not the licensee and
23 because we're not even an applicant for a license,
24 that we're not eligible to make a 2002 request.
25 So currently the Maywood material,

1 although it's only at 25 percent of U.S. Ecology's
2 waste acceptance criteria, because of its
3 classification, its source base classification, at
4 this time it cannot be exposed at U.S. Ecology, Idaho,
5 and we can't realize the cost savings with that
6 approach.
7 What would we like to see happen? In a
8 perfect world, we'd like to see the source based waste
9 classifications eliminated. We'd like to eliminate
10 the need for case-by-case exemptions. We would
11 embrace two concepts. We would certainly embrace a
12 classification system that was based on health risks
13 that could arise from waste disposal, and we feel that
14 a risk based waste classification system to be
15 meaningful, it has to also have a general class of
16 exempt waste.
17 And here we're talking specifically about
18 an exemption for purposes of disposal. We're not
19 saying that these materials should be exempt for any
20 reuse, but for purposes of disposal, and this would be
21 determined based on risk and the risk would be
22 determined to be negligible in the exempt waste class.
23 These views are consistent with the
24 recommendations of the NCRP in NCRP Report 139. These
25 recommendations have been endorsed by the Health

1 Physics Society, and these concepts are consistent
2 with the recommendations of the IAEA.
3 What would be the outcome of having a risk
4 based classification as opposed to a source based
5 system? We believe you would see improved
6 consistency. A pico Curie would be a pico Curie.
7 That's what we say in the trenches. Right now that's
8 not the case. A pico Curie of TENORM uranium that's
9 considered TENORM cannot be disposed in the same way
10 as a pico Curie of Uranium 238. That's 11(e)(2).
11 So we would see improved consistency,
12 improved transparency. This might make even a little
13 bit of sense to the public. It would be defensible on
14 the grounds of health protection. Waste within a
15 single category would represent roughly equivalent
16 risks following disposition. It would allow exempt
17 material to be handled at less cost commensurate with
18 risk.
19 Our fiscal resources are pretty stretched,
20 and we feel like we could better utilize our physical
21 resources. Could it require changes in laws and regs?
22 Sure. Could this take years to develop and to
23 promulgate? Absolutely.
24 But as Paul Lohaus mentioned yesterday,
25 something needs to be done with the very low level

1 material. Bill Dornsife said yesterday -- and I'm
2 sorry Bill is not here to defend himself -- but he
3 said the current system works and it works well.
4 I think we would argue that it sort of
5 works, but it definitely doesn't work well.
6 CHAIRMAN RYAN: Thanks very much. We
7 appreciate your comments.
8 Okay. Next up we have Joe Ring from
9 Harvard, Harvard University.
10 Joe.
11 DR. RING: Thank you.
12 I think I bring a different perspective
13 when I come here. I can talk about universities and
14 medical institutions, but also can talk as a former
15 regulator. For a number of years I was the chair of
16 Massachusetts Low Level Waste Management Board.
17 So some of the comments that I bring forth
18 are from that point of view. Being an academic, I can
19 think about things, and they don't have to be
20 practical.
21 (Laughter.)
22 DR. RING: Thank you for the laugh.
23 All right. I want to give an overview for
24 what we do in academics in a medical institution. We
25 do an awful lot of material work with short-lived

1 material. That we can do with decay in storage. The
2 university has a decay in storage requirement for
3 basically 365 days and less, which really allows us to
4 manage our waste.
5 But that doesn't mean we don't have
6 problems with long-lived materials. We do have
7 problems with Tritium C14, Chlorine 36 and Technetium
8 99. And those pose a real big problem for us. We
9 have denied research because we have not had access,
10 and remember that when we deny research that usually
11 means that we're not letting people do research on
12 medical treatment options.
13 The treatment systems that we see in
14 hospitals, for instance, Tech 99, the only way you can
15 do that research work is with Tech 99M. The only way
16 you can do research work with that is Tech 99. We
17 have one of the largest research groups doing rated
18 pharmaceutical research, and we have severely limited
19 their research applications because of disposal
20 access.
21 We also have concerns with medical
22 sources. We do use large sealed sources, and those
23 sources have now been around long enough that we're
24 concerned about how we're going to get rid of them.
25 They're starting to decay. So we haven't had a lot of

1 disposal because we've been using the sources, but now
2 the sources are getting small, which means the patient
3 treatment time is getting long. So now you have to
4 start thinking about getting rid of that source.
5 We're very concerned about the access to
6 disposal capacity for B&C wastes. That's a real
7 problem.
8 I also want to give a little background on
9 how materials are used in the research environment.
10 I like to say that research is used, a hassle factor
11 determinate, when they want to use materials. Right
12 now I know that researchers use alternative methods
13 because they are a lot easier to use, but they are not
14 environmentally, population risk responsive. They
15 know that they're working with things in the
16 laboratory that will kill them. That is something
17 that they will tell you.
18 Picric acid, they're working with it. It
19 can kill them, but they can't work with radioactive
20 materials, and it's difficult. So that's something
21 that we all need to think about when we move forward,
22 is we have to think about risk.
23 They also look at cost. They know that it
24 is cheaper to get rid of things that are hazardous
25 material. They also know that they can get rid of

1 some of the substitutes for radioactive materials that
2 they believe are more hazardous that the research just
3 hasn't been done on by throwing them in the trash.
4 That's not responsible from a point of
5 view for overall population risk. Costs are certainly
6 an important piece. We have lots of government
7 regulations about how we have to spend grant money.
8 Grant money has to be spent then. If I can't do
9 disposal option for materials, I can't let the
10 research go because I can't charge them in ten years
11 or two years for waste disposal.
12 The other side is that costs have gone up
13 a lot. I'm going to give you an example, which should
14 come around a couple of times. We had a research
15 group working with Chlorine 36. Years ago their waste
16 disposal budget was $1,000 a year. Two years ago
17 they came to us with a drum of waste. We bit it out
18 to get rid of it. It was $27,000. They had three of
19 them.
20 That's a sizable amount when it's not
21 supported by the grant research. In addition if we
22 got rid of that, we would have had surcharges, and
23 then the state would have come back with an additional
24 surcharge that we would have had to pay for about five
25 years.

1 So those costs all add up, and we have to
2 factor those into the way we do business. We, as well
3 as the researchers, are concerned about site
4 availability. Medial research is growing to the point
5 where as a radiation safety officer it is almost
6 impossible for me to comprehend.
7 My particularly institution just added a
8 750,000 square foot research building which was
9 supposed to be something they would fill over the next
10 three years. It was filled in a year and a half, and
11 they're already renovating and it's two years old.
12 They're building another one on a
13 different campus, and it's bigger than that. I'm told
14 that they already have that filled. Research work is
15 growing. We're concerned about what are we going to
16 do with the materials that come out of that research
17 work, and we're seeing it increased in long-lived
18 material. Tritium and C-14, for some reason and we
19 haven't figured out why, is growing, and that's the
20 only one of the long-lived materials that we do allow.
21 So our current status of Class A waste we
22 can get rid of. Capacity exists. Very concerned
23 about the lack of competition. WE have very few
24 options in our book. That means that we pay a lot
25 more. We k now the comparative cost difference

1 between hazardous materials and radioactive materials.
2 Hazardous materials are a whole lot less expensive to
3 get rid of, and I think that my example of the $27,000
4 drum stands on its own. That really makes a cost
5 concern for researchers as they're trying to put it
6 into their research budgets. That kind of cost does
7 not get readily reimbursed on research grants.
8 We are concerned about the life span
9 issues with the existing sites and the closure of the
10 Barnwell site and other low level waste policy
11 restrictions. Barnwell closing in 2008 is a clear
12 example, and the access capability for Class B and C
13 waste, which would be our larger sources in medical
14 and physics research.
15 We do have existing sources. I have the
16 ability to get rid of the sources, but some of the
17 smaller institutions do not. Some of the problems
18 come around academics who believe that even though
19 they retired ten years ago, they need to keep the
20 sources. You want to get rid of them, but you can't.
21 You can only get rid of them after the researcher
22 leaves. I can see a number of those things coming
23 along as early physics researcher in radiation science
24 start to retire.
25 What do I do with those sources? I don't

1 have options to either keep them or dispose of them if
2 I look five years ago. So that really posses a
3 problem for me. At medical institutions they don't
4 have the privilege of keeping them or storing them,
5 and they don't have the money to get rid of them. So
6 that really poses a big problem for medical
7 institutions.
8 So we do have concerns over Class B and C
9 wastes and long term over disposal access.
10 I think the regulatory structure, and
11 here's where I can really think about things from my
12 management board perspective. We've heard a lot of
13 discussion about the Low Level Waste Policy Act. From
14 my point of view, it was set up to redistribute the
15 responsibilities to the generating states and to
16 reduce wastes.
17 Contrary to some of my colleagues, I
18 believe that the Low Level Waste Policy Act worked
19 exceptionally well. However, I think it worked so
20 well that it doesn't apply, and that will come up on
21 the next slide.
22 We have drastically reduced the volume of
23 the wastes. We not have an economic consideration on
24 our waste disposal sites in many ways. We've
25 decreased access. That's a concern. There have been

1 significant expenditures for no new sites really in
2 the U.S. That comes from somebody's pocketbook.
3 The the concern, having come from a state
4 position, no matter what you do with the Policy Act,
5 you've got to remember that you can't penalize states,
6 which really poses a problem.
7 Your options with the Policy Act are to
8 revise it or repeal it. I don't think those are going
9 to happen because you can't protect the states that
10 have done something and revise or repeal the Policy
11 Act. It's just not going to happen.
12 But I think that there is the possibility
13 that we can look at things a little bit differently
14 and possibly use DOE facilities specially for the B&C
15 wastes to manage the facility or to manage the waste
16 preferably in the greater than Class C waste. The
17 increased volume on that would be exceptionally small,
18 and the site is designed for waste with a higher
19 classification.
20 One of the other possibilities as I look
21 at it is is it possible to use federal land operated
22 by either a federal entity or a private entity to
23 manage low level waste? I think that's something that
24 long term we may need to think about because the
25 economics may not necessary be there to manage

1 radioactive waste facilities across the country.

2 I know there was discussion of what we in

3 Massachusetts call the boutique facility, very small

4 capacity, but cost was very high.

5 The regulatory model. Julie started off

6 for me very nicely. I think it's overly complicated.

7 The classification system is pretty difficult. It's

8 based on source and disposal is based on, if you will,

9 legislation. Your options are depending upon where

10 the waste was generated. You can figure out which

11 rule to go to to figure out how you can dispose of

12 your waste, and it is very difficult for even a

13 skilled person to figure out.

14 I believe that over the extended period we

15 should seriously look at a risk based classification

16 and disposition model. We should harmonize the

17 radiation waste program with nonradioactive waste

18 disposal models at least for the Class C. It may not

19 have any impact on the -- I think I said C. Class A

20 is what I should have said.

21 It shouldn't have much of an impact on B

22 and C waste, but it could and should on Class A

23 waste. When we revise the model, I believe that we

24 should consider security, public health and safety,

25 protection of the environment, total overall risk and

1 cost.

2 Many times I see that we do not look at

3 total overall risk as well sa we should and that's

4 just something that I would like to put out there. I

5 think we cold do revised model based on NCRP-16. We

6 could allow the disposal and record sites in

7 compliance with EPA models for Class A waste.

8 I believe for the very short-lived

9 materials we should look at a Texas style exemption

10 for disposal of short-lived materials and municipal

11 waste facilities, given some classification.

12 I also believe that we should look at

13 clearance. For instance, NCN-1312. I put that into

14 the university's license many years ago. I understand

15 that I was the first licensing in the country to do

16 that. That has had great advantage for us. We used

17 that when we were decommissioning a 50 year old

18 cyclotron, and we needed to know what the bottom level

19 of things that were contaminated was. We were able to

20 send exceptionally high grade copper off of recycling

21 at an enormous cost savings to the university,b ut

22 more importantly, we weren't getting rid of very good

23 quality grade copper.

24 In the Class A, I think that the risk

25 based model would allow us to use RECRA D or C

1 facilities for the low activity and the low mixed
2 waste activity. We could also use uranium mill
3 tailing impoundments for the high volume, low activity
4 wastes or the TENORM wastes.
5 Class B and C, I think it would be very
6 useful to look at a recycling program for sources.
7 Institutions like universities and hospitals have
8 sources that they no longer use that other
9 institutions are looking for, and also it turns out
10 that they don't have enough money to buy the new
11 source.
12 It would be great to connect the two up
13 and recycle the source. That is not an unusual thing.
14 There is an informal system like that set up, but it
15 does not work as well as would be ideal.
16 I don't believe that we should look at storage
17 as an option. Operationally, universities and medical
18 institutions just don't have facilities space to do
19 storage. There are security concerns with that.
20 Space is so tight on the facilities that
21 I support that our waste program is on a campus 40
22 miles away from Boston and we have to truck
23 everything in and out. Disposal is really the only
24 long-term solution.
25 Storage when I was in the Massachusetts

1 Board was certainly not well received by the members
2 of the public, and B&C said before I believe would go
3 into the greater than Class C, it's a very small
4 volume, and I think that would be a reasonable
5 solution.
6 Again, I want to leave on this storage
7 option, having been subject to a lot of the discussion
8 within Massachusetts in the I guess it would be polite
9 to say not so very friendly phone calls at home about
10 centralized storage. This should not be a preferred
11 method. It should only be used if we can find an
12 overall society advantage. It has to be based on the
13 same criteria as disposal and not operational
14 facilities, which is the usual model that people
15 propose.
16 We need to be thinking about total costs,
17 dose, and security, as well as public doses from
18 management and transportation and repackaging.
19 Thank you for the opportunity to present
20 a different point of view.
21 CHAIRMAN RYAN: Thanks very much. That's
22 good insight from a different regulated component of
23 the community. So thanks for being with us.
24 Next up on the list is Steve romano, U.S.
25 Ecology.

1 MR. ROMANO: Thank you.

2 I don't have slides today. I was going to

3 make a few remarks based on some of the comments made.

4 CHAIRMAN RYAN: All right.

5 MR. ROMANO: I think I've probably got you

6 with enough slides --

7 CHAIRMAN RYAN: Maybe we can get the

8 lights up a little bit.

9 MR. ROMANO: -- on my behalf yesterday.

10 I'd like to make some general comments.

11 I will start with something that I think has come out

12 in a number of the different presentations, is that

13 cost is an issue. We've heard that in a number of

14 different areas. We've heard from Larry Camper and

15 what's available to him and his stretched staff, as I

16 would put it. It's an excellent group that I've known

17 and worked with for some years, and I've also noticed

18 the gradual reduction as that staff ha shrunken down.

19 The same resources, resource limitations

20 apply to the Corps of Engineers and other federal

21 agencies, the Department of Energy and others who have

22 limited dollars that they're asked to stretch to clean

23 up a large backlog of sites.

24 Many of these programs are anticipated to

25 be going on for many years. As you look at the SDMP

1 sites within the backlog of NRC responsibility, it's
2 the reality that if it costs a lot of money to clean
3 up a site versus less money, it's going to get done
4 more rapidly on a multiple site basis, even on an
5 individual site. There could be a multi-year clean-
6 up. Cost is an issue.
7 So with that as a bit of a background
8 comment, I'd like to address first low level and very
9 low level and then go to the higher end of the
10 spectrum because there's general agreement that while
11 Class A, at least there are more options than perhaps
12 for some other things. So at the low end of the
13 spectrum, there are savings possible by using other
14 kinds of sites.
15 And my perspective working for a company
16 that operates both RECRA and Atomic Energy Act
17 disposal sites is that they're a safe, protective
18 disposal available on either kind of site, and I think
19 sometimes folks find themselves in too narrow box,
20 thinking the only way we can protect ourselves is by
21 running everything through the Atomic Energy Act
22 structure, and I don't believe it to be true. I
23 believe either structure can work.
24 And from a risk based perspective, I think
25 that deserves careful consideration. As Julie Clement

1 points out, Corps of Engineers is operating under
2 CERCLA largely, and the actions that are taken under
3 CERCLA are not subject to NRC licensing actions in
4 many cases, and as was pointed out, large volumes of
5 waste have gone to RECRA sites in the low activity
6 column via CERCLA actions, via the licenses that these
7 RECRA sites have.
8 Every once in a while as the example
9 Maywood pointed out, there are existing laws that form
10 some characterization classification restrictions that
11 don't allow risk based approaches to proceed. So from
12 our perspective, I guess we would offer two
13 suggestions that we think makes sense.
14 One is that the exemption process does
15 work. The exemption processes have been in place for
16 many years for a lot of materials. You know, one
17 example there is what's been going on for many, many
18 years from the biological waste at a certain level are
19 allowed to be disposed of via the sewer systems, via
20 incineration at a very low level.
21 There's a long history of exemptions being
22 used for materials and exempted from Atomic Energy Act
23 handling. I didn't bring my full list of examples,
24 but there's a lot of them. I have the example on our
25 Idaho license where the whole list of consumer

1 products for many, many years exempted devices and
2 consumer products have been deemed to not require
3 close tracking under Atomic Energy Act regulation.
4 Very important, these risk based, health
5 based judgments, but the President has been there for
6 a long time.
7 As far as the future, I would suggest with
8 the exemption process, there is an increased desire to
9 use it. I believe it has been proven that it can be
10 done in a responsible manner with careful safety
11 analysis, with regulators involved, with the public
12 involved.
13 RECRA has public involvement requirements
14 just as the Atomic Energy Act's implementation
15 includes, and I also agree with Julie's comment that
16 longer term it makes sense to work towards some more
17 general approaches to come to risk versus source based
18 definitions.
19 But that's not going to happen soon. It's
20 not going to happen overnight, and I believe it would
21 be the wrong approach to say that we should stop
22 proceeding down the exemption path because there is a
23 roader global solution that ought to be pursued
24 instead. The experience that many of us went through
25 on the old below regulatory concern rulemaking and the

1 collapse of that effort, I mean, I think it was so
2 resounding a collapse that nobody dares use the same
3 words anymore. So now we talk about clearance and
4 other kinds of things.
5 These kinds of approaches make sense, but
6 there is a danger in ignoring the incremental in favor
7 of the theoretically more perfect. So my
8 recommendation would be to perfect, regularize the
9 approach to exemptions to support the staff. My view
10 would be that staff allocations to that kind of work
11 where you're working to expediting real projects,
12 cleaning up against these STMP sites that have been
13 there for many, may years in certain cases, that
14 that's a good application of resources to address
15 these kinds of sites, at the same time looking towards
16 longer term risk based reclassifications that might
17 make sense.
18 One other point that I would make here is
19 that there's a limited number of Atomic Energy Act
20 sites out there, more limited as we go forward.
21 You've heard this proposal in Texas. I think there's
22 many folks that are hoping that process can move along
23 and can continue to move among, but that's the only
24 project that's out the recurrent right now for a new
25 Atomic Energy Act licensed facility.

1 And you heard about Ward Valley yesterday.
2 You can go down the laundry list. I believe the
3 bejers were put together by NNE in the range of $750
4 million were sent to fail in California and Nebraska.
5 At two previous sites in Texas it didn't happen.
6 Michigan, North Carolina, Illinois, Pennsylvania, New
7 York. These efforts didn't work.
8 And while those things didn't work, other
9 things have. A site was developed in Utah by the
10 folks in Envirocare that has provided a great service
11 that otherwise would not have been met had the country
12 been solely relying on the compact process, and RECRA
13 sites have stepped in and also provided services at
14 the lower end of the spectrum.
15 Turning to the higher end of the spectrum,
16 a couple of perspectives there. I don't understand as
17 fully as I'd like to what the opportunities and
18 potential is for using 61.58 for other ways of
19 considering waste classification.
20 I was around working in the agency in the
21 early to mid-'80s as we were looking to send guidance
22 out on what Part 61 meant and tracked through myself
23 the development of Part 61 through how that whole
24 waste classification system was built, and indeed,
25 much of the Part 61.55 classification tables were

1 based on certain assumptions and developing a
2 regulation that could uniformly work for humid and
3 arid region sites.
4 And there are conservatisms in there, and
5 I believe as one looks to an arid region site, there
6 may be possibilities under 61.58 to reach some
7 different conclusions about classification.
8 I don't pretend to understand what the
9 right direction is there, but it seems like a
10 promising dialogue to be had, and it seems like one to
11 be pushed forward with some broad based stakeholder
12 comment on how that can be useful.
13 Disuse sources is something else that
14 we've tracked carefully. While our Richland,
15 Washington site is restricted to taking only Class A,
16 B, and C waste from the northwestern Rocky Mountain
17 compacts, we are able to take radium water from
18 anywhere in the nation because it's not regulated
19 under the compact system. You know, it's norm.
20 And in fact, at Richland we do take a high
21 activity radium sources, higher than the limits of the
22 other sites, it being an arid region site. And one
23 thing we've noticed there nd perhaps to Joe's comment,
24 we noticed a disconnect between when folks say that
25 sources are waste and when they start saying we have

1 waste to get rid of and then they say, well, no,
2 that's not waste. These sources are going to set here
3 on these shelves, and by gosh, we're going to have a
4 use for these things one day.
5 In reality, the folks might have retired
6 or that thing might not have come off the shelf for
7 ten years. It may or may not be in a good lead pig
8 containing it. DOE's efforts on the off site source
9 recovery program, I believe, are moving in the right
10 direction. I understand NRC staff has been involved
11 in those discussions.
12 In general, I think that the sealed source
13 issue is one that has both the health and safety and
14 the security aspects to it, that perhaps could use
15 some greater attention, and in general, I do not
16 believe storage is an appropriate approach.
17 The one area where at least in my mind I
18 draw a bit of a distinction I that I think there you
19 have an existing federal program set up at Los Alamos
20 National Laboratory to handle these sources. That may
21 be one area where I would carve out an exception and
22 suggest that maybe there's an existing federal program
23 that could provide a safety valve for those kinds of
24 matters.
25 So I apologize for bounding around a

1 little bit. Those are my thoughts.

2 CHAIRMAN RYAN: Thanks very much, Steve.

3 We appreciate it.

4 And again sitting in for Bill Sinclair is

5 Todd Lovinger from the Forum.

6 Welcome, Todd. thanks for being with us.

7 MR. LOVINGER: I have taken some excerpts

8 from a presentation that I made at the Organization of

9 Agreement States. I"m going to o through them rather

10 quickly.

11 A couple of quick caveats. Despite what

12 the sign says, I do not work for the Utah Department

13 of Environmental Quality. I am the Executive Director

14 of the Low Level Radioactive Waste Forum.

15 And as the Executive Director of a

16 national organization that is comprised for entities

17 that include various stakeholders, such as federal

18 agencies, states, compact generators, and so forth, I

19 need to just clarify up front that unless I otherwise

20 state, the views that I'm stating are those of myself

21 and not necessarily attributable to the organization.

22 The last caveat is while Bill is regulator

23 and has a vast experience of scientific and technical

24 knowledge, I am actually an attorney and have a policy

25 background. So I'm going to come at this from a

1 little different perspective and offer a different
2 point of consideration.
3 CHAIRMAN RYAN: Actually it's probably a
4 great addition. So we're happy to have that different
5 perspective and thanks again for being with us.
6 MR. LOVINGER: Very briefly the Low Level
7 Waste Forum originated as technical assistance from
8 the U.S. Department of Energy upon passage of the Low
9 Level Waste Policy Act and its 1985 amendments. The
10 law required technical assistance to the states and
11 compacts, and the forum was the organization that was
12 intended to do that.
13 As originally established, the forum was
14 comprised exclusively of states and compacts, and its
15 purposes were originally to facilitate state and
16 compact implementation of the act and the 1985
17 amendments, as well as to promote the objective of low
18 level radioactive waste regional compacts.
19 In 2001 we reorganized, incorporated and
20 began operating as an independent, nonprofit entity,
21 and we extended our membership to include federal
22 agencies, Generator Facility Operators Association,
23 and all interested stakeholders.
24 And this slide gives you a good idea of
25 the vast and diverse viewpoints that are brought to

1 the table within the organization.

2 Some of our activities include the hosting

3 of two meetings a year, the putting out of

4 publications, newsletters which I've put some on the

5 back. We've put together an annual summary report

6 which provides a brief snapshot, one page, of what's

7 going on in various states and compacts through the

8 regulatory agency as membership.

9 We provide liaison services amongst the

10 different organizations, and we also do special

11 working groups and committees when issues arise.

12 What I want to focus on is what we call a

13 discussion of issues statement which was passed by the

14 organization, adopted on September 22nd of 2005, and

15 the document originated because we found ourselves at

16 our meetings looking at various position statements

17 that were being passed by different organizations,

18 some of which we've heard about, the American Nuclear

19 Society, the Health Physics Society, and the issue was

20 raised that it would be appropriate, given that the

21 voting members being the states and compacts of the

22 forum, are the officially designated governor

23 appointees and compact commission appointees who have

24 direct authority for this issue under current law.

25 The reason that we titled our document a

1 discussion of issues statement instead of a position
2 statement is it really does two things. One, it
3 provides limited consensus views on certain issues
4 because we tend to try to act under unanimous consent.
5 But the other thing is it's intended to
6 serve as an outline to frame discussions, such as the
7 one we're having today, and one that has been had at
8 many meetings on the current status and where to go,
9 and to identify potential issues which must be looked
10 at and considered when having these types of
11 discussions.
12 And I encourage everyone to take a look at
13 it. Copies are in the back, and I know we've provided
14 copies to the committee.
15 Some of the consensus points that we came
16 up with. The first one is when looking at the federal
17 law, we came to agreement that the Policy Act was
18 designed to be flexible and to allow for change in
19 response to events and circumstances. And in our
20 document, we listed some examples of that, the merger
21 and realignment of compacts and states, the coming on
22 line of what was previously known as Envirocare of
23 Utah or is now Energy Solutions' Clyde facility after
24 the passage of the act, and what we just heard about,
25 reduced volumes. That occurred earlier on or midway

1 through the process.

2 I think in the last couple of days we've

3 also hear about ongoing changes that the act has

4 accommodated, such as the use of RCRA facilities, mill

5 tailing sites, the 20.202 document, and so forth that

6 are examples of the continuing flexibility of the act

7 and the act's ability to change to ongoing situations

8 and circumstances as they come about.

9 Another consensus point that we came to is

10 with regard to access, and the point that we want to

11 make here is that currently disposable access exists

12 for all classes of low level waste in all states in

13 the country. In contrast, the federal high level

14 waste in greater than Class C, disposal programs

15 continue to encounter obstacles, delays and

16 uncertainty.

17 The intent here is not to criticize the

18 programs, but rather to point out that as we heard

19 yesterday, 26 years ago this program originated

20 because the governors of the three cited states were

21 threatening to close their borders, and through the

22 operation of the act and the system that we have

23 today, states and compacts have been able to provide

24 for continued access which is an important point

25 that's often lost in the discussion.

1 We also came out with a couple of
2 positions. To review them very briefly, commercial
3 low level waste is well regulated and managed safely.
4 The fact that we have individuals and entities from
5 academia, states, compacts, disposal operators, public
6 interest groups and so forth here today is a testament
7 to that.
8 The second is that the system is flexible.
9 There's no immediate crisis, but we must insure all
10 current and future disposal needs are mete, and this
11 was an intent to recognize the potential lost of
12 access if Barnwell does close as scheduled and no
13 alternative disposal pathways are developed for a
14 significant amount of states for BC waste.
15 And the point that we want to make here is
16 while that is a problem, it needs to be considered and
17 looked at, it doesn't represent an immediate crisis
18 that necessarily requires a complete overhaul or
19 complete throwing out of the accomplishments that have
20 been made to date.
21 In June 2004, the GAO did a report which
22 most people are aware of in which they surveyed
23 generators, and most of the generators being the
24 larger utilities indicated that they have the ability
25 to store this waste indefinitely.

1 We acknowledged that that's not optimal,
2 but we want to point out that it doesn't present a
3 public health or safety risk, which is an important
4 point to make.
5 This is a slide that's included in the
6 document. It's a table taken from the MENS system,
7 which basically shows the reducing volumes and the
8 generally low volumes of Class B and C waste that are
9 generated presently.
10 This third position is what I want to
11 focus, and it goes to the heart of what we're talking
12 about, and that's when evaluating alternatives, it is
13 important to consider political realities, economic
14 consequences, regulatory concerns, and I would add
15 here, unintended consequences.
16 And what we did here was try to look at
17 some of the proposals that have been raised, some of
18 the alternatives, some other things that have been
19 suggested even earlier today, and not come to
20 necessarily consensus, but to raise points for
21 consideration that need to be looked at.
22 The first is disposal of commercial waste
23 in federal facilities, which actually was the subject
24 of the meeting on Monday that was hosted by the
25 Southeast Compact Commission with some co-sponsors and

1 which has been raised as a potential solution today.
2 We did not attempt to come to a consensus
3 position on that we don't advocate in favor or
4 opposition to it. But what we intended to do here was
5 merely raise some important considerations, the first
6 of which is that federal facilities are located in
7 states, and their proposed use will encounter the
8 same, if not elevated, local and state concern
9 associated with the development of new facilities.
10 The second is that until remediation is
11 completed at federal facilities, it will be difficult
12 to convince citizens that they should be allowed to
13 develop new disposal capacity for the acceptance of
14 off-site wastes. And I think the Hanford initiative
15 and the litigation that's going on between the State
16 of Washington and the Department of Energy is a good
17 example of that.
18 A third that I would add here in response
19 to the comment about the use of federal land is the
20 presentation that we heard the other day about Ward
21 Valley and the perception that it was the federal
22 government an the fact that that site was located on
23 federal land, which actually ended up stopping the
24 process in the end.
25 And I guess to pull this together, what I

1 would say is one of the committee members yesterday
2 asked about if a lessons learned document had been
3 done on Ward Valley, and I think that when looking at
4 some of these other alternatives and considerations,
5 you have to look back over the history of the last 26
6 years for lessons learned to determine if what we're
7 looking at or what is being suggested is realistic and
8 can be done.
9 I take to heart Steve comment that what is
10 desired or what is seen as optimal is not always
11 achievable, and sometimes you can get the same
12 results by going about it in a different path.
13 And I agree with Steve that some of these
14 different techniques that have been used, exemptions
15 and so forth, are achieving the same things, but in a
16 manner that's acceptable to the public and acceptable
17 under the current political climate.
18 The second item that we looked at here was
19 the development of commercial disposal capacity by
20 private entities, and this is what's also referred to
21 as the free market, and the suggestion that if the
22 responsibility or authority is taken away from the
23 states and given to individual companies, that they
24 will somehow be able to achieve greater success and
25 develop greater capacity than has been achieved by the

1 states and compacts under the current system.

2 Points that we came up in and agreement

3 were that the act is flexible enough to accommodate

4 the development of a disposal site by a private

5 company either on private, state, or federally owned

6 land, as is evidenced by Envirocare's history.

7 Second is that this is already permissible

8 under many compacts. Individual state law can be and

9 has been amended to allow private companies to develop

10 such facilities, and we cite here the Texas as an

11 example, and then their new season is going to be on

12 this afternoon, but I think it's a good example.

13 Texas went from an earlier system where

14 the state was the applicant to the current system

15 where a private entity is, and it's important as a

16 lesson learned to look at the number of applicants

17 that actually applied, and the answer is one. Despite

18 the fact that three of the main companies that are

19 operating in this market today have land, only one of

20 them submitted a license application, and that's an

21 important thing to look at in reviewing this as a

22 viable option or alternative.

23 The other point was requiring access to

24 new or existing sites. Pressuring states with

25 existing sites or that are developing sites to accept

1 out of region waste runs the very real risk of
2 inviting new restrictions or shutting down sites
3 altogether. For instance, the new Richland sublease
4 includes a provision that the state may terminate the
5 lease of the compact's exclusionary authority.
6 Equity and disposal burden is what
7 originally led to passage of the act, and remains a
8 vital consideration.
9 The fourth and final position is that the
10 federal government provides appropriate assistance to
11 states and compacts related to commercial low level
12 waste management. We've listed some here: ACNW
13 activities, the NRC strategic assessment. There are
14 many others. I think the main point here is the
15 recognition that this is and remains a saving compact
16 program, and while there is certainly a role for the
17 federal government and the federal government provides
18 much needed assistance, it's important that that
19 communication be maintained and that all parties be
20 involved to avoid unintended consequences.
21 So as the conclusion, the conclusion was
22 that the current system provides access for the
23 management of Class A, B, and C low level waste,
24 including disposal to all states. Changing conditions
25 may close off disposal access to Class B and C and

1 some Class A waste for a significant portion of the
2 country, but other opportunities may alleviate or
3 eliminate this problem.
4 While the volume of Class B and C waste is
5 quite small, it remains important that disposal
6 capacity for all classes of low level waste be
7 preserved and developed. Proposals for alternative
8 approaches need to be carefully analyzed from the
9 perspective of all affected parties.
10 I wanted to close with just an observation
11 from this meeting and the meeting on Monday and just
12 other meetings that I have attended. I noticed, and
13 I was talking to some colleagues the other day, that
14 there is a tendency when looking at the system and the
15 current status of where we can go from here to focus
16 on the negatives and the shortcomings, and what some
17 people identify as the failures.
18 And I would submit to you that the
19 committee has a good opportunity to look at the system
20 and promote a more responsible use of resources to
21 pull out the benefits and highlight them and expand
22 upon them.
23 There was some discussion at the meeting
24 on Monday about the primary objectives of the act and
25 whether the main intention of the act was to develop

1 new disposal capacity. I think if you look back at
2 the history, at the reason that the act came about,
3 the reason that the system came about that we have
4 today, that it's pretty clear that the primary
5 objectives were equity, the protection of public
6 health and safety, and continued disposal access.
7 And I think that all three of those remain
8 today, and I think that that's an important point, and
9 that what we should do is look at what's been
10 accomplished and look at ways to continue approving
11 the system to address the very real concerns that
12 Julie and Joe and Mark and other people have raised,
13 without undoing the significant progress that's been
14 made to date.
15 thank you.
16 CHAIRMAN RYAN: Thanks. That's great
17 insight.
18 Last and certainly not least, Henry Porter
19 from South Carolina.
20 MR. PORTER: Thank you, Mike.
21 I don't have any prepared slides either,
22 but I'll just give you some of my thoughts on some of
23 the questions that have been posed. The greater than
24 Class C waste, I mentioned in my presentation
25 yesterday that we have approved and allowed Chem-

1 Nuclear to take some discrete amounts of greater than
2 Class C waste.
3 I think it's important to recognize that
4 there are some greater than Class C wastes that are
5 not acceptable at Barnwell and probably wouldn't be
6 acceptable at most low level waste sites that accept
7 B&C wastes.
8 So there will still need to be a method
9 to look at the ultimate disposal of that waste and to
10 look at storage of that waste possibly for a long
11 period of time, until DOE has a disposal option for
12 that that they're required to have.
13 I'm glad to see that people are looking at
14 the availability of Class B and C waste disposal. I
15 mentioned that an Organization of Agreement States
16 meeting probably five years ago, that Barnwell was
17 going to close to most of the generators and that
18 people needed to start thinking about it.
19 And I think it seemed to have fallen on
20 somewhat deaf ears at the time, but I think that it's
21 one of those issues where until the urgency is there,
22 there probably isn't going to be that much effort
23 placed on it. I think the urgency is here now.
24 Two years from now, that's not a very long
25 time. Two years from now is when the law requires

1 that Barnwell stop accepting waste from out of the
2 compact.
3 Depleted uranium disposal options, I know
4 just from our experience with depleted uranium, we had
5 a facility in South Carolina that operated for a long
6 period of time. They processed depleted uranium for
7 the Department of Defense. They weren't managed well,
8 and we ultimately had to issue an order closing that
9 facility, and EPA has been helpful in getting most of
10 that material off site.
11 The state will ultimately have to do the
12 final decommissioning on that site, and I'm sure that
13 the state and our contractor that we hire will run
14 into similar situations of how do we classify certain
15 wastes and particularly as we look at the lower
16 activity end of that. We'll be in kind of an
17 interesting role as both the regulator and the one
18 holding the money, looking at what's the best option
19 for that waste.
20 But any guidance that the NRC can develop
21 in that area I think would be helpful to the industry
22 and certainly helpful to any state or federal agency
23 that would have to address one of these types of
24 situations.
25 The extended storage of low level waste.

1 We looked at that in South Carolina about ten or 12
2 years ago when the Barnwell site was originally
3 required to close, and our staff went out and talked
4 to the major generators in the state. And what we
5 found at the time, and this was in the mid-'90s, was
6 that the utilities didn't really seem to think that it
7 was going to be a problem for their to store waste at
8 least over the short term.
9 They had locations on site where they
10 could put waste. They had programs in place to be
11 able to manage that waste, and didn't seem to think
12 that the cost for them to do that would be
13 significant.
14 The other generators of waste,
15 particularly the industrial generators of waste and
16 universities, really didn't have any plans at all of
17 how they would manage the waste, and most of them
18 didn't have a location to store the waste, didn't have
19 the financial resources to do it, and I think that's
20 probably an area that the NRC staff could focus on
21 providing some guidance that would be focused more on
22 the non-utility low level waste generators. I think
23 they really need some guidance.
24 With the increased security controls,
25 that's going to be an issue that would need to be

1 looked at, and you know, whether it would be suitable
2 to allow generators to store other people's waste
3 might be something that's worth looking at, too.
4 The low activity waste and very low level
5 waste disposal options, we've addressed that on a
6 case-by-case basis, and that process works. It can be
7 a headache to go through for both the generators and
8 the regulators. We've run into situations where we
9 think it's suitable to send a certain waste stream to
10 a particular non-licensed facility and the facility
11 operator doesn't want to take that waste.
12 So it really is a situation, and I think
13 that's something that needs to be thought about as the
14 NRC continues to look at this, is the operators of
15 non-licensed facilities are not going to want
16 something jammed down their throats that says they
17 have to take this waste.
18 Now, there are facilities that are willing
19 to take waste if a regulator says that it's suitable
20 to go there. So I don't want that to have the
21 appearance that we're saying that that isn't something
22 that should be pursued.
23 On-site disposals, we've look at that. I
24 think it works well for utilities and facilities that
25 we know will be there for a long period of time that

1 are going to have to look at major types of
2 decommissioning.
3 We actually, interestingly enough, one of
4 the utilities that has done some on-site disposal in
5 South Carolina is looking at the location where they
6 did that on-site disposal as the footprint for a new
7 reactor. We've talked to them about how they plan to
8 address that.
9 Fortunately, the waste that was disposed
10 of there had very low amounts of radioactivity in it.
11 It was, from what I recall, sewer sludge, and really
12 it's an artifact of the ability to have better
13 counting, better detection, and I think we're going to
14 continue to run into that as the science and detection
15 of radionuclides improves, and it has improved
16 considerably over the last ten or 20 years.
17 We're going to find out that things that
18 we thought weren't radioactive we're now going to have
19 to say are radioactive because we've detected a very
20 small quantity of some manmade radionuclide in it.
21 Waste dilution, we have historically
22 related to the Barnwell site limited the application
23 of waste dilution really to what's allowed in the
24 branch technical position and what's done with
25 irradiated hardware. We think that that has probably

1 served the industry well. I think it has resulted in
2 a lot of improvements in the waste forms and the
3 packaging that's being used for low level waste.
4 I don't know that there are any exact
5 actions that I would say other than, you know,
6 continue to look at guidance on low level waste
7 storage. I think that's an area that the staff should
8 focus on.
9 Changes in regulations, I think that the
10 current regulation in Part 61, although it could
11 certainly use some improvements, I think that it has
12 ben workable for South Carolina. We have operated a
13 regulatory program with those regulations with a
14 licensed low level waste site now for almost 20 years.
15 So it's a workable regulation.
16 There have been two sites that have been
17 licensed under that, under Part 61, although neither
18 one of them are operating as a B&C. It seems clear
19 that you can license a site under the regulations.
20 So I think the focus probably should be
21 more on regulatory guidance and areas that could help
22 statements and facilities that are looking at becoming
23 licensed and that can help address some of the issues
24 that are things like the very low activity waste.
25 The other thing that I wanted to mention,

1 I know that there's been a lot of discussion about the
2 disposal of variable activity waste or maybe even
3 consideration of disposing of class A waste in a RCRA
4 Subtitle C type facility. And although I think that
5 that could be a suitable approach in an arid type
6 environment, we have in South Carolina RCRA Subtitle
7 C facility that's undergoing closure right now in a
8 humid environment, and that facility has a
9 considerable amount of leachate that's collected from
10 both the primary sumps and the secondary sumps.
11 To give you an idea of how much leachate
12 it is, it's about two million gallons a year. It's a
13 large volume of leachate. It has to be managed as a
14 hazardous waste. It ultimately goes to a waste water
15 treatment plant where it's treated and the water is
16 released.
17 Our experience with the Barnwell site is
18 that tritium is very difficult to contain. Class A
19 waste contains tritium. I think that if tritium
20 containing waste, which most of the utility waste is
21 going to have some concentration of tritium in it; if
22 that's put into a RCRA facility that has a significant
23 amount of leachate associated with it, that's going to
24 create a problem in getting rid of that leachate.
25 I know that there are some provisions in

1 the regulation to be able to release certain
2 concentrations of radionuclides from licensed
3 facilities, but I think that could create headaches
4 for both the facility in operating the facility and in
5 the long term.
6 So I just wanted to bring that up as a
7 thought as you look at the possibilities for
8 alternate. methods of disposal for some waste.
9 And that's all the comments that I had.
10 CHAIRMAN RYAN: Thanks very much, Henry.
11 Now as we know, Jim Lieberman wanted to
12 address the Committee for a few minutes, and summarize
13 his materials that we've been given in written form,
14 and that will certainly be part of our record. And I
15 think Mike Leah of the staff has made copies available
16 in the back.
17 So why don't you just turn around and use
18 the podium? The audience can better hear you and see
19 you as well.
20 MR. LIEBERMAN: Good morning, Dr. Ryan,
21 members of the committee.
22 I am Jim Lieberman, a regulatory
23 consultant affiliated with Talisman, International,
24 I appreciate the opportunity to provide comments this
25 morning on the issue of risk informing Class 61.

1 I wasn't here yesterday, and I regret
2 doing it, regret being absent because it was a very
3 good lesson from all of the comments that I've
4 received.
5 I want to speak today on risk informing
6 Part 61, to address low activity material, the so-
7 called very low level waste.
8 John Greeves and myself, on behalf of
9 Talisman Intrenational, have been considering the
10 issue of very low level waste in light of the cost
11 associated with disposing very low level waste in
12 Part 61 disposal sites.
13 We made a presentation this past October
14 before the inundation of agreement states and
15 discussed with CRCPD the need to revisit Part M of the
16 suggested state regulations. Copies of the slides
17 that we used with the Organization of Agreement State
18 meeting are on the back tables.
19 We provided a letter yesterday to the
20 committee that describes our post to risk informing
21 Part 61 to address very low level waste. Briefly,
22 from our perspective, an approach from very low level
23 waste is to be protective to the public health and
24 safety in the environment and provide for public
25 confidence. Part 61, while protective, overregulates

1 the risk involved creating the unnecessary regulatory
2 burdens.
3 RCRA sites, while they're protective, have
4 public exceptions issues that requires exemptions with
5 the potential for inconsistencies. Internationally,
6 France, Japan, Spain, Sweden have or are considering
7 approaches for disposal of very low level waste.
8 What is needed in our view is a risk
9 informed, performance based approach under the Tom
10 Gange Act authority for very low level waste disposal.
11 For example, given the hazards associated
12 with very low level waste, performance objectives for
13 the intruder could be 25 millirems for allowing a post
14 closure period of, say, for example, 100 years.
15 During the post closure period, the dose of the
16 intruder could be limited to 100 millirems, consistent
17 with the public dose limit nd the levels for
18 restrictive release under the license termination
19 rule.
20 This would simplify design requirements
21 the way the acceptance criteria could be set based on
22 performance objectives after doing performance
23 assessments.
24 Generally, we're talking about a subset of
25 Class A. Government ownership might not be required,

1 given the lower dose limits. A long-term control
2 license similar to that being considered for the
3 license termination rule might be used for the post
4 closure period.
5 In our view the approach that we're
6 proposing should maintain public protection at a low
7 cost in the existing framework under Part 61. It
8 should provide flexibility based on risk. It should
9 add consistency with the international community. It
10 should standardize the directory approach for very low
11 level waste by providing a consistent approach for all
12 states with a level playing field for all disposal
13 operators without the need to rely on exemptions.
14 It should diffuse public comments of those
15 who were concerning the lack of an AEA or Tom Gange
16 Act regulatory system for the disposal of low level
17 waste. It could generate public acceptance.
18 Our letter describes the approach in mo
19 detail and you might consider in your deliberations.
20 In sum, we think part 61 can and should be
21 modified based on risk considerations to provide a
22 cost effective approach for exposure to very low level
23 waste without unnecessary regulatory burdens.
24 I recognize the resource challenges that
25 NMSS faces for low level waste. Very low level waste

1 is not just an NRC issue. States have
2 responsibilities under the Low Level Waste Policy Act.
3 I suggest that the NRC work closely with
4 the states, for example, through the National Material
5 Program review efforts to gain a consensus and
6 approach to be taken for very low level waste.
7 The process to risk inform Part 61 is a
8 journey. It will not happen overnight. Pending a
9 change to Part 61, the exemption process using the
10 RCRA approach may be necessary, but in our view the
11 time is now to start changing the process.
12 Thank you for your time, and I'd be happy
13 to answer any questions.
14 CHAIRMAN RYAN: Okay. thank you, Jim. If
15 you'd just maybe take your seat and we'll call you on
16 if we need you to respond to questions.
17 I guess at this point we have been sitting
18 in the chairs for a long time. I can hear a little
19 wrestling behind me. Why don't we take a very short,
20 ten-minute break and then come back and we'll have Q&A
21 from the committee members and staff with our panel
22 members, and everybody get a little pause.
23 (Whereupon, the foregoing matter went off
24 the record at 10:21 a.m. and went back on
25 the record at 10:33 a.m.)

1 CHAIRMAN RYAN: I'd like to come back to
2 order, and first of all thank all the panel members
3 for a very rich set of presentations and views, and we
4 have I think a pretty good, clear understanding of
5 where each of you come from. And, again, I want to
6 appreciate all of your presentations very much.
7 Before we go to the committee for
8 questions, are there any comments, followups, or
9 additional short thoughts from any of the panel
10 members? Going once, going twice. Okay, great.
11 MR. CARVER: I'll say something.
12 CHAIRMAN RYAN: Oh, yes. Please.
13 MR. CARVER: The only thing is is from my
14 perspective I provided the operating reactors, and the
15 fact is is that we know that with every one of the
16 issues that we levied here and discussed, building new
17 reactors and siting new sites within our industry is
18 a very important thing.
19 So this whole overall picture is something
20 we've been working on as well with the designs of new
21 reactors, the URD, working with EPRI and Westinghouse
22 and GE on their new designs. That is certainly
23 something that we need to keep focused on, as well as
24 everybody else who may have the waste generated -- A,
25 B, and C, in low-level -- very low-level waste, that

1 we're going to have that whole full gamut as well and
2 it's going to go for the 80-plus years.
3 CHAIRMAN RYAN: Oh. These issues will be
4 with us for a while in one form or fashion. Well,
5 thank you very much.
6 MR. CARVER: Or somebody else after us,
7 yes.
8 CHAIRMAN RYAN: Indeed. Optimistic on my
9 part I guess.
10 Let me start with Professor Hinze. Bill?
11 MEMBER HINZE: Well, we heard a lot of
12 excellent ideas this morning, and I think perhaps the
13 one that drew my attention the most was one that Henry
14 focused in on, and that we heard from the others
15 really without having said it, and that is the
16 difference in terms of storage for utilities and non-
17 utility components.
18 I think that we should try to hear more
19 about how we can separate those out. And if there is
20 a way that we can separate those out or suggest that
21 they be separated out, and provide them the
22 flexibility to the program to involve that. And I'd
23 just like to hear a little more discussion about that.
24 I think it's a real probe that could be useful to the
25 Commission and to the country.

1 CHAIRMAN RYAN: Henry, what do you think?

2 MR. PORTER: I'll give you some more --

3 maybe some more thoughts that I have on that. And as

4 I had mentioned, it has been a number of years since

5 we talked with the larger generators in the state.

6 But I think that there -- that the waste streams that

7 the -- that non-utilities have are going to be

8 somewhat different. They're going to be probably --

9 have different mixes of radionuclides in them. They

10 may for certain of those generators have just one or

11 two radionuclides that may be of interest in them.

12 I think there is considerations for what

13 level of security might be required for it. Some of

14 it is going to be lower activity waste that may not

15 need the same level of security, or there are going to

16 be issues with shielding the waste.

17 One of the issues that I think is going to

18 be a difficult one to address is financial assurance.

19 How much financial assurance do you need to dispose of

20 waste when you don't know what the cost will be at a

21 waste site? And we know that the costs continue to go

22 up, so I think that that's something that needs to be

23 looked at and provide some guidance on how to approach

24 financial assurance for that.

25 I think that will probably help the

1 industry some. That way they'll know how much money
2 they need to be putting away as they generate the
3 waste, particularly things like research. There could
4 be trust accounts or something like that set up and
5 funded as the waste is generated. So I think those
6 are some of -- you know, some of the things that would
7 probably be worthwhile looking at.
8 MEMBER HINZE: Could I also follow up on
9 that, and ask Joe -- coming from an academic
10 institution, I was very interested in your comments.
11 And I was wondering -- I had the impression from your
12 presentation that Harvard is storing a lot of waste at
13 this time. How much waste is being stored, and what
14 kind of turnover is this? And what kind of a mix is
15 there to that?
16 DR. RING: We do have a decay-in-storage
17 program, and we do have materials that are in storage.
18 I have a philosophy of storing as close to nothing as
19 possible, because I can't predict what it's going to
20 cost. The biggest problem is the sources and the
21 materials that a researcher is holding onto because
22 they might be used some day, even though when you go
23 to inspect the source you have to clean the dust off
24 of it before you can get to the source.
25 We do have a decay storage program where

1 we do things with a half life of less than a year, and
2 I can't give you off hand the number of cubic feet
3 that are in storage. I can rough it out and say
4 something in the vicinity of 8,000 cubic feet is in
5 storage at any one time. And it ranges from -- a
6 larger portion of it is P-32, increasing proportion is
7 Sulfur-35, and then there's a mixture of just about
8 everything that you can think of, provided the half
9 life is less than 365 days.
10 We are unusual in that we are able to do
11 that because we've been around a long time. There was
12 an awful lot of discussion with the regulators when we
13 were going through the permitting process, and
14 basically it wound up with a discussion between the
15 lawyers. And the regulator lawyer said, "We need to
16 be around long enough to regulate you," and the
17 university attorney said, "What's the guarantee you're
18 going to be around long enough?"
19 And they said after they realized that we
20 had been around for 150 years longer than them, they
21 decided that they would let us have the longer storage
22 time. That's an unusual event. Most universities
23 don't have that privilege.
24 We have the size of the facility on one of
25 our remote campuses, but that doesn't mean we

1 transport. Most research universities just don't have
2 the space. You have to do things like bring it to
3 someplace else, and hospitals are even tighter.
4 Did that answer your question?
5 MEMBER HINZE: It did. And I appreciate
6 it. I'm wondering, who pays for the storage? Is this
7 -- does this come out of a general research fund, a
8 general fund, or shouldn't I ask, or what --
9 DR. RING: You shouldn't ask is probably
10 the easiest answer. We assess a charge to the
11 researcher directly for every piece of waste, because
12 we have to attribute it to the grant. And that's the
13 problem, because we have to take the money for future
14 disposal, and we can't keep it in a bank account for
15 longer than six months.
16 So how do you hold things? Because we
17 have to spend the money, and then have money available
18 in the future. That's a real problem by the
19 interpretation of the government accounting laws that
20 I have to work with.
21 MEMBER HINZE: When Henry talked about
22 trust fund, I couldn't see that happening in my own
23 university. This would be a very different approach.
24 It could be done through perhaps some research
25 foundation, but it would be outside of the university

1 situation.

2 There's another question. I have

3 another --

4 CHAIRMAN RYAN: Please.

5 MEMBER HINZE: One of the things that

6 struck me -- and I think it was Todd that brought up

7 competition -- and I'm wondering, this is -- we've

8 heard a lot about, in the last day and a half, about

9 the potential in terms of marketing of the disposal of

10 radioactive waste. Why isn't there more competition

11 in this arena? Why don't we hear just a few names?

12 Are there more names around that I don't hear about?

13 Or why do we have such little competition in the low-

14 level waste disposal area? You alluded to that.

15 MR. LOVINGER: I'll start, and I think

16 Steve is probably better equipped to answer it. But

17 I think one of the other presenters, and I don't

18 remember who -- I think it was Joseph -- actually

19 struck upon it, which is it's an inevitable result of

20 one of the successes of the system is that we have

21 greatly reduced the volume of waste being generated.

22 And as a result, that impacts the economic

23 viability of these facilities, and it's one of the

24 concerns that is raised by states and compacts over

25 and over again. And it's often seen as an attempt by

1 states and compacts to try to hinder success or future
2 action, but in reality I think what it is is an
3 attempt to insert reality. And that is, as you reduce
4 the volume, you're going to impact the economics.
5 The other thing is, as we talk about some
6 of these alternatives that have been implemented, and
7 successfully implemented, and which I certainly don't
8 oppose and think have given great benefit such as the
9 exemptions and the use of RCRA facilities, and so
10 forth, that is further impacting volume and economics.
11 And the Texas facility is an ideal
12 example. The fact that they are looking at a facility
13 that will include both the disposal of DOE waste and
14 commercial waste and a mixed waste I think is the
15 reality of the situation and the reality of what it
16 takes to operate a facility.
17 In addition, when we've had discussions
18 about the future of Barnwell, one of the issues that
19 comes up is the economic viability of that facility
20 for three states. And Henry would certainly be able
21 to better answer that than I.
22 But it all goes back to my original point,
23 which is this is an issue, and it's an important issue
24 which needs to be looked at. But it's also an issue
25 that arises out of a success, and I don't think that

1 we address that success enough, which is as a result
2 of these changing circumstances we have greatly
3 reduced volumes, we have new and improved treatment
4 and processing technologies, that probably wouldn't
5 exist were the situation not as it exists.
6 And this creates a more stable, better
7 waste form, and better protection in the public health
8 and safety. So there are benefits. And Mike Mobley
9 at the meeting on Monday made the point, and I was
10 thinking about it this morning when I was hearing the
11 presentations, that one of the overarching themes that
12 he kept hearing was not necessarily a lack of disposal
13 access, but every conversation kept coming back to
14 economics. And I hear that again this morning.
15 And I think it's a very real concern, and
16 I think it's a very real concern. I think that some
17 of the points that Julie raised are very real and need
18 to be considered, and I think that some of the
19 solutions that are being implemented to reduce costs
20 are important and significant.
21 But I also think that that's also -- you
22 have to look at the cost of doing business. And this
23 is a highly regulated industry, and as everybody can
24 agree we're talking about something that is not easily
25 accepted, and there are costs associated with that.

1 Beyond that, I would think Steve and Henry would
2 certainly be able to add.
3 MR. ROMANO: I guess I'd offer a couple of
4 comments. And, first, to respond to some of your
5 comments and questions on the storage end, there is
6 limited commercial services provided for storage.
7 It's not much. There is a biomedical storage for a
8 decay facility operated in Salt Lake City, Utah. It's
9 not a large facility, but they collect from generators
10 in the west and they store it for decay, and then they
11 take it to a -- what they call a red bag waste
12 management company for the residuals.
13 There is also -- a waste control
14 specialist does take in certain waste for storage at
15 their site in West Texas, but there has not been a lot
16 of demand for the service. You know, our company
17 reached the determination that there really wouldn't
18 be enough demand for commercial storage to justify an
19 investment in seeking to develop such a facility. The
20 utilities and the fuel fabrication folks can handle
21 their own, and there just hasn't been the commercial
22 demand.
23 I think it's worth noting that Ohio
24 actually developed a storage -- assured storage
25 regulation, and a lot of resources devoted to

1 something that will probably never be used.

2 One other point I think to make about the

3 assured isolation storage concept as it came out --

4 our perspective was is that it was -- frankly,

5 proceeded from some wrong-headed assumptions. That

6 there is a suggestion out there that while the public

7 is objecting to these newly-proposed low-level waste

8 disposal sites, you know, that litany of states that

9 tried and failed to develop sites, and there is a

10 thought that, well, an assured storage facility will

11 garner public acceptance.

12 It is our view that that's just wrong.

13 The idea of taking a new Greenfield site, and you're

14 going to bring waste in there, and you're going to

15 store it there where it hasn't been in the past from

16 multiple generators, is no -- no more likely to garner

17 public acceptance than a new disposal facility.

18 In fact, for the reasons that Henry noted,

19 the financial assurance issues about, where is the

20 money going to be to take care of the waste, what if

21 you get packaged generators, packaged degradation, you

22 know, radiolytic gas generation issues have been

23 raised about some materials, I think it would be more

24 difficult to gain public acceptance for that.

25 On the disposal end -- and I go back to

1 the point I made earlier about, you know, the
2 difficulty getting a new Greenfield, you know, virgin
3 low-level waste disposal site if you will as the new
4 site, it's extremely difficult, and that has been
5 proven.
6 And, frankly, you know, we're a public
7 company with shareholders and, you know, it wasn't a
8 happy day when we had to explain that we had bet on
9 the Policy Act and we were now writing down
10 $22 million of the shareholders' assets, because we
11 had tried and done our best and gotten a license, but
12 politics intervened and we're sorry.
13 So, you know, sort of, you know, it's --
14 were I to propose this again, they'd probably be
15 looking for somebody else to sit in my chair.
16 (Laughter.)
17 And, you know, others have invested
18 heavily, and the utilities invested heavily, whereas
19 in California it was largely an investment by our
20 shareholders if you will. In other regions of the
21 country there were collections from generators, and,
22 again, sort of once burned twice shy.
23 And I think many in the utility community
24 and others that put forward -- and, you know, Mark
25 could comment on this -- who put a lot of money into

1 siting efforts, with the exception of the recovery
2 that was obtained on the Nebraska effort, frankly,
3 again, because of in that particular case an intrusion
4 of politics that wasn't careful in its application.
5 And some people wound up getting taken care of by the
6 courts for that.
7 Elsewhere it was just money spent and
8 gone. So as you look back to the options, what do we
9 have in the country right now? We have a low-level
10 waste -- we have three -- we have two full service --
11 CHAIRMAN RYAN: Steve, I want to ask you
12 to maybe sum up, because I want to make sure all of
13 our members get their questions.
14 MR. ROMANO: Okay.
15 CHAIRMAN RYAN: Go ahead and finish up.
16 MR. ROMANO: Two full service low-level
17 waste sites, in Richland and Barnwell, both are faced
18 -- you know, both either have or will soon have
19 significant restrictions. Eighteen RCRA hazardous
20 waste sites around the nation that exist. While
21 they're not all suitable for low activity waste,
22 they're out there, they exist. There's a substantial
23 regulatory regime in place for them, and the reality
24 is that's an option that makes more sense than
25 Greenfield site development, if competition is

1 important.

2 CHAIRMAN RYAN: Thank you.

3 MR. ROMANO: Sure.

4 CHAIRMAN RYAN: Allen.

5 VICE CHAIRMAN CROFF: In the last day and
6 a half, I think I've heard from -- a consistent theme
7 from innumerable speakers along the lines of Part 61
8 is workable, let's -- you know, don't do any violence
9 to it, we need to keep on using it, but it would be a
10 good idea to have some kind of an alternative. There
11 are things that need to be done, and 61.58 seems to
12 provide a vehicle to do that.

13 I haven't heard quite as much on the
14 details of what that alternative might look like. Is
15 it performance-based or not? Should it strive to
16 allow credit to be taken for engineered barriers where
17 there are not upgraded health physics? You can go in
18 any number of directions.

19 I'd be interested in the views around the
20 table on what should -- what should be an alternative?
21 What's desirable to be in an alternative? And maybe,
22 what shouldn't be in an alternative, what should be
23 avoided? Anybody got any thoughts there?

24 MR. PORTER: I'll address it, since I
25 talked about it some in my presentation, and since we

1 have reviewed some requests for greater than Class C
2 waste and have provided some approvals. And some of
3 the things that we have looked at are performance
4 assessment. I think that needs to be a part of it.
5 That needs to be a part of really anything that is
6 going into a low-level waste site is to look at how
7 that particular waste impacts the performance of the
8 site.
9 I think it needs to consider the -- what
10 the dose alternatives are to addressing that
11 particular waste in a different manner. One of the
12 waste streams that we looked at was some discrete
13 material, small metal fragments that were in a reactor
14 vessel. To go in and remove those fragments from that
15 reactor vessel would have resulted in a fairly
16 substantial amount of exposure to workers that would
17 have had to do that with probably no environmental
18 gain, no gain in site performance for that particular
19 waste.
20 So I think there are probably some
21 particular things it needs to address performance.
22 But it's going to be hard to address everything,
23 because that -- looking at alternative waste streams
24 really runs the whole gamut of different things.
25 The same kind of situation that we run

1 into with license conditions. It's -- we've made an
2 attempt over the years to write license conditions
3 that address the majority of waste streams, but it's
4 probably impossible to write a guidance document, to
5 write license conditions, that are going to address
6 every situation.
7 CHAIRMAN RYAN: Just an additional thought
8 there, Henry. We've heard that theme I think from a
9 number of speakers yesterday and today. And I just
10 thought for everybody to think about -- it seems that
11 while you can address waste streams or waste types or
12 particular sources of waste, we even have temporally
13 defined waste -- pre- and post-'78 UMPTR waste for
14 example -- so it's time that's the only differentiator
15 there.
16 But in all of those cases you end up with
17 -- you can address the mainstream of the waste, but
18 you still I think have to maintain -- and this is
19 maybe where I wanted to clarify Julie's comment, and
20 that is that the case-by-case process needs to be in
21 place.
22 Now, I would offer a friendly amendment
23 that it's a case by case with some structure to it as
24 to how you go about it and what you need to submit and
25 what you need to analyze for, and so forth. That's

1 the -- I mean, case by case without any instruction is
2 not very good, I'd agree with that. But a case by
3 case that gives folks the sense of what they need to
4 do to make the analysis viable for regulatory
5 consideration is the way to go.
6 Am I summarizing what you're saying well?
7 MR. PORTER: Yes, that summarizes it.
8 VICE CHAIRMAN CROFF: If there's no other
9 questions, anybody else want to weigh in on that one?
10 No?
11 MR. ROMANO: I would just real briefly say
12 that it could be useful to reexamine the assumptions
13 used in assembling the 61.55 tables for A, B, and C
14 classification, because I do believe there is a --
15 there are certain limits set in consideration that
16 these had to work in humid region sites, and that some
17 of those limits may be grossly overconservative for an
18 arid region site.
19 CHAIRMAN RYAN: I would also extend your
20 thoughts, Steve, to say that it's also true that, you
21 know, with a -- kind of a risk-informed approach and
22 thinking about probabilistic assessments, the intruder
23 scenario requires a probability of one at 100 years
24 and one day into the hottest waste.
25 So the probability of hitting the Class C

1 waste is one; the probability of doing it in 100 years
2 is one. Well, does that make sense in today's
3 environment?
4 So I would just offer the amendment that
5 what I think we're thinking about is that's -- those
6 scenarios fix the concentrations that are in
7 regulations. So it's the whole set of assumptions and
8 the framework even for, you know, should it be
9 probabilistic, and other aspects that might be
10 fruitful to look at.
11 Would you accept that friendly amendment
12 to your proposal?
13 MR. ROMANO: I would. And there -- in the
14 broader sense, there are a number of scenarios that
15 just don't make sense at certain sites that are --
16 CHAIRMAN RYAN: Right, right.
17 MR. ROMANO: -- built in. But beyond the
18 intruder scenarios, some of the resident farmer
19 scenarios aren't --
20 CHAIRMAN RYAN: Sure.
21 MR. ROMANO: -- aren't applicable to
22 certain sites.
23 CHAIRMAN RYAN: Fair enough. Ruth?
24 MEMBER WEINER: In the interest of time --
25 CHAIRMAN RYAN: I'm sorry. We had another

1 response.

2 MEMBER WEINER: Oh.

3 CHAIRMAN RYAN: I'm sorry. Let's --

4 MS. CLEMENTS: I was just going to add to

5 that.

6 CHAIRMAN RYAN: Please jump in. Please go

7 ahead.

8 MS. CLEMENTS: If you're going to revisit

9 61.55, we have A, B, C, and greater than C, how about

10 a less than A? Can we add a less than A? In other

11 words, you know, I alluded to this in my talk -- an

12 exempt class.

13 CHAIRMAN RYAN: And I think we heard from

14 Jim Lieberman on a similar concept, so we sure heard

15 that.

16 MS. CLEMENTS: And just to emphasize,

17 Henry brought up -- I believe it was Henry -- BRC and

18 the stigma that's associated with that term and that

19 concept. This would be exempt just for purposes of

20 disposal, and I think that's an important distinction.

21 The release for any future use, you know,

22 is less acceptable to a lot of stakeholders. But

23 perhaps released for purposes of disposal, without

24 regard to radioactivity, might be more palatable.

25 CHAIRMAN RYAN: Right. Thank you.

1 Todd?

2 MR. LOVINGER: I would just add that I
3 know this is a technical body, but in looking at this
4 issue, which I think is a very valid issue, you have
5 to look at not just the scientific component but the
6 mechanism that you're looking at and what's acceptable
7 and what can be accomplished.

8 And this goes back to the lessons learned,
9 and I think that that's a very important component
10 that has to be looked at -- what can and can't be
11 accomplished, what has and hasn't been accomplished,
12 so that we don't go down a road of something that just
13 won't work, even though it may be scientifically
14 feasible.

15 CHAIRMAN RYAN: That's a good caution, and
16 I appreciate your reminding us of that. That's good
17 to think about. The lessons learned aspect I think
18 and what has worked versus what hasn't I think, and
19 minding our experience a little bit more carefully, is
20 a really good suggestion.

21 Okay. Ruth?

22 MEMBER WEINER: I'm happy to say that both
23 Julie and Todd weighed in on the question that I
24 wanted to ask, and I'd like to ask the rest of the
25 panel if you have any opinions on setting a

1 classification that Julie has very well characterized
2 for waste as less than Class A. Do the rest of you
3 have any -- can the rest of you weigh in on that, or
4 is that just --
5 MR. PORTER: Yes, I guess I'll weigh in on
6 it some, and just -- in my involvement with other
7 regulatory schemes, particularly the hazardous waste
8 scheme that EPA has, there are concentrations of non-
9 radioactive material that are hazardous constituents
10 that have been deemed to be suitable to go in lower
11 regulated facilities.
12 So I think there is precedence there. I
13 don't want to encourage the NRC to follow everything
14 that EPA does, but I don't think this is going down a
15 path that hasn't been gone down before that there
16 isn't some experience with.
17 MEMBER WEINER: My other question is to
18 Dr. Ring. And having been from a university, I
19 understand what you're saying about space for decay.
20 But both tritium and cobalt-60 could decay from
21 Class B and C to A. I mean, this can happen in real
22 time. It's not out of the question.
23 Could you give us some insight on that?
24 Have you thought of that?
25 DR. RING: Generally, the insight is if

1 you have something that has been declared radioactive
2 waste because of the financial restraints is to get
3 rid of it. And, yes, things can decay, but the long-
4 term liability of having the materials around and the
5 financial liability in extremely risk-adverse
6 institutions is something that really is the
7 overarching issue.
8 Get rid of it once it's declared as waste.
9 Once you can prove it's no longer needed, get it out
10 of here; pay for it.
11 MEMBER WEINER: Finally, I'd like to say
12 that in the waste world, in the regulatory world, it
13 seems to me that 2008 is tomorrow. It is not two
14 years or some number of years away. And I want to
15 finish by commending Julie on her -- on pointing out
16 that these standards, these regulations, should be
17 based on risk to health as nearly as we can assess it,
18 and that I hope is an overriding feature of whatever
19 is done with low-level waste. Thank you for that.
20 CHAIRMAN RYAN: Dr. Clarke.
21 MEMBER CLARKE: Thank you. I think this
22 has been just a terrific series of presentations, and
23 I want to pick up on something Henry said. I've
24 always thought that when we were looking at a specific
25 decisionmaking process, say for rad waste, we ought to

1 go back and look at how that decisionmaking process
2 works for chemical waste. And vice versa.
3 And I found myself doing that and
4 listening to Julie, and then listening to Joe. I have
5 recently joined academia, so I enjoy the opportunity
6 to engage in fantasies as well that are totally
7 unconstrained by politics and regulation. Maybe we
8 can't --
9 (Laughter.)
10 Maybe we can't do too much with the
11 regulation, but we can compare these approaches, and
12 that could perhaps lead us to improved guidance. And
13 let me just give you a couple of examples.
14 The approach that the NRC is taking to
15 decommissioning complex sites is very risk-informed.
16 They have a graded approach, high-risk sites, low-risk
17 sites, and within those approaches they have a graded
18 approach to engineered barriers and a graded approach
19 to institutional controls, and that's very risk-
20 informed.
21 On the other side, the way the EPA
22 classifies hazardous waste, as you know, interestingly
23 enough, does have a source-based component. You can
24 be a hazardous waste if you're on a list, say your
25 steel bottoms from the manufacturer of whatever. But

1 that classification, but while it's in play during the
2 facility operation, doesn't come into play during an
3 environmental restoration activity. Then you're
4 looking at decisions that do have more of a risk-
5 informed component.
6 So, you know, I think this could be a very
7 rich comparison, and I really appreciate both of your
8 comments. So thank you.
9 CHAIRMAN RYAN: That's an interesting
10 observation, Jim. I think if you go back to the
11 Atomic Energy Act of '46 -- everybody thinks it's 52,
12 but there is one back in '46 -- safety is mentioned
13 four times, three with regard to explosives and one
14 with regard to sanitation at AEC facilities.
15 So it's very clear that these definitions
16 are based on security and safeguards rather than
17 health and safety, and somehow it got converted of
18 course to a health and safety regulation set up in '52
19 with the definitions from security and safeguards
20 orientation were maintained. So that's part of the
21 Rosetta Stone that we try and teach students to
22 unravel, you know, as they begin to study. Why is it
23 defined this way?
24 You know, and I recall Mike Mobley -- many
25 times hearing him say, "Uranium is uranium is

1 uranium." And in Tennessee we regulate uranium.
2 Don't really care where it came from. So it is health
3 and safety based, so there's a lot of interesting
4 aspects.
5 You know, just to maybe close with drawing
6 a few themes from this morning, you know, I think we
7 hear common problems whether it's utility or
8 university or FUSRAP sites or others, or quantities
9 that end up being disposed at other types of
10 facilities.
11 But it's one where, how do you get from
12 some kind of a definition and framework to thinking
13 about the radioactive material content and related
14 risks and the setting in which they are placed,
15 whether it's storage or disposal. So there are some
16 common themes here that we can think about and
17 hopefully draw together.
18 And to that end, I guess Dave Kocher has
19 been listening very carefully as a consultant to the
20 committee. Dave, I'd offer you the chance to make any
21 observations or comments that you'd like to make at
22 this point. Please do, yes. There's a microphone
23 right there. Suit yourself.
24 MR. KOCHER: Yes, thank you very much.
25 I've been listening very intently over the last day

1 and half, and I've had many of the "deja vu all over
2 again" sensations.
3 I really wanted to make a few remarks in
4 three areas, most of which involve this whole business
5 of inadvertent intrusion, Class A, B, C, probabilities
6 of this, that, and the other, and what kind of
7 flexibility you might have.
8 61.58 appears to be a fairly open door
9 through which you can do a lot of things. But I do
10 believe there is probably some very clear limits as to
11 what you can do in regard to waste classification.
12 Let me clear up one misconception that I've heard here
13 several times.
14 It's not true -- it's not true that the
15 Class C limits were based on an assumption that an
16 intrusion occurs at year 100 and one day with a
17 probability of one. That statement is not true.
18 CHAIRMAN RYAN: What is it?
19 MR. KOCHER: What is true is that it
20 occurs at 500 years with a probability of 0.1.
21 CHAIRMAN RYAN: Really? You'll have to
22 show me where that is.
23 MR. KOCHER: Yes, sir. I will be glad to.
24 CHAIRMAN RYAN: Oh, good.
25 MR. KOCHER: How else can you explain the

1 fact that the Class C limit for plutonium-239 is
2 10 times the Class A limit, unless you invoke some
3 probability of intrusion being 10 times less?
4 CHAIRMAN RYAN: Great question. And the
5 other view of that is that there's a packaging credit.
6 MR. KOCHER: Sure. The whole idea is that
7 Class C is fairly low-volume stuff in this great mass
8 of A and B waste that's in there, so that it's less
9 likely that some would actually get into it. But the
10 distinction between Class A and Class C is one in
11 time. It's 500 years, not 100 years, and that there
12 is some implicit notion that it's less likely to get
13 in there.
14 That's not to say that you can't get some
15 additional relief through this 61.58, and I will speak
16 to that in just a second.
17 CHAIRMAN RYAN: Plus, in the case of
18 plutonium it doesn't matter if it's year 100 or year
19 500.
20 MR. KOCHER: Exactly.
21 CHAIRMAN RYAN: It's a probability --
22 MR. KOCHER: Plutonium will outlast you.
23 CHAIRMAN RYAN: Sure.
24 MR. KOCHER: It hangs around. It's got
25 good hang time.

1 So on the matter of probabilities, how
2 could you go about this? Mike's favorite example is
3 these little needles and things like that that are
4 this big, and yet you're required to call that Class C
5 -- greater than Class C waste, and you can't do
6 anything with it.
7 On the DOE side of the house, that's where
8 I come from. DOE does the intruder business
9 completely differently, and they do it along the lines
10 that I think I've heard a lot of people in here say
11 that they'd like to do. DOE defined performance
12 objectives, numerical criteria, and the sites are
13 allowed to use site-specific scenarios that are based
14 on the characteristics of their site, the design of
15 the facility, the nature of the waste. They can do
16 all kinds of concentration averaging to do this.
17 We always felt that the major flaw in the
18 NRC system was not that the classification limits were
19 generic, but the branch technical position on
20 concentration averaging was not really directed at the
21 disposal problem. It was more directed at the waste
22 handling and what you do with it before you get it
23 into the ground.
24 And if by means of guidance you could
25 define concentration averaging with respect to

1 intrusion scenarios and not with respect to what a
2 wasteform looks like, or how it's packaged, you could
3 get some serious relief here. That's just my thought.
4 Probably in this guidance you can do a lot
5 with Class A limits by just redefining scenarios.
6 Class C limits are more of a challenge. Why is that?
7 It's because they are now embodied in the law. The
8 Low-Level Radioactive Waste Policy Amendments Act of
9 1985 specifically points to Table 1 of 61.55.
10 So if you want to get around those
11 numbers, you've got to put your lawyers to work. I
12 mean, this is a barrier. But I think you can address
13 it by proper concentration averaging with respect to
14 the scenarios that you're concerned about.
15 Another misconception about this that came
16 up yesterday in one of the talks was the idea that,
17 well, if I could -- I ought to be able to increase the
18 Class A limits because I can meet my offsite
19 performance objectives with no problem. Please
20 remember that the Class A limits have little or
21 nothing to do with release and offsite dose to the
22 public. It's addressed at the intruder protection,
23 which is an entirely separate issue.
24 You can get relief, in my view, in the
25 scenarios, but you can't argue that, well, I can put

1 in a lot more Class A waste because 25 millirem is
2 still okay.
3 Yes, I think licensees might have a go at
4 petitioning the NRC to use 61.58 on these
5 classification issues and defining intrusion scenarios
6 properly on a site-specific basis and see what
7 happens. Enough of that.
8 A couple other areas. One was the use of
9 RCRA facilities for Atomic Energy Act materials. This
10 is a great idea. I'm really -- I'm sympathetic to
11 Bill Dornsife and others who say that, yes, the system
12 looks kind of messy, but we can make it work, so we
13 live with it. I tend to be an idealist. Those of you
14 who know me know that that's true.
15 There is something about the -- putting
16 radioactive material in a RCRA facility, which I have
17 advocated in one case, leads to, I don't know, logical
18 difficulties. We have the red ones over here, the
19 radioactive stuff, they're red. And the hazardous
20 chemicals over here, they're blue.
21 Well, when we put the red guys in the
22 ground, we have to do a performance assessment. Even
23 at a RCRA facility you have to do a performance
24 assessment to check against the performance
25 objectives, and you have to in some sense ensure

1 against protection of inadvertent intrusion.

2 The blue guys, you don't have to do either

3 of those. The technology is assumed to take care of

4 everything. If the technology doesn't work, we're

5 going to scoop it up and process it again. There is

6 no consideration whatsoever at a RCRA site for

7 predicting future inadvertent intruders.

8 So I suppose we can live with this, but in

9 an ideal world this ranks somewhere between, you know,

10 untidy or unseemly on one extreme and total farce at

11 the other. That bridge will never -- that gap will

12 never be bridged. We'll just have to learn to live

13 with it.

14 My last comment concerns exemptions for

15 radioactive material. I'm completely in favor of the

16 idea that almost all of these exemptions in Part 30

17 and Part 40, any materials that satisfy those

18 exemptions ought to be able to go to a RCRA D landfill

19 with no problem. The one that I have a little trouble

20 with is the .05 percent source material.

21 Ten years ago or so I worked on a project

22 where we did a detailed sort of health and safety

23 assessment, all of the existing exemptions. And it

24 was clear that nearly all of the existing exemptions

25 did have some kind of health and safety basis. The

1 AEC or the NRC had done some evaluation of the
2 possible health consequences of exempting these
3 materials.
4 The one clear exception, of course, was
5 the .05 percent. That is strictly based on economic
6 considerations of the ability to get source material
7 out of the ground and make a bomb. There was nothing
8 to do with health and safety.
9 I don't think it's a real problem, but if
10 you have large volumes of .05 percent thorium you've
11 got a problem. That's 50 picocuries per gram. That's
12 50 times background. You have fairly high gamma
13 doses, and radon-220 is not innocuous totally. So be
14 a little bit careful about that one. But otherwise,
15 the idea that timepieces, smoke detectors, can go in
16 a landfill, no problem with me.
17 CHAIRMAN RYAN: Dave, I think the
18 important point you make that comes through there is
19 that it should be a radionuclide-focused health and
20 safety-based kind of risk, and that's -- the .05 by
21 weight is one where you didn't find that.
22 MR. KOCHER: Well, that exemption had no
23 basis --
24 CHAIRMAN RYAN: No, and I understand it
25 was a chemical processing basis.

1 MR. KOCHER: Yes.

2 CHAIRMAN RYAN: And it's uneconomical to

3 get more than that out of the ore, but so --

4 MR. KOCHER: So you do need to look at the

5 health and safety consequences of managing --

6 CHAIRMAN RYAN: Fair enough. I just

7 wanted to --

8 MR. KOCHER: -- so-called exempt materials

9 that contain large volumes of thorium and uranium.

10 CHAIRMAN RYAN: Well, and just to add to

11 your thought, I mean, again, I bring to the point that

12 concentration is not necessarily the appropriate

13 metric for risk. Sometimes it's quantity. Most often

14 it's quantity and concentration considered in some

15 joint way. You make, you know, the point about my

16 little needles with strontium-90 eye applicators, or

17 whatever. Yes, they're highly concentrated, but

18 they're trivial in amount.

19 MR. KOCHER: Yes, I would average that

20 over the width of a drill hole.

21 CHAIRMAN RYAN: And, in fact, for some

22 disposals of that type that -- you know, those kind of

23 considerations go into packaging and all those kinds

24 of things. But the -- I think the root point is

25 concentration and quantity are what you need to think

1 about, not one or the other, and not one to the
2 exclusion of the other.
3 Let me finish. The concentration tables
4 only talk about concentration. So what we wrestle
5 with is how we interpret the concentration tables when
6 we have quantity questions that are significant and
7 important to the risk questions.
8 So that to me is kind of one of the points
9 of struggle is -- we're only given the concentration
10 side, without any thinking or path forward on quantity
11 and concentration, and that's where we have the
12 biggest struggles. Very dilute stuff, and very
13 concentrated stuff. Somewhere in the middle we tend
14 to be okay.
15 You know, if you're at the top of Class A
16 to the bottom of Class C, everybody seems to work just
17 fine. But when you get to the extremes, the very low
18 and the very concentrated, that's when we struggle
19 with, how do we deal with risk, considering both? Is
20 that a fair view?
21 MR. KOCHER: That's a fair statement. And
22 my concern about the .05 percent really applies in the
23 I guess unlikely circumstances that you would ever end
24 up with large volumes of this kind of stuff. A barrel
25 full of .05 percent thorium, I don't worry about that,

1 but --

2 CHAIRMAN RYAN: Yes.

3 MR. KOCHER: -- thousands of cubic meters,

4 if that should ever happen, you know, that's a

5 different -- that's a different --

6 CHAIRMAN RYAN: Well, again, we're on the

7 concentration and quantity view of the world as being

8 something to consider.

9 MR. KOCHER: But I do think that it would

10 be nice to try the guidance route to implement 61 --

11 my bottom-line message here is it would be nice to try

12 the guidance route under 61.58 to see if you can

13 handle some of these site-specific issues where the

14 intrusion -- where the basic intrusion scenarios that

15 were used to develop the Class A, B, and C limits

16 don't really work. The West Texas facility is a clear

17 example. A resident farmer there just isn't going to

18 happen.

19 CHAIRMAN RYAN: Thanks. We appreciate

20 your insights, and thanks for summing up for the last

21 day and a half or so.

22 We are a little bit over time. I'm going

23 to suggest that we take our lunch break and

24 reconvene --

25 MS. D'ARRIGO: Mike, could I have an

1 opportunity?

2 CHAIRMAN RYAN: Actually, we have -- we're

3 going to have some time later on, so if it's a quick

4 question --

5 MS. D'ARRIGO: Will a utility person be

6 here later?

7 CHAIRMAN RYAN: I think everybody will be

8 here this afternoon. But if you have a quick

9 question, that's fine.

10 MS. D'ARRIGO: I wanted to know -- I have

11 two questions. One is, what is the current plan for

12 new reactors to manage low-level radioactive waste?

13 What's part of the plan for that?

14 MR. CARVER: Well, I think we're sitting

15 on an issue that many of us are going to be struggling

16 with. Sitting back and looking at what's going on,

17 we've actually taken down and worked with the people

18 who are designing the reactors to look at what the

19 potential options are, and in that we're looking at

20 the generation points and the management points.

21 We also have taken into account that we

22 may have to have storage, but that's not an issue that

23 either Westinghouse, GE, or any of the other designers

24 are struggling with. So basically, with what we're

25 dealing with here, as I mentioned earlier and going

1 forward, is what we're going to have to live with.
2 And we're working through whatever regulatory guidance
3 and whatever design basis we can go with to maintain
4 that and deal with the overall issue of radioactive
5 waste.
6 MS. D'ARRIGO: So you don't have to put
7 into your application your plans for how it's going to
8 be dealt with?
9 CHAIRMAN RYAN: That's actually beyond the
10 scope of -- new reactor activity is beyond the scope
11 of what we're trying to cover today.
12 MS. D'ARRIGO: Is it?
13 CHAIRMAN RYAN: Yes, I think it is for the
14 moment. I mean, he's got an answer for --
15 MR. CARVER: I mean, in actuality, the --
16 each one of the reactors, once they go beyond the
17 design and they go to the NRC, there are going to be
18 numbers within the application to the NRC as far as
19 what they anticipate as far as generation. But as far
20 as what they're going to do with the radioactive
21 waste, that's not within the scope of what the
22 application and early site permitting have had us to
23 deal with.
24 MS. D'ARRIGO: Okay. My other question
25 was: who is going to move to a risk-based or a risk-

1 informed classification system? Would these risk
2 decisions be made by the Nuclear Regulatory
3 Commission, or would they be made on a site-specific
4 basis? And at what opportunity would the public be
5 able to participate in the risk decisionmaking?
6 CHAIRMAN RYAN: All good questions. You
7 know, and I guess I wouldn't pick one over the other
8 at this point, because we're really exploring all of
9 that -- to think about what those options should be
10 and what -- you know, clearly, the NRC has guidance on
11 risk-informed regulation. They've been working with
12 that concept now for some years, so I think what we're
13 exploring is how all of that would fit together in
14 this arena. So the answer is: I don't know.
15 MS. D'ARRIGO: Well, because from the
16 perspective of a public interest organization, and
17 people who work with those who will be exposed to
18 whatever minimal risks these are or whatever level of
19 risks these are --
20 CHAIRMAN RYAN: Right.
21 MS. D'ARRIGO: -- we would like to fulfill
22 our responsibilities to participate in the process.
23 But, you know, we're not really actively being sought
24 after for, you know, input on this. And there are
25 differing opinions on what the risks are, and there

1 are differing facts that are not always presented,
2 and, you know, we've had comments that we've put in on
3 what the risks of low doses of radiation are, which
4 appear to be often not incorporated into the decision.
5 So if we're going to talk about risk-based
6 regulations -- I mean, risk-based standards, there has
7 to be a greater opportunity for those who are going to
8 be exposed to that risk to be a part of that
9 evaluation. I mean, in several situations the --
10 okay. I'm glad this is entertaining.
11 CHAIRMAN RYAN: Are you done? I mean, are
12 you --
13 MS. D'ARRIGO: Well, I could go on, but I
14 won't. I know everyone wants to go to lunch, and, of
15 course, you know, I don't want to hold that up. I'm
16 trying to get an answer of what I do to alert people
17 that this is coming down the pike, and that I, you
18 know, invest my resources and hire people or train
19 myself to participate in these decisionmakings. And
20 I'm asking at what juncture there is an opportunity
21 for input or if there's not.
22 CHAIRMAN RYAN: Well, there's certainly
23 one now, and for the rest of this meeting, because we
24 have a lot of time for input on those issues. So we
25 certainly are interested in all input as we prepare

1 our letters. And, of course, we operate in the
2 public; our letters are provided to the Commission as
3 a public document.
4 So anything we say to the Commission on
5 this information-gathering certainly is public. And,
6 of course, that's a far cry away from the Commission
7 doing anything with our letters of advice at this
8 point. So we're very early in the process, so we
9 appreciate you being here and appreciate others who
10 want to offer their views during these meetings. And
11 we'll certainly have your information and views as
12 part of the record.
13 MS. D'ARRIGO: So then, my final comment
14 would be that a problem that I see here is that from
15 the perspective of those who -- some of us who would
16 be exposed, that we would like to see the regulators
17 working toward prevention of exposure, rather than
18 legalizing it and finding various different technical
19 mechanisms to allow for increasing exposures, even
20 though they may be deemed by the experts that generate
21 the waste that they're minimal.
22 We're talking about -- the input I'm
23 trying to give here is that there is a significant
24 portion of the public that doesn't want any additional
25 exposure. People here who make the decisions may

1 think that that is unreasonable or that that's not
2 scientifically based, but I contend that it is and
3 that people have a right to have that protection, and
4 that the Nuclear Regulatory Commission is the agency
5 that is supposed to provide public protection.
6 And that's what we -- we'd like to provide
7 input into the decisionmaking that reflects this
8 perspective.
9 CHAIRMAN RYAN: Okay, great. Thank you
10 very much for your comment.
11 With that, we will adjourn until 12:30.
12 Thank you very much.
13 (Whereupon, at 11:23 a.m., the
14 proceedings in the foregoing matter
15 recessed for lunch.)
16 CHAIRMAN RYAN: Let's go ahead and come to
17 order and have folks take their seats, please.
18 This afternoon's panel includes the
19 following individuals. Unfortunately, as I mentioned
20 this morning, Mike Elson could not be with us. He had
21 some pressing work that came his way. Joining us are
22 Scott Flanders on my left. Next to Scott is Dr.
23 Judith Johnsrud, Dr. Alan Pasternak, Mr. William House
24 and hopefully soon, Susan Jablonski. She's on her
25 way, okay, great. So she'll be here in just a second.

1 I want again express my thanks to all the
2 presenters and to the panel discussion this morning.
3 I think it was a very good exchange on lots of points
4 of view and lots of information from many different
5 folks and we appreciate every single one of them. So
6 it's great information and great to have everybody's
7 participation.
8 I think we'll follow the same format of
9 having individual presenters this afternoon give their
10 views in perhaps 15 minutes or so and then after we
11 have that first round of comments by individuals,
12 we'll have exchange among the panel members and
13 reactions to what they've heard. And then from there,
14 we'll ask the Committee Members and consultants to
15 provide any questions or additional dialogue that they
16 might offer in response to what they've heard this
17 afternoon.
18 Again, our schedule for this afternoon is
19 this should take us from about now 12:30 to 3 o'clock
20 or so and then from 3 to 4:30, an hour and a half, we
21 have an open session for any other additional comments
22 or views to be added or other discussion among panel
23 members or others in the audience that may wish to
24 speak and offer their comments and views.
25 And with that, we'll close with a

1 discussion among the Members of what trends and themes
2 and items we might summarize, things we've heard and
3 we'll then consider all of that as we draft our letter
4 which we'll read out and evaluate at our new ACNW
5 meeting, not the June meeting, but perhaps the meeting
6 after that in early July. So that's about the time
7 frame for when the letter will be prepared and read
8 out and edited and changed as our process dictates, so
9 we can task whatever advice we might develop from this
10 meeting to the Commission.
11 So without further ado, thank you, Susan,
12 for being here.
13 Let me start with Scott Flanders on my far
14 left, please.
15 DR. FLANDERS: Thank you, Dr. Ryan.
16 Today, I just wanted to spend a few minutes providing
17 a little bit more context about our low-level waste
18 strategic assessment.
19 CHAIRMAN RYAN: Just for the record, so
20 everybody is clear, that hasn't seen your name tag,
21 Scott, you are from?
22 DR. FLANDERS: NRC, NMSS, Division of
23 Waste Management and Environmental Protection.
24 CHAIRMAN RYAN: Thank you.
25 DR. FLANDERS: I just want to spend a few

1 minutes giving a brief over of our low-level waste
2 strategic assessment. Larry gave a good overview
3 yesterday. I just want to provide a little bit more
4 detail, a little more context on what we're trying to
5 do. But before I get started, I do want to take the
6 opportunity to thank ACNW for putting on this meeting.
7 I think it's been a good two days. We've gotten a lot
8 of very useful information for our efforts and I think
9 it's going to benefit us greatly.
10 And I do want to point out specifically
11 and I'd be remiss if I didn't point out the efforts of
12 Dr. Lee in helping to coordinate this session and
13 working very closely with the staff to get this all
14 set up. So we really appreciate the efforts of the
15 Committee as well as the ACNW staff.
16 Let me start off briefly by trying to put
17 some context around our strategic assessment.
18 Yesterday, you heard two very good presentations about
19 strategic assessment efforts that have been done in
20 the past by the NRC by Paul Lohaus and Dr. Mal Knapp.
21 And this effort is really driven by a very practical
22 issue that we are facing with our staff. And Larry
23 touched on it yesterday in terms of the resources that
24 we have available to do the work as we see more and
25 more pressures from both internal and external desires

1 to have different activities worked on and evaluated
2 as it relates to low-level waste. And it really
3 became a matter of how do we work on the right issues
4 and the right time frame? How do we focus our
5 efforts? Because we want to work with a sense of
6 purpose and we want to work to move and advance and
7 achieve outcomes.
8 So one of the things that we started off
9 with is to ensure that we didn't necessarily work in
10 a vacuum. We wanted to gather stakeholder input and
11 the timing of our efforts starting in the timing of
12 the ACNW's activities worked out very nicely where we
13 could really benefit from this meeting because we
14 think that we have a good group of players here that
15 can really provide some very good and useful
16 information.
17 In formulating the strategic assessment,
18 one of the things that we wanted to make sure that we
19 thought about was not just to have tunnel vision or
20 just look at the next day in front of us, but we
21 wanted to look at and factor in future needs, how is
22 the industry, how is external, internal -- the
23 environment changing? How can it influence what
24 issues that we need to work on as we move forward to
25 ensure that we're not always operating in the mode of

1 being reactive. We wanted to try to get out in front
2 of some issues to ensure that we provide a good
3 regulatory framework.
4 We wanted to -- and again, this gets back
5 to being practical. We wanted to identify potential
6 industry actions, specific actions and activities we
7 could take that would move towards improving the
8 stability, reliability of the regulatory framework and
9 we've heard some good ideas today about some of those
10 things that we could potentially do.
11 We certainly want to prioritize our
12 efforts. As I said earlier, we want to work with a
13 sense of purpose. So we want to prioritize our
14 efforts and work on those things that are most
15 important.
16 We had some good suggestions earlier today
17 that really, in addition to providing the suggestion
18 on what we could do, there's also a reason why it was
19 felt that it was an important activity. For example,
20 Henry Porter pointed out a few activities that we
21 could work on. But in addition to identifying just
22 the activity, he really pointed out why he thought it
23 was of utility to work on those things and why it had
24 some importance.
25 Next slide. Just in working with the

1 sense of purpose and prioritizing, we want to work on
2 activities that give us the greatest return on
3 investment. And what we mean by return on investment
4 are those things that help us achieve these set of
5 objectives that you see here. We want to position
6 ourselves to meet current and future challenges as it
7 relates to low-level waste and ensure that our
8 regulatory framework is adaptable, stable to be able
9 to address not only today's issues, but potential
10 issues that may come up tomorrow as the environment
11 changes.
12 We wanted to make sure and assess are
13 there any gaps that we really need to address or
14 close? Are there any vulnerabilities? Are there any
15 unintended consequences by us taking a particular
16 action or not taking a particular action? We wanted
17 to be mindful of that. We wanted to get input on
18 that. And we certainly wanted to make sure that if
19 there's opportunities to improve the efficiency and
20 effectiveness while maintaining our primary goal which
21 is safety, the protection of public health and safety,
22 we wanted to look to see if there's ways to improve
23 the efficiency and effectiveness without compromising
24 in any way protection of health and safety.
25 And then again, because we have limited

1 resources, we wanted to identify those things that we
2 thought we could do that will give us the greatest
3 return of investment with the resources that we have
4 available to us. There might be some things that
5 could really give you a great benefit, but given the
6 limited resources we have, we need to be mindful as to
7 whether we can realistically take some of those issues
8 on or the time in which it would take us to actually
9 address those issues.
10 So these are some of the objective that we
11 wanted to achieve as a part of our strategic
12 assessment. So when we talk about return on
13 investment, this is partly what we're trying to go
14 towards, with the primary goal of that vision, we want
15 a reliable, stable and adaptable regulatory framework.
16 Certainly, in all this effort, as I
17 mentioned earlier, is the importance of stakeholder
18 input. We really wanted to gather stakeholder input.
19 We didn't want to work in a vacuum. When we met with
20 Dr. Ryan and Dr. Lee concerning this workshop, we
21 really looked at this as an opportunity to collect a
22 great deal of stakeholder input as we feel as though
23 it's valuable to hear the views of the stakeholders
24 because they have a different perspective in terms of
25 what's important. They're working with these issues

1 day to day and in some cases much more closely than we
2 are. So we feel it's important to get that input.
3 We're certainly going to review the transcript from
4 today's meeting and consider all the information
5 that's provided.
6 We also intend to issue a Federal Register
7 notice in mid-June, soliciting additional stakeholder
8 input. And it's likely it will take the form of the
9 questions we sent out earlier as a part of -- as ACNW
10 sent out earlier as part of the prospectus, but also
11 based on some of the discussions and things that we
12 heard in this meeting, are there some thoughts or
13 things that we can expand upon? And we want to go
14 ahead and send that out in mid-June, so I hope that
15 everybody keeps, takes a look at the Federal Register
16 and gets an opportunity to provide input to us. We're
17 going to put it out for a 30-day period, to allow
18 people to have sufficient time to think about and
19 digest some of the issues.
20 Another reason why we thought it was
21 important is there may be some issues that are
22 discussed today, over this two-day period that prompt
23 people to think of different issues and activities
24 that they may suggest us taking on. So we wanted to
25 give that opportunity.

1 And then one of the things I wanted to
2 leave you with last to help, hopefully, this will help
3 focus some of the discussion this afternoon, is to
4 identify maybe what three issues you think are most
5 important for the NRC staff to work on and why. When
6 we talk about issues to work on, we're really looking
7 at this from a practical standpoint in terms of issues
8 that are within our regulatory responsibilities,
9 issues that we can get to and actually make, take
10 practical actions toward.
11 Some of the discussion talked about issues
12 that are maybe outside of our scope, of our regulatory
13 responsibility, but certainly there are many things
14 that were within our scope of responsibilities and we
15 really want to focus on those things that we think may
16 be most important for us to take on as we look, not
17 only on today's issues, but as we want to position
18 ourselves for any potential changes in the future.
19 That concludes my remarks.
20 CHAIRMAN RYAN: Thank you, Scott. That
21 gives us a good focus on your views and NMSS's
22 information-gathering activities. Again, I appreciate
23 the comment that the Federal Register notice in mid-
24 June will solicit additional stakeholder input. I
25 think that helps answer at least, in part, the earlier

1 question that we had just before the lunch break.

2 Okay, with that, I would turn next to Dr.

3 Judith Johnsrud, coming this way.

4 Good afternoon.

5 DR. JOHNSRUD: Good afternoon, and thank

6 you very much, Dr. Ryan, for the invitation to

7 participation. I am, in a sense, representing the

8 National Sierra Club, but I do want to state that I am

9 speaking essentially for myself, also, on the behalf

10 of a great many in the organization. My background is

11 in the field of the geography of nuclear energy, and

12 I think I'm in the 39th year of working on these

13 issues. In that time, I guess I need to add a great

14 additional waste has been generated.

15 I have things to say that may make some in

16 the room less than happy. I hope that they will be

17 understood as they are intended, namely to represent

18 the concerns of many in the public realm who have no

19 direct involvement with the industry or with the

20 regulatory process. But working in this realm as I

21 have for a long time, I have found myself quite

22 troubled that there are major aspects relating to not

23 only nuclear reduction issues, but most particularly

24 waste issues given the duration of the hazards

25 associated with radioactive materials and waste that

1 appear to many of us in the public realm to have
2 received relatively short shrift.
3 Perhaps I should add, however, that from
4 the time of the passage of the Low-Level Waste Policy
5 Act, our involvement in my state, which is
6 Pennsylvania, has been, I think, moving in a
7 remarkably strong direction to arrange for the
8 control, the management, and disposal of radioactive
9 waste generated within the Compact to which we belong,
10 the Appalachian State Forest State Compact. And of
11 course, we are the major generators.
12 And so in certain respects, especially as
13 I learn that there are those within our state who may
14 believe that the policies and the law have failed to
15 create a site for our Compact, or in other ways have
16 failed, I am concerned that we may find ourselves with
17 efforts to alter the existing legislation within the
18 state and at the federal level. Both of which I feel
19 have under certain circumstances at least served us
20 reasonably well.
21 This is not to say that we are or I am
22 pleased with all aspects of waste management. It is
23 not quite clear to me whether you anticipated that
24 this panel would be addressing the several questions
25 that you had sent to us. Are there actions of

1 industry or regulation that should be taken up with
2 respect to the long list --
3 CHAIRMAN RYAN: Just to clarify, I think
4 our questions were just meant as food for thought.
5 We're happy to hear your views of any aspect of the
6 subject that you'd care to share.
7 DR. JOHNSRUD: Yes. A fundamental point
8 that I want to raise has to do with the necessity for
9 protection of public health and safety both in the
10 immediate time period and in the substantially more
11 distant times ahead, that those be given absolute
12 priority as the mission, if you will, of members of
13 this Committee and certainly of both the NRC, EPA, the
14 Department of Energy, the Department of Defense, and
15 all others who have responsibilities for radioactive
16 materials.
17 So without going then into too much
18 detail, but I guess if that's since a response to
19 question number 3, the issue of key safety and the
20 cost drivers, and that brings me to suggest that we
21 must not allow the costs to either the generators or
22 the waste management companies to be given priority
23 over the fundamental cost which is that to members of
24 our society who are exposed to radioactive materials
25 and waste.

1 So good. I don't have to go through
2 those. We have felt for a very long time that there
3 were some serious shortcomings of radiation exposure
4 limits. The regulations were promulgated both by the
5 NRC and EPA. EPA for the general public, and of
6 course, the working populations exposures in the work
7 place. I've suggested to some in the agency that I
8 believe it is long overdue to retire Standard Man.
9 Standard Man is an important concept for all workers.
10 So is Standard Woman, only partially protected during
11 pregnancy.
12 But from the perspective of the general
13 public, of those who will be living with radioactive
14 waste disposal sites in their own neighborhoods, as
15 well as other sources of radioactive exposures that
16 come about in consequence of policy decisions on the
17 part of the agency and this Committee, I think we
18 need, finally, to alter our fundamental radiation
19 protection standards in a number of ways.
20 Primarily, they do not address, but very
21 much need to address, those who are at greatest risk.
22 And who are those? I think we do all know they are
23 indeed pregnant women. They are people with impaired
24 health for other reasons. They are people who are
25 aged and very young, fetus, embryo, and we seldom even

1 mention the ova.

2 So all of those are the ones who should

3 receive the maximum protection from the standards and

4 permissible releases of radioactive waste. In

5 addition, I've been troubled, we are troubled, by the

6 fact that for the most part our standards address the

7 lifetime risk of fatal cancer. They address gross

8 genetic consequences. But we have indeed learned a

9 great deal more about the impacts of radiation

10 exposures and of low-level radiation exposures.

11 So we would strongly urge that this

12 Committee have as strong a role as it can exercise to

13 extend to other illnesses, other consequences of

14 exposures to ionizing radiation, even at low dose

15 levels.

16 I've been much interested, well perhaps I

17 should say first, you know, we've really depended a

18 great deal on epidemiology and epidemiology has shown

19 us in many communities positive correlation between

20 the presence of a nuclear facility of some kind on the

21 one hand and clusters of otherwise unexplained

22 illnesses, cancers, leukemias, other illnesses in

23 populations resident in the area.

24 And with due regard to epidemiologists who

25 do, I think, the very important work of notification

1 for us, they can't really explain the causation. They
2 can't put the finger on why these clusters are
3 occurring, whatever the cluster may be. It may be in
4 the realm of lesser diseases, but nonetheless
5 those that are significant for the people who have
6 them.
7 And so what we have seen in the recent
8 years, I would guess I'd say in the last decade and a
9 half perhaps, two decades, I have seen a rising
10 interest in the realm of the research of
11 microbiologists who have been looking closer to
12 causative factors, to why there is a damage to a
13 particular cell or a group of cells and what those
14 damages may be as they, in turn, will impact the
15 health of surrounded people.
16 And what have they found? Well, they are
17 coming close to the mechanisms of damage, I believe.
18 This is not my realm of personal research, but it is
19 a realm that's significant for the public. And
20 genomic instability, immune system deficiencies,
21 imperfect cell repair. These are all, I'm sure, by-
22 standard effect. These are matters that I assume all
23 of you are well learned in. And I would hope that
24 they will be made evident in your recommendations to
25 the Commission with regard to low-level radioactive

1 waste.

2 CHAIRMAN RYAN: If I may, just to let the

3 audience know, we are, in fact, planning for later in

4 the fall, we don't have an exact month for it yet, but

5 we're planning an information gathering working group

6 much like this on those very issues of fundamental

7 radiation biology in these emerging areas. So --

8 DR. JOHNSRUD: I'm delighted to hear this.

9 CHAIRMAN RYAN: Keep your eyes on the

10 agenda, on the ACNW website. We'll keep you up-to-

11 date on that. But we're hoping to get some of the

12 folks who are doing some of the cutting work you

13 mentioned to come and tell us about it.

14 DR. JOHNSRUD: Very good. I'm delighted

15 to hear that and I hope that you can invite the whole

16 Commission, the Commissioners, as well as the whole

17 staff.

18 CHAIRMAN RYAN: They're always invited to

19 our meetings, it goes without saying.

20 DR. JOHNSRUD: So without going too much

21 farther into this, it really does speak to what you

22 are dealing with which are the finding on the part of

23 waste management people that they have a serious

24 difficulty. It is expensive, very expensive to

25 isolate radioactive waste for the full period of the

1 toxic life of the waste. And therefore, within our
2 culture, the pressure, both from the waste management
3 companies and certainly from the generators who have
4 to bear costs, it's a very difficult problem, which
5 has been met in the past and I would remind everyone
6 of below-regulatory concern, met by essentially
7 loosening the requirements for control.
8 Class B, yes indeed, is dangerous. Class
9 A is supposed to be the low-level waste. And yet, we
10 find increasingly that there are exemptions. There
11 are relaxations such that not all of the radioactive
12 material waste that are generated may be brought under
13 full control. Now, in my State of Pennsylvania, as a
14 member of the Low-Level Waste Advisory Committee from
15 its inception, I can guarantee that we worked awfully
16 hard to develop a good proposal for a Compact site
17 that would be as protective of public health and
18 safety as good conceivably be achieved.
19 However, we find increasingly that
20 radioactive materials are being allowed to be disposed
21 of in facilities that are not designed to maximize the
22 control. And this we do have deep concern about and
23 we strongly urge that the ACNW do all it can to
24 minimize relaxation of the definition of what is
25 considered to be low-level radioactive waste that

1 requires the best possible sequestration from the
2 environment.
3 And this is, in large measure, because
4 unfortunately waste that are allowed into landfills or
5 otherwise semi-abandoned, have a nasty way of showing
6 up and again within our State of Pennsylvania we are
7 now facing the occurrence of tritium in substantial
8 amounts, far in excess of EPA's drinking water
9 standards at more than 50 percent of our landfills.
10 This is, as we've heard today, a problem, a serious
11 problem. Tritium is not easy to manage, control.
12 Moreover, the more waste that is released
13 that enters the biosystem, more individuals will
14 receive small doses, perhaps almost infinitely small,
15 that may indeed be then cumulative from numerous
16 sources, none of which the individual can identify.
17 I've had for a long time a great concern
18 about these multiple, additive, cumulative and
19 synergistic doses, the synergies being with the entire
20 realm of hazardous materials, toxics that are released
21 also into the environment. And we really know very
22 little about how they may interact both with other
23 toxics with radiation, sources and within the
24 individual recipient.
25 The recipient should, indeed, manage to be

1 able to determine whether he or she wishes to take
2 additional doses. And when the wastes have been
3 released, downgraded in terms of the disposal siting
4 and control, the greater will be the doses to which an
5 individual is unable to offer identity, even if he
6 carries a monitor. We don't all want to have to carry
7 monitors with us and they wouldn't show us much
8 anyway.
9 So I don't want to continue over my time.
10 I do urge, however -- I'd like to see the NRC return
11 to former philosophy of regulation, redundancy of
12 safeguards with respect to waste, as well as
13 production. Redundancy of safeguards in combination
14 with defense-in-depth, which in the context of low-
15 level waste will mean maximizing the control of those
16 wastes, not releasing them, not developing new
17 terminology.
18 The public and the waste themselves, I
19 think deserve more than performance-based and risk-
20 informed approaches to the regulation.
21 And with that, I thank you.
22 CHAIRMAN RYAN: Thank you very much.
23 We'll turn next to Alan Pasternak.
24 Dr. Pasternak, welcome. And again, I
25 apologize, we're running real short of time and I knew

1 you were going to be in that chair here shortly, so if
2 you want to make any comments from that point, have at
3 it.
4 DR. PASTERNAK: Oh, I see. Talking about
5 earlier today?
6 CHAIRMAN RYAN: Yes. I apologize.
7 DR. PASTERNAK: Sure. Can you hear me?
8 CHAIRMAN RYAN: I can hear you fine. The
9 important person is the recorder. I think she can
10 hear you and hopefully the audience can hear you as
11 well.
12 DR. PASTERNAK: I apologize for this.
13 (Cell phone ringing.)
14 Give your dollar to Mike Lee. At least
15 he's not going to confiscate it, I hope. I apologize.
16 Thank you, Chairman Ryan, and the Members
17 of the Committee for inviting me here to talk about
18 the Nuclear Regulatory Commission's strategic plan.
19 While I usually have a lot to say, I did not prepare
20 a formal PowerPoint presentation and one reason is
21 that I hoped to be able to listen and reflect on the
22 comments of others of both today and yesterday, as
23 well as Monday when across the street there was a
24 meeting sponsored by the Southeast Compact Commission
25 on the use of federal facilities for disposal of non-

1 DOE waste.

2 And indeed, the mean recommendation I'd

3 like to make to you today was not one that I had

4 really given much thought before I came to Washington,

5 so I think it's probably just as well that I did not

6 prepare a formal presentation.

7 It's going to take me a little while to

8 get there. And I'd like to comment, as you suggested,

9 on some other things that have happened.

10 Yesterday, Chairman Ryan asked Don

11 Womeldorf, the Executive Director of the Southwestern

12 Commission, is there a path forward at the present

13 time for California? This was in the context of the

14 Ward Valley proposed Ward Valley project and my short

15 answer is no.

16 Not only did Assembly Bill 2214 of 2002

17 say that will not build a regional disposal facility

18 at Ward Valley, it also put in place laws, provisions

19 of that law required engineered barriers and

20 explicitly no shallow land burial.

21 I think it reflects a lack of political

22 will on the part of the legislature to move forward on

23 the state's responsibilities under the act and under

24 the Compact.

25 I don't know if you can build a facility

1 that is not near-surface disposals since the NRC
2 regulations are built around near-surface disposal and
3 somebody might question in a Court what does that
4 mean, no shallow land burial and you get arguments
5 back and forth, have we complied or haven't we
6 complied and it would just be a mess.
7 Furthermore, last August, a nominee for a
8 seat on the Southwestern Compact Commission was denied
9 a recommendation for confirmation by the Senate Rules
10 Committee in Sacramento because it was found that he
11 had sent an email to his colleagues on the Commission
12 suggesting that, among other things, that they might
13 recommend to the Governor would be a repeal of
14 Assembly Bill 2214, thus allowing the process to move
15 forward.
16 That was considered, I guess beyond the
17 pale and he was not confirmed for a seat on the
18 Southwest Commission. So there are those indications
19 that there is not a path forward in California.
20 You've asked the question what are the
21 lessons learned and if we had time I might -- by the
22 Ward Valley experience -- if we have time, I might to
23 into that a little bit.
24 CHAIRMAN RYAN: You might, just as a
25 planning item save that until the end until we get

1 through with this panel, if that's okay.

2 DR. PASTERNAK: With respect to the

3 development of new low-level radioactive waste

4 disposal facilities and assuring, providing assured

5 access to all users of radioactive materials that

6 their low-level radioactive waste can be safely

7 disposed of, Cal Rad supports amendment of the Low-

8 Level Waste Policy Act by Congress to provide a role

9 for the Federal Government.

10 These proposals have the support of the

11 Health Physics Society, the American Nuclear Society

12 and the Council on Radionuclides and

13 Radiopharmaceuticals, among others. And there is an

14 American Nuclear Society Position Statement No. 11

15 that you may want to refer to. The Health Physics

16 Society has written extensively, has extensive

17 documentation on this issue.

18 Specifically, we have two proposals. One

19 in the near term and one in the long term. For the

20 long term, we recommend that Congress authorize the

21 Department of Energy or any other federal agency,

22 appropriate agency that it sees fit, perhaps the Corps

23 of Engineers, to develop a disposal facility on

24 federal land to be regulated by the U.S. Nuclear

25 Regulatory Commission and to be considered a national

1 facility, that is, a facility for waste from those
2 states, it would be 34 to 36 states, depending on how
3 successful Texas is. But those states were not among
4 the fortunate 14. The states of the Northwest, Rocky
5 Mountain and Atlantic Compacts do have assured access
6 to safe disposal facilities for the indefinite future.
7 It is argued that the act has failed in
8 its primary purpose which was the generation -- the
9 development of new disposal facilities to more
10 equitably distribute the disposal task than it was at
11 the time in 1979 when there were three facilities.
12 Today, we have only two such facilities plus the
13 Envirocare facility which accepts a subset of Class A
14 waste.
15 I'd like to bring to your attention, oh,
16 let me go on to the near term proposal and that's the
17 one where I think NRC might be of immediate help. The
18 near term proposal is that non-DOE waste, sometimes
19 referred to and has been referred to repeatedly over
20 the last two days as commercial waste, but I refer to
21 them as non-DOE waste because it includes not only
22 waste from industries and utilities and medical
23 centers and universities, but we're talking about
24 waste as you heard earlier this morning from the Army
25 Corps of Engineers. Monday's session was attended by

1 other military people from both the Army and the Navy;
2 in California, NASA; the Veterans Administration, Air
3 Force Bases are in the practice of sending low-level
4 radioactive waste to Barnwell for disposal. They will
5 no longer be able to do that after July 1, 2008. So
6 that is our near term solution to these problems is
7 access to DOE facilities, disposal facilities, at
8 least on an interim basis.
9 There is a third proposal which is a
10 variation of these, I think, which has been suggested
11 by the Health Physics Society and which I think is
12 worthy of serious consideration. And that is that
13 while the Department of Energy is considering the
14 disposal of greater than Class C waste, they issued an
15 advanced notice of intention to prepare an EIS and the
16 Health Physics Society is suggesting that that EIS
17 consider the disposal of Class B and Class C waste,
18 along with the greater than Class C waste. This seems
19 to make a good deal of sense. Doe is charged with
20 disposal of greater than Class C waste. They're
21 beginning the process of doing the environmental
22 review for that. Such a facility, if it's safe for
23 greater than Class C waste, would certainly be
24 adequate for Class B and C wastes, why not consider
25 that and we think that that's a proposal that also

1 ought to be considered.

2 We look at the history of the Act and it's

3 been on the books for 26 years and in that period of

4 time no new facilities which meet the requirements of

5 the act have been developed. We think there is a lack

6 of political will among the states. Only one state,

7 Texas, is currently pursuing development of a new

8 disposal facility. There are 10 intra-state Compacts,

9 but we don't need 10 disposal facilities. But of

10 course, the purpose of the act never was economical.

11 It was a question of equity and it was designed to

12 share the burden. In addition, I think there are

13 about 10 states that are not members of Compacts.

14 We are not dealing with the same low-level

15 waste policy act today that we were dealing with when

16 it was active and put on the books in 1980. In 1992,

17 the Supreme Court struck down the Take Title

18 provision. The act had a carrot and a stick. The

19 carrot was that a Compact Commission within whose

20 region, a regional disposal facility was built, could

21 limit access to that facility to the party state

22 members of the Compact or anyone else they wished to

23 contract with. And that is the way that the Northwest

24 Compact has operated since 1993. At that time, they

25 contracted with Rocky Mountain States and so access to

1 Richland has been restricted since 1993.

2 And similarly, the Atlantic Compact, South

3 Carolina, New Jersey and Connecticut will restrict

4 access to the Barnwell facility in just about two

5 years.

6 So that's the carrot and that's still

7 there. But the stick was the Take Title provision,

8 that any state which failed to provide its users of

9 radioactive materials with assured access to a

10 disposal facility would be required to take title and

11 possession of the waste.

12 And when that provision of the act was

13 struck down, I think a lot of the wind went out of the

14 sails. Proponents of the development of new

15 facilities came in and told California and I presume

16 other states, see, you don't have to do anything. And

17 I think if you look at the history of it, you will see

18 that activity by a number of states, including

19 Pennsylvania, may have -- I think it was about that

20 time that a lot of this activity began to taper off.

21 July 1, 2008, Barnwell closes to 36

22 states. The waste that those 36 states send to

23 Barnwell -- over the last year, full Fiscal Year, I

24 was able to find the data. The waste that those 36

25 states send to Barnwell generate -- contains 98

1 percent of the curies disposed of at the three
2 facilities at Envirocare, Richland and Barnwell. So
3 we're talking about access, loss of access for 98
4 percent of the curies.
5 Development of a new disposal facility can
6 take 10 years or more from the time of enactment of
7 enabling legislation in California until issuance of
8 a license was 10 years and to uphold that license
9 against challenges the EIR took another three years of
10 litigation.
11 Not only will these 34 to 36 states lose
12 access for their disposal of their B and C waste under
13 the current statutory scheme, but the way things have
14 developed, one facility, the Envirocare facility will
15 have a monopoly on disposal of their Class A waste,
16 and under current regulations that does not include
17 biological tissue or sealed sources.
18 The outlook has worsened in just the past
19 year and a half. A year and a half ago, there was
20 hope and it was reflected by the Nuclear Regulatory
21 Commission in its comments on a General Accounting
22 Office report that I'll get to in a few minutes, that
23 Utah would accept B and C waste. But just about a
24 year ago, the State of Utah put on the law, on the
25 books, a law which bans the acceptance of Class B and

1 Class C waste. In addition, the Governor of Utah has
2 expressed his opposition to expansion of the
3 Envirocare facility for Class A waste.
4 There have been some suggestions here in
5 the last day and a half that an application of Part
6 61.58(a) may in ways that I don't understand because
7 I'm not an expert in this, expand the Class A limits.
8 But I think if you attempted to this, you'd run up
9 against the Utah legislature would say by Class A, we
10 meant what it was when we enacted the law.
11 There has been and is on-going litigation
12 concerning as a result of attempts to implement the
13 Low-Level Waste Policy Act, for example, Nebraska was
14 willing to settle a lawsuit for $140 million brought
15 by the Central Interstate Compact Commission. They
16 ponied up $140 million or so, rather than develop a
17 new disposal facility. And this was following the
18 findings of two Federal Courts, the District and an
19 Appellate Court, that Nebraska had acted in bad faith
20 in denying a license for a facility.
21 Finally, in this list, in this dreary list
22 of problems, I'd like to mention a number of --
23 another issue and it was illustrated for us this
24 morning. It has to do with who opposes this idea of
25 a federal solution? And you've heard this morning

1 from Todd Lovinger, the Executive Director of the Low-
2 Level Waste Forum who presented their statement of
3 considerations or statement of positions issued last
4 fall.
5 Susan, who is the Executive Director of
6 the Low-Level Waste Forum or the Chairman of the Low-
7 Level Waste Forum, I trust has seen the document that
8 Cal Rad did which was a critique of that position
9 statement. I've provided it to Todd about three
10 months ago in Tucson and I hope I'm not surprising you
11 with a critique here of that. But we feel that that
12 statement presents a far too optimistic picture of the
13 current status and offers no specific recommendations
14 for moving forward. I'm not going to read you that
15 whole statement, nor am I going to read you our
16 critique of it, but I will provide you with a copy.
17 CHAIRMAN RYAN: We heard the statement
18 because it was presented to us, but if you're going to
19 provide us with any feedback, it would be helpful if
20 we had it in writing as well.
21 DR. PASTERNAK: Oh yes. I'll provide
22 that.
23 CHAIRMAN RYAN: Thank you.
24 DR. PASTERNAK: Here's one statement from
25 that Low-Level Waste Forum document. "States and

1 Compacts agree that the ultimate goal is to provide
2 safe, environmentally sound, reliable and permanent
3 access for the disposal of all commercial low-level
4 radioactive waste generated in the nation. States and
5 Compacts must be allowed to pursue that goal
6 unfettered, allowing them to identify solutions
7 appropriate to the needs of their generators and their
8 unique political situations."
9 It's a remarkable statement. No
10 government agency -- very few of us in any realm
11 operate unfettered. And I think this is -- I find it
12 very defensive. And I will provide -- in fact, I
13 think I have a copy of our critique, yes.
14 CHAIRMAN RYAN: If you provide copies for
15 people in the audience as well, we can get them made.
16 DR. PASTERNAK: I'm concerned because we
17 do want to go to Congress. We've been to Congress.
18 We want to go to Congress again. We want to suggest
19 these federal solutions.
20 CHAIRMAN RYAN: Alan, just in the
21 interest, again, in giving everybody else a turn.
22 DR. PASTERNAK: Oh sure.
23 CHAIRMAN RYAN: If you could take a minute
24 and then maybe wrap up your thoughts, we can look for
25 more from you as we go around.

1 DR. PASTERNAK: Let me get to my specific
2 recommendation.
3 CHAIRMAN RYAN: I wrote it down first
4 because you said it first, your main recommendation is
5 -- I've been kind of waiting for that.
6 DR. PASTERNAK: Here's what NRC can do and
7 this is probably an appropriate time to bring this in.
8 Can the Nuclear Regulatory Commission
9 examine this question? Are there regulator issues
10 concerning the disposal of waste by NRC licensees at
11 existing DOE facilities on some kind of an interim
12 basis?
13 There is to some extent a precedent. The
14 use of the Barnwell and the Richland facilities is an
15 example. These are facilities that were built and
16 operated long before 10 CFR 61. And we disposed of
17 low-level waste at those -- the licensees disposed of
18 their low-level waste at these facilities. Now true,
19 these facilities operate now under 10 CFR 61. Could
20 they have been licensed under those provisions? I
21 don't know. Maybe somebody does. But they do operate
22 under 10 CFR 61, even though they were not 10 CFR 61
23 facilities to begin with.
24 And what we're suggesting is a little bit
25 different, that these waste be disposed of at existing

1 DOE facilities that are already there, where it's not
2 going to take the 10 years to develop them.
3 Can the waste be disposed of at the
4 existing DOE facilities by DOE rules in the near term?
5 And if the Commission could look at that, it may be a
6 trivial question. Maybe the simple answer is why not,
7 fine, get it off the table. If there are some issues,
8 can we start to deal with them now? So that when
9 Congress considers this issue, this possibility is not
10 offered --
11 CHAIRMAN RYAN: Can I just ask for
12 clarification?
13 DR. PASTERNAK: Sure.
14 CHAIRMAN RYAN: Having worked in most of
15 the agreement states my whole career, I hope you mean
16 agreement for NRC licensees and agreement state
17 licensees who are authorized through the agreement
18 state program.
19 DR. PASTERNAK: I mean both.
20 CHAIRMAN RYAN: I just want to clarify
21 that. Very often we forget agreement states and the
22 bulk of licensees to whom NMSS is looking for input
23 too. Agreement states are included. So I just want
24 to make sure you would accept that.
25 DR. PASTERNAK: Oh yes, I appreciate that

1 clarification. When I said NRC licensees -- I
2 certainly meant the agreement state licensees as well.
3 CHAIRMAN RYAN: Fair enough.
4 DR. PASTERNAK: Does the disposal of their
5 waste at existing DOE facilities under DOE rules,
6 create any issues that --
7 CHAIRMAN RYAN: The reason I mention that
8 goes to authority. There's a state authority issue
9 which I'm no expert on, on how the laws flow, but the
10 NRC can probably say something about its rules and its
11 licensees. Yeah or nay, I have no clue, but when you
12 then say the state is authorized for certain
13 activities under the agreement state authorization
14 provisions, how the state then deals with access
15 somewhere else, I think adds a dimension to your
16 question and I just wanted to be sure that we had that
17 very clear.
18 DR. PASTERNAK: Well, perhaps that's
19 something to deal with.
20 CHAIRMAN RYAN: At least in concept as a
21 dimension. You now have another authority, the state
22 authority kind of in the mix. So everybody who has
23 been here, I think Texas and South Carolina and
24 California and others are all agreement states.
25 Frankly, most of the action is in agreement states

1 these days.

2 DR. PASTERNAK: And one would hope that if

3 such access were made available by DOE or by

4 congressional action, that those states would be happy

5 to see the waste safely disposed of.

6 CHAIRMAN RYAN: And again, I'm not raining

7 on your suggestion, I just want to clarify that that

8 dimension you recognize that's in there.

9 DR. PASTERNAK: Yes, and if it poses any

10 problems, then the question is how can we deal with it

11 to make this as simple an interim solution, as simple

12 and effective as possible.

13 I'd also like to take a moment to praise

14 the statement here this morning by Dr. Joseph Ring of

15 Harvard. Without meaning to hurt anybody's feelings,

16 I can say from my part, it is the most significant

17 statement I have heard in the three days since I've

18 been here, Monday, Tuesday and so far today. It

19 illustrates the problems that are already being

20 created for users of radioactive materials by the

21 uncertain circumstances we live in today; the research

22 that's being curtailed, the economic costs. It was

23 just a very, very important statement and I hope

24 everyone will take that to heart. I appreciate the

25 comments yesterday of Mal Knapp and Paul Lohaus about

1 the NRC rules.

2 We think that 10 CFR 61 is a good rule.
3 We do not advocate reopening the classification
4 system. However, we certainly support the examination
5 of the very low activity waste and the improvement or
6 the expansion of disposal options for those waste that
7 this Commission has looked at, that the Environmental
8 Protection Agency has begun to look at, expanding
9 those disposal options is very important.

10 Similarly, the on-going work of the
11 Department of Energy in its off-site source recovery
12 program is very important and is a good example of the
13 construction role that the Department of Energy and
14 the Federal Government can play in solving these
15 solutions.

16 I also want to take a moment and this will
17 wrap it up for me, to praise our own Southwestern
18 Commission, having cited the problems that the
19 defensive attitude of some of the Commissions in the
20 Low-level Waste Forum about looking at alternative
21 systems. The Commission, our Commission has urged the
22 Governor, our Governor, Governor Schwarzenegger to
23 support efforts to have the Federal Government make
24 its disposal facilities available.

25 And I think one other entity deserves some

1 praise. There was a mention yesterday about the
2 possibility of an advocacy role for the Nuclear
3 Regulatory Commission. And I'd like to point to two
4 instances in which the Commission has already
5 illustrated that.
6 Two years ago, the General Accounting
7 Office issued a report and the Nuclear Regulatory
8 Commission commented on that report and here's what
9 the key thing that the Commission said. "Not one new
10 facility has been developed in this time under the
11 Low-level Radioactive Waste Policy Amendments Act.
12 Therefore, we believe it is in the national interest
13 to begin exploring the alternatives identified in
14 Appendix 2 that would potentially provide a better
15 legal and policy framework for new disposal facilities
16 for commercial generators of low-level radioactive
17 waste. The Nuclear Regulatory Commission says it is
18 in the national interest to provide a better legal and
19 policy framework for new disposal facilities for
20 commercial generators of low-level waste."
21 And in this Committee's meeting, with the
22 Commission on January 11th, I believe it was, to
23 consider your White Paper, several of the
24 Commissioners sua sponte, is that the right Latin
25 expression, mentioned the July 1 on their own

1 initiative, mentioned the July 1, 2008 cutoff as being
2 a priority issue.
3 So the Commissioners, I think through
4 these statements, are aware of the seriousness of the
5 problem and we very much appreciate that.
6 CHAIRMAN RYAN: That is exactly why we're
7 here today, Alan, because of their direction to us to
8 follow up. So we're doing that and on we go. Thank
9 you very much.
10 Let me turn over the floor to you, please,
11 and we'd be happy to hear from Susan Jablonski from
12 the State of Texas.
13 MS. JABLONSKI: Thank you, Dr. Ryan, and
14 Members of the Committee. My name is Susan Jablonski.
15 I'm here representing the State of Texas. I work for
16 the Texas Commission on Environmental Quality, and Dr.
17 Ryan, I echo your comments that the action is
18 happening in the states. Low-level waste management
19 is a state responsibility, but the states we've talked
20 about in our C resources towards the low-level waste,
21 I don't want to forget the efforts and the resources
22 that states are spending in actually trying to
23 implement these policies with low-level waste.
24 Our state has been very active for the
25 last 25 years trying to implement part 61, and we've

1 had a lot of lessons learned. So I think that the
2 discussion this morning about lessons learned is
3 definitely something we don't want to repeat our past.
4 And I think we find ourselves in a place today based
5 on where we have been in the past. And so I'm going
6 to talk a little bit about historically what brought
7 us here.
8 You know, we are where the rubber meets
9 the road in the agreement states, so I don't want to
10 underestimate that there is focus needing to be on the
11 implementation of how policy actually plays out in the
12 states that are trying to implement these things.
13 Historically, you know we have -- Steve Romano
14 mentioned some of our early time -- I was actually on
15 the other side of the fence as an applicant for seven
16 years before I became a regulator, and lived through
17 the Sierra Blanca experience and learned as I came
18 into it as a health physicist and an engineer from a
19 very pure, technical basis trying to come up with a
20 solution, and learned very quickly that policy and
21 politics had as much to do with it as the technical
22 part of the equation. So that can't be forgotten when
23 we talk in context of looking at solutions, that the
24 technical solutions that are pure, looking at what
25 might be the perfect or ideal solution is not always

1 what is workable.

2 So, you know, that's kind of what brought

3 me to definitely where I am today. When we look in

4 Texas at our sites that were not successful, we're not

5 based on issues with problems with Part 61. They were

6 based on political and policy discussions. And so I

7 felt that it was very important for me to be here as

8 part of this discussion to talk about our concern with

9 possible changes in national low-level waste policy

10 where we find ourselves today, very active midstream

11 in a licensing process.

12 And I want to just kind of give some

13 context to that. You've heard from our applicant, we

14 are active in a technical review as we speak today.

15 We're currently reviewing the waste control

16 application and we're in the technical review. We're

17 responding to the technical notice of deficiency that

18 that applicant has provided for quality and content.

19 At this point, I can't say that the licensability of

20 the site has been -- the determination has been made

21 yet. We're not at that point.

22 However, legislation in our state which

23 establishes new approach that we're looking at in

24 Texas, which is really a policy shift, was based on

25 status quo and nothing changing. So if things do

1 change, I don't know what that does to our process.
2 And I don't know how politically things will change,
3 how technically anything could change based on Stanley
4 requirements and that part of our requirements that
5 are the state implementation part of it.
6 So my main reason for being here is you
7 know, maybe we're the anomaly but we are out here
8 actively working today.
9 There's been a lot of talk about low-
10 activity waste. In Texas, we've really been on the
11 forefront on that process. I mean, we have been
12 looking at low-activity waste for many, many years in
13 Texas. Actually, in my former life we provided for
14 the 300 day half-life exemptions that are currently
15 being used by our generators to use Subtitle D
16 landfills for disposal of 300 day half-life.
17 And so, it's been a tremendous success.
18 We have a mechanism in place that allows for those
19 things to happen in our state. There has been some
20 criticism of our process, but I don't believe that
21 it's broken. It is a rulemaking process, but for us
22 that gets the public participation and the other
23 things as part of that process which has really been
24 a successful equation for us.
25 We've been able to have that 300 day half-

1 life rule out there for 20 years without any ill
2 impacts to it. And so I think that speaks volumes --
3 CHAIRMAN RYAN: Just as a point on that
4 example, maybe this is a trend you can offer
5 information on that would be helpful to the
6 Commission. If for example, you could show how from
7 monitoring or modeling or both kinds of data that
8 that's in fact true, 300 years. I mean, 300 day stuff
9 you don't have issues from some number of facilities
10 and then maybe even a little history on what those
11 facilities are. They all are arid, some are humid --
12 MS. JABLONSKI: Some are humid.
13 CHAIRMAN RYAN: All that. That would be
14 helpful information, I think for the Commission to see
15 the range of how those things were done. I know
16 that's asking for a lot to pull information together,
17 but if you can at least point us to maybe you have
18 annual reports or other kinds of documents where we
19 could begin to learn about that. We could even
20 encourage it to staff it to be well worth a visit, you
21 know if there are things they can learn on a trip to
22 Austin to go to your other offices and so forth.
23 So I just offer that as a suggestion where
24 I think it's good to hear those kinds of results, but
25 it's even more powerful if we can get that information

1 to the staff so that they can see it.

2 MS. JABLONSKI: Sure. And a lot of that

3 work was actually done up front, which I think was why

4 it was successful. It wasn't a wait and see kind of

5 approach to wait for monitoring to see if it was going

6 to be a successful program. There was a lot of

7 modeling done, site specific modeling, looking at all

8 kinds of different sites that were included as part

9 the package that went through rulemaking and public

10 involvement.

11 The Department of State Health Services

12 who we applied at the time with the Low-Level Waste

13 Authority for that exemption, and they have all of

14 those files in their records and I'll be happy to

15 facilitate getting that information to any staff

16 members that might want to see it.

17 And so it had to do with taking a very

18 open approach and really looking at the issues in our

19 specific state that we could address readily in giving

20 some solutions and really showing that there were not

21 issues in the long term. So you know, there have been

22 comments made, you know, about the case-by-case basis

23 for establishment. But you know, states are having to

24 implement it in the ways that they see fit, which

25 really vary across the country.

1 And for us, that equation it's a Texas
2 generators only, which I know some of our sister
3 states around us wish that they could send their 300
4 day half-life waste into Texas. But our authority is
5 over the exemption of our own generators, so you have
6 to be a licensee in our state. It's a licensed
7 condition in your license that allows you to do it.
8 And so that is the mechanism that has worked for us.
9 It's not necessarily applicable to everybody that's
10 out there, but it is a mechanism that has proved to
11 work.
12 CHAIRMAN RYAN: And an option of many.
13 MS. JABLONSKI: It is an option of many.
14 And I just wanted to mention that because it was
15 brought up this morning in the session. We do have
16 some other issues with this low-activity waste.
17 Particularly, we have been weighing in over the last
18 year on the 2002 exemptions from the State of Texas
19 perspective, and we do have continuing concerns about
20 the process.
21 Our experience with the process has been
22 inconsistent and not transparent. It is propagated a
23 lot of misinformation and confusion in our state of
24 exactly what the process is. And there are still
25 people in our state that are taking the position that

1 in the State of Texas, we should look at an exemption
2 from the NRC under 2002 as a blanket kind of an
3 exemption, and not weigh it at all. Not give any
4 consensus, that we actually don't have the right to,
5 that it's a matter of compatibility.
6 And we have continued, including my
7 agency, to take huge issue with that that we
8 absolutely have the right to weigh in. It is prudent
9 for us to look at the state and site-specific issues
10 according to these disposals. So I think that will be
11 continuing to be an issue for us. It's definitely one
12 on my chairman and commissioners' hot button list.
13 And I also echo Dr. Ryan's comments on the
14 concentration and quantity question, because that's at
15 the heart of many of the things that we have brought
16 up associated with that.
17 We also have rules for on-site disposal
18 alternatives, as Henry Porter mentioned. And I think
19 really he brought out some of the things that are
20 already being done at sites within the flexibility of
21 the framework, and I think those can't be overlooked
22 because that's really what the system we have in front
23 of us has allowed to happen actually out there in the
24 real world with people disposing of waste.
25 And so with that, I'm going to limit my

1 comments. I really want to address any questions that
2 might come up.
3 CHAIRMAN RYAN: Okay, great. Thanks very
4 much. Bill House, welcome back.
5 MR. HOUSE: It's good to be here. I
6 appreciate this opportunity again to be present and
7 speak to the Advisory Committee. I want to talk for
8 a moment on cost and the nuclear industry over the
9 past couple of decades has optimized the cost in not
10 only just managing operating waste at facilities, but
11 also cleaning up a number of facilities that existed
12 and decommissioning some actual nuclear facilities
13 along the way.
14 They've optimized those costs in my
15 opinion by two different things. They've minimized
16 the volume of waste generated for these activities and
17 they implemented alternate disposal methods to manage
18 the low-concentration waste. So we are making
19 progress there. Few if any of us have control of all
20 the costs associated with doing our business. And
21 with respect to the Barnwell site, even though we've
22 had increased material equipment and labor costs,
23 we've been forced, if you will, to cut our overall
24 costs of doing business even in the advent of
25 decreasing volumes allowed to come to a site. We all

1 need to be conscious of cost. We all need to address
2 those things.
3 CHAIRMAN RYAN: Bill, just a question so
4 we understand the terminology. I sometimes struggle
5 with everybody being on the same page in terms of cost
6 and price. For low-level waste, I know there's a
7 component called tax or fee that goes somewhere. It
8 goes to the State of South Carolina, or in your case
9 I don't know exactly what the structures are in all
10 the other sites currently. But maybe you could touch
11 on that difference, because there's a real cost of
12 operating a disposal facility and then there's a price
13 the customer pays and generally that price is much
14 higher than the actual cost. Am I fair on that one?
15 MR. HOUSE: Yes, I don't know about much
16 higher. We'll decrease that margin --
17 CHAIRMAN RYAN: All relative terms.
18 MR. HOUSE: But let me --
19 CHAIRMAN RYAN: I just wanted to clarify,
20 when you mean cost the cost of operating is not
21 necessarily the price the customer pays at the gate
22 and it's typically less.
23 MR. HOUSE: That's exactly right. We've
24 been under economic regulation since the year 2000 and
25 we've developed acceptable methods for identifying our

1 allowable costs at the site. We go to the Public
2 Service Commission. We went through some of this
3 yesterday. We've broken our cost down into three
4 categories. Fixed costs of the facility, and that is
5 the maintenance of the license, the basic
6 requirements, the monitoring, the maintenance of the
7 site. That's about half the cost or half of the
8 expense of operating the disposal site.
9 Another part of that cost is variable
10 cost. And that's associated with the incremental
11 increase in cost of labor and equipment to dispose of
12 each shipment of waste as it comes in the door. We
13 have another category called irregular costs, and just
14 these are non-reoccurring costs that we don't
15 initially know the full magnitude of. I'll give you
16 one example and that's the license appeal and license
17 renewal process that we've been going through for the
18 last six years.
19 The taxes, fees, annual license fees,
20 things of that nature go, we pay those and we get
21 reimbursed for that actual cost. Other identified
22 allowable costs, we do get a margin as company profit
23 for that. We've continued to decrease that portion,
24 the fixed costs, and the variable costs as best we can
25 to keep the overall expense of operating the disposal

1 site down.

2 And we will have to continue doing that,
3 especially as we move into lower and lower waste
4 volumes. I want to talk about disposal accidents for
5 a minute, and I want to use these slides, just a
6 couple of them, that I used Monday at the roundtable.
7 But I want to put a different emphasis on them today.
8 We've heard a number and a full range of comments,
9 some to the point of saying we will be in a disaster
10 today or tomorrow, and the sky is falling when we walk
11 out the door.

12 I want to remind everybody there is two
13 full years of access for every state on that map at
14 the Barnwell disposal site. We have a history under
15 the Atlantic Compact law of not receiving the full
16 allowed volume in each given year. So there is
17 allowable volume left for folks to approach us with,
18 to work with us and the Budget and Control Board that
19 actually sets the disposal rates, not Chem-Nuclear,
20 and at least approach us and be able to get as much
21 waste taken care of, disposed of safely, before that
22 deadline occurs -- two years are left.

23 As far as the short-term improvements that
24 we may be able to help this situation and dispose of
25 as much waste and properly dispose of it as possible

1 is in the area of sealed sources. The NRC is
2 continuing with the source tracking rulemaking, and in
3 my opinion that will result in realization that a
4 number of licensees specific and general licensees
5 have these things in their closet. They're going to
6 realize it and recognize it and hopefully they will
7 opt, when there's no more use of that source, for
8 secure disposal or some form of transfer for
9 recycling. But the key goal is safe and secure
10 disposition of these sources.
11 With respect to disposal of those, that
12 have no further use the consideration of additional
13 levels of containment, more robust containers, and
14 evaluations of curie quantities that are suitable for
15 disposal should be considered. With respect to
16 irradiated hardware, we have the Rule of 10 for
17 concentration averaging. That works well. It's
18 appropriate and it right now allows us disposal of
19 much of the irradiated hardware from nuclear
20 powerplants.
21 Radiated hardware is zirconium or
22 stainless steel for the most part. It's a very stable
23 waste form. And I do understand the long-term rules
24 associated with the concentration limits that are put
25 in place because of potential intruders. One

1 consideration to be given to allowing dissimilar
2 metals to be averaged in the same disposal container
3 as the same components or similar components now.
4 These metals individually have the same
5 concentrations of radionuclides, the same quantities
6 of Nickel-63, Cobalt-60, etc, that individually do in
7 separate containers. So to allow averaging of those,
8 we could optimize some costs, optimize the better use
9 of fuel boost base by allowing their disposal at the
10 Barnwell site or other sites.
11 What can we do then in the longer term?
12 And I'm glad this is going on the record, because I
13 agree with the NRC's objectives and their strategic
14 plan. Our full goal should be safe and secure
15 disposal or management of radioactive materials and
16 radioactive waste. We need to maintain and his
17 objectives said promote. We do have a stable
18 regulatory framework. We need to optimize that again,
19 but also promote and maintain that in its place. That
20 will provide us some efficiencies and effectives to
21 apply the existing rules that we have and still
22 maintain the established dose standards and goals that
23 are in place in other regulations. Thank you.
24 CHAIRMAN RYAN: That's a great start.
25 Again, we've been sitting for an hour and a half.

1 Maybe folks would want to take a few minutes stretch.
2 I suggest that we take a short break right to 2
3 o'clock and then reconvene and go around again and
4 have interaction and further comment. Fair enough?
5 Ten minute break.
6 (Off the record.)
7 CHAIRMAN RYAN: Okay, great. I will start
8 in reverse order this time with the idea that anybody
9 that wants to observe or comment or add to what
10 they've heard or offer a view that's different from
11 what they've heard, I'd be pleased for the Committee
12 to hear all of those views in the next hour or so and
13 then we'll sum up and thank the panel for its work
14 over the last couple of hours. So Bill, why don't you
15 lead us off this time?
16 MR. HOUSE: I'm okay for the moment.
17 CHAIRMAN RYAN: Susan, you didn't have a
18 lot of time to think about it.
19 MS. JABLONSKI: Well, I had one little
20 comment on my side that I wanted to kind of bring up
21 and it had to do with guidance. I know there has been
22 some discussion about changing guidance documents.
23 And from our perspective, you know, the guidance
24 documents that we've used through this process this
25 time around have been useful, not perfect, but useful

1 and you know, even changing those for us might put a
2 spin on something in a hearing or an administrative
3 process that would be an added element that might be
4 negative for us if things are talked about.
5 CHAIRMAN RYAN: If you could give us your
6 insights, too, with a little bit -- and I think I know
7 the numbers of the documents but the specific NUREGS
8 you've relied on an other things. If you could --
9 MS. JABLONSKI: I can provide you a list of
10 all of them, sure.
11 CHAIRMAN RYAN: That would be great because,
12 you know, that gives, I think, very explicit
13 information to the staff that will help them
14 understand your comment a little bit better.
15 MS. JABLONSKI: Okay.
16 CHAIRMAN RYAN: So we'd appreciate that.
17 MS. JABLONSKI: I'd be happy to do that and
18 I just want to go on the record that there -- the
19 Applicant had mentioned they believed we misapplied
20 some of those and you know, of course, we take issue
21 with that. We think that you know, there is a certain
22 amount of professional judgment that's used in this,
23 particularly the approach that we use to review a low
24 level application that you know, you apply certain
25 things and other things you don't apply. And that's

1 the flexibility of guidance. And so, you know, we
2 think we've used what tools were out there for us to
3 use and we have been able to move through the process
4 and sit where we do today.
5 CHAIRMAN RYAN: Okay. One other thing, and
6 I think if Dean is here maybe he could answer it, but
7 I saw on one of the slides and I didn't ask it was
8 most meritorious was a phrase used to describe the
9 application. Does it have a specific regulatory
10 meaning?
11 MS. JABLONSKI: Well, let me lay out kind of
12 the process for those of you that aren't familiar with
13 what we went through to -- you I did mention that
14 there's been a policy change in the State of Texas of
15 how we approach possible licensing for low level
16 waste. Previously, it was going to be a state owned,
17 state run site. And in 2003, actually three
18 legislative sessions there were private entities
19 coming in trying to get that legislation changed to
20 open up the restriction on a public entity only for an
21 applicant. And in 2003, there was much discussion,
22 many bills, about changing the way that we would
23 politically, policy-wise approach, on possible
24 disposal and there's a hybrid created in Texas.
25 Really the approach in Texas is a hybrid. The

1 idea is that there will be a compact only facility or
2 the potential for the compact only facility and that
3 that applicant could be a private entity. Would also
4 have the opportunity at the same time on the same site
5 under one license to also have a federal waste
6 facility for the economics and I think it ties into
7 some of the discussion this morning about the
8 viability of more and more sites. Even in Texas, the
9 viability of a compact only facility, you know, we
10 were told there would be no applicants if it was a
11 compact only facility. So the hybrid that was created
12 in Texas allowed for a competitive process and a very
13 aggressive time line, a time line set out we would
14 accept applications in a shortened period of time with
15 a cutoff date from all comers. And they would have
16 this opportunity to take federal facility waste on a
17 facility to be owned by the Federal Government, not
18 the State of Texas.
19 The law actually precludes the state from
20 having any liability associated with the federal waste
21 that might be accepted into our state for disposal.
22 And so the competitive nature of that is that there's
23 actually written into the legislation and rules that
24 were written based on it that we would have this most
25 meritorious application that was chosen through an

1 administrative review and a pseudo technical review
2 and an initial technical review based on statutory
3 criteria of who would be the recommended staff
4 application to move forward through the process.
5 And so that's what was set up through all of
6 what was looked at is that it would be a competitive
7 process. Legislature really hoped to have multiple
8 applications. That's what they envisioned when they
9 laid out the process that they did, statutorily that
10 we wrote rules to. We only got one application is the
11 reality of it but yet the artifact in the legislation
12 and our rules had this most meritorious review and
13 required us to look at the statutory criteria and
14 write a written report based on that, that we
15 submitted to our Executive Director who then allowed
16 us to move into a technical review.
17 So it was steps and hurdles we had to go
18 through regardless of the lack of competition in the
19 process.
20 CHAIRMAN RYAN: The previous language I've
21 always heard is "accepted for review". Most
22 meritorious was never offered at that stage.
23 MS. JABLONSKI: Right.
24 CHAIRMAN RYAN: I'm glad you explained that.
25 Okay, thank you. Alan, any additional comments,

1 observations, thoughts to share?

2 MR PASTERNAK: Not at this moment. Well,

3 perhaps one. I was asked during the break why, if the

4 Federal Government was responsible for the demise --

5 words to this effect, if the Federal Government was

6 responsible for the demise of the Ward Valley Project,

7 why would I put my trust in the Federal Government to

8 solve this problem for everybody? And at least part

9 of that answer is, the Federal Government wasn't

10 responsible alone. Certainly it was President Bill

11 Clinton and the White House who put the kibosh on the

12 land transfer. Things had gone very well during the

13 administration of Bush 1. And if there was one lesson

14 learned at least that I take away from the whole

15 multi-year experience is that time is of the essence.

16 If that project had moved, perhaps, one year ahead of

17 the schedule on which it was, Ward Valley might be in

18 existence today. That is if the land transfer had

19 been complete under the administration of George

20 Herbert Walker Bush, we'd probably have the project

21 today.

22 So time is of the essence, but you cannot

23 discount the fact that Gray Davis, first as Lieutenant

24 Governor, did his best to stop the land transfer as a

25 member of the State Lands Commission. The state could

1 have designated that land for an in lieu transfer in
2 place of certain school lands and a mechanism that I
3 don't fully understand. When that failed, we were
4 told -- I remember sitting in a meeting where the
5 Executive Director of the State Lands Commission told
6 a number of us who were supporting the project and
7 some other state officials, "No one in this room
8 should want this issue to come to a vote before the
9 State Lands Commission", and that was pretty clear.
10 So we had to go to the Federal Land Policy and
11 Management Act process, FLPMA, which was a little bit
12 more involved and then they were able to delay it.
13 I have never placed the blame on the
14 Secretary of Interior and in recent months, I have had
15 my belief in his good offices in this business
16 reinforced. The problem came from the White House.
17 It was not Bruce Babbitt's fault, nor was it the fault
18 of the Bureau of Land Management. It came from the
19 White House.
20 Now, you've got different players.
21 CHAIRMAN RYAN: Alan, I've just got to tell
22 you, I just think that some of the dissection of the
23 political history is probably not our best use of time
24 because we want to focus on the technical and
25 regulatory aspects.

1 MR PASTERNAK: All right, let me give you
2 one --
3 CHAIRMAN RYAN: If I could ask you to focus
4 on those issues, that would be helpful.
5 MR PASTERNAK: Let me give you one other
6 answer. Well, again, the question is, why is the
7 method that we're proposing any likely to be more
8 successful and I can say that the answer is, it's not
9 perfect, but you don't want to continue to do the same
10 thing you've done in the past unsuccessfully and hope
11 for a different outcome.
12 And the second thing is, this method that
13 we're suggesting would concentrate the responsibility
14 and authority in one branch of government rather than
15 two. Bill Clinton was not responsible for the
16 development of a disposal facility. He probably felt
17 he could fool around with it any way he wanted to.
18 We're saying, let's make it a DOE responsibility.
19 They're doing a good job in other areas. They're
20 moving on greater than Class C. They've got an off-
21 site source recovery program. We need one facility,
22 national facility, except for Texas and the Northwest
23 and South -- those who have taken their responsibility
24 seriously. I'm talking about those who are in states
25 that have not.

1 Let's just focus the responsibility in one
2 government, in one agency that can do the job.
3 CHAIRMAN RYAN: I would point out that's in
4 direct conflict with what three governors said in
5 1979.
6 MR PASTERNAK: And the National Governor's
7 Association.
8 CHAIRMAN RYAN: Yeah.
9 MR PASTERNAK: And the irony of all this is
10 that --
11 CHAIRMAN RYAN: I'm not trying to find the
12 right answer of the two. I'm just saying that that's
13 a 180-degree shift. It's interesting.
14 MR PASTERNAK: Well, no one has supported
15 implementation of the Low Level Waste Policy Act
16 stronger than -- more stronger than Cal Rad Forum and
17 one reason was we had what seemed to be success for
18 some time and then we started to look around and we
19 said, "Nobody is going anything". And then the State
20 of California gave the thing the coup de gras. You
21 don't do the same thing for 26 years and hope for a
22 different outcome.
23 CHAIRMAN RYAN: Thanks. It's good to hear
24 you views. I appreciate the time and the effort
25 you've put into it all these many years, and it's

1 helpful to hear your thoughts.

2 MR PASTERNAK: Thank you.

3 CHAIRMAN RYAN: Anything else?

4 MR PASTERNAK: Not at this time.

5 CHAIRMAN RYAN: Dr. Johnsrud.

6 DR. JOHNSRUD: Dr. Ryan, I tried to stay

7 within your time recommendations and so I really

8 didn't finish.

9 CHAIRMAN RYAN: We have plenty of time.

10 DR. JOHNSRUD: Good. I would like to make

11 some suggestions that, oh, dear, I hope would not

12 result in anyone here being put out of business or out

13 of work, but do have to do with our concerns, and

14 Sierra Club and elsewhere in the public realm about

15 the not only continued reliance one existing nuclear

16 facilities and the wide variety of uses of nuclear

17 energy, but also and quite particularly the proposals

18 of the Administration and many others to solve global

19 warming issues by reliance on more nuclear power.

20 We've taken a bit of a look at the total

21 system costs in terms of fossil fuels from the mining

22 of the ore, the transportation of materials and on and

23 on, that indicate that we would not gain a substantial

24 benefit from moving in that direction, and obviously,

25 we haven't talked much about it today, but there would

1 be substantially more radioactive waste generated to
2 be controlled, and particularly so in view of what we
3 are learning about very low dose irradiation and a
4 variety of human health effects.
5 And again, I want to repeat, I'm so pleased
6 that you will be having some exchanges with those good
7 folk. So we would very much like to recommend that we
8 minimize or halt all together the generation of --
9 well, preferably the generation of additional
10 quantities of radioactive waste, that the reactor
11 programs be phased out rather than increased and as
12 near term as is possible. We strongly recommend that
13 the Committee in turn recommend to the NRC that the
14 current Category A, Class A of low level waste not be
15 diminished by creating new lower activity wastes. I
16 think that is definitely the wrong way to go and
17 particularly since, in turn the probability, I think
18 is pretty high that we'll have a continuation of
19 further exit from regulatory control as the costs of
20 management and perhaps difficulties of management
21 continue to increase.
22 We would like to see, certainly, NORM and
23 TENORM wastes brought under control, those that are
24 made available in the environment in other activities.
25 And there are quantities that have, over the years,

1 been released that we believe can be sought out and
2 brought under regulatory control. We find them in
3 various communities and of course, in various
4 activities and they should be -- if possible, they
5 should be reregulated. I don't know how much
6 attention has been given to the -- within your
7 community to the precautionary principle that says in
8 essence, be very, very careful when we are uncertain
9 of the adverse outcomes of our activities. And that
10 too, I believe, fits in the realm of the concerns
11 about low dose health impacts that we're only now
12 really beginning to discover.
13 The entire bio-system, the biota are only
14 now beginning to be examined in terms of impacts on
15 other forms of life in addition to human beings. I am
16 -- I do want to mention the concern about the -- I
17 have to say the failure of the NRC and many other
18 federal and state agencies to seek to want and make
19 use of recommendations that come from members of the
20 public from the affected citizens who essentially have
21 very little voice in decision making.
22 One or two others, my view is that the
23 states and in certain instances, municipalities need
24 to have more authority to be able to determine
25 standards within their communities. For example,

1 there are some states, there are some areas in my
2 state that have heavy concentrations of hazardous
3 activities and two those and adding nuclear facilities
4 and radioactive waste facilities, creates a burden for
5 those populations. And so I do think that there needs
6 to be an ability of localities to exceed the federal
7 standards. And I think that's quite enough for the
8 moment.
9 CHAIRMAN RYAN: Thank you very much. And
10 we'll turn to Scott Flanders, Scott?
11 DR. FLANDERS: Yes, I do have a few comments
12 that I wanted to touch upon. The first is on very low
13 activity waste and it's been mentioned a few times
14 about our 20.2002 process and really the call we heard
15 from Steve Romano earlier today and yesterday and from
16 Susan on this panel about the concerns about the
17 transparency and coordination of the 20.2002 process.
18 And we recognize that and we're working to implement
19 or develop some guidance on the 20.2002 process. And
20 we're going to be coordinating with the states as best
21 we can to do that.
22 This is an example -- and I talked about
23 trying to get out in front of issues. This is an
24 example where in the last couple of years there has
25 been a significant increase in the request for 10.2002

1 requests and most of them started with US Ecology in
2 Idaho and as a result of that increase, it expanded
3 the number of staff that were involved in processing
4 20.2002s and when you have that kind of sudden growth,
5 without specific guidance in place, there's a
6 situation where you have a lack of coordination that
7 you really need and we worked through some issues with
8 the State of Idaho, working with the regulatory agency
9 in Idaho to work on how -- the coordination process
10 and we're going to use a lot of that information as
11 well as, you know, interfacing with Susan and others
12 to help develop that guidance.
13 We recognize that and we feel that guidance
14 is critical and important as more and more of the
15 20.2002s -- the potential for more 20.2002s as we see
16 by the discussion today that there is certainly
17 interest in that. So that's one of the things, I
18 wanted to let you know that that's an issue that we're
19 currently working on. There was a Commission paper we
20 actually issued talking about the transparency of the
21 20.2002 process. And that's another area that we feel
22 is important and that we actually identified some
23 things that we want to do in terms of making the
24 process more transparent so the public at large
25 understands exactly what do we mean when we say

1 20.2002. What does that entail? What's the process
2 that's looked at? What is actually being done? So we
3 want to allay all that and we feel that's important.
4 CHAIRMAN RYAN: I don't mean to press you
5 with an unfair question but just so everybody has a
6 sense, what's the timing of all this do you think, or
7 if it's unknown, that's okay, but I just wanted to
8 ask.
9 DR. FLANDERS: Well, part of what we're
10 looking at is part of the strategic assessment, but
11 the timing for getting the transparency, we're already
12 starting to move on that and we'd like to get things -
13 - and Jim, you keep me honest on the dates. We're
14 trying to get some things on the Web probably by the
15 fall of this year, maybe towards the end of the
16 calendar year, and then certainly, the guidance will
17 be some time after that because we feel it's important
18 to coordinate on the development of the guidance, but
19 hopefully --
20 CHAIRMAN RYAN: That's '07?
21 DR. FLANDERS: Right, but hopefully within -
22 - you know, by the fall we'll have something on the
23 Web that really explains what the process is but
24 certainly we need to coordinate to talk with the
25 interface.

1 There are a couple of other issues that were
2 mentioned about the 20.2002 process that deals with
3 exemption NRC material and this was an area that
4 certainly in our interactions with the State of Idaho
5 was clear the way the permit was written that the
6 State of Idaho, you know, the way they've structured
7 their permit, they recognized NRC exemption. I don't
8 think that at any point in time the NRC was -- or
9 would imply that we recognize the state's authority in
10 terms of their ability to recognize what material is
11 exempt, et cetera.
12 So I think that's something that I think we
13 just need to make sure is transparent and we
14 coordinate that we both have -- both not only the
15 State of Texas but with other states as well, have a
16 mutual understanding of how that works.
17 Another issue I'd like to mention is 61.58
18 and there's been a lot of discussion about 61.58.
19 There's actually been a lot of good dialogue about it.
20 There are a couple things that I wanted to talk about
21 and I think Dr. Kroger mentioned some of those issues
22 in 61.58, but what I wanted to touch on is that I
23 thought I heard a few times that 61.58 we needed to
24 have a way of recognizing site specific or case
25 specific scenarios and situations. And if you read

1 61.58, it's looking at alternate waste classification
2 based on the specific characteristics of the waste,
3 the site and the disposal method.
4 CHAIRMAN RYAN: Just for the fun of it, let
5 me read that for everybody's benefit. "The Commission
6 may, upon request or its own initiative, authorize
7 other provisions for the classification and
8 characteristics of waste based on a specific basis if
9 after evaluation of the specific characteristics of
10 the waste, disposal site and method of disposal it
11 finds reasonable assurance of compliance with the
12 performance objectives in sub-Part C of this part",
13 which is 10 CFR 16. That's the exact language.
14 DR. FLANDERS: That's correct. So there is
15 a recognition and I think the regulation is there. I
16 know there were some questions about the application
17 and the guidance associated with it. I will also
18 reference folks back to NUREG 1573 which, again, that
19 is performance assessment guidance for one of the
20 performance objectives which is 61.41 that goes to the
21 public, but in there it talks about credit for
22 engineer barriers and how you go about doing that.
23 So there is a method to give credit for
24 engineer barriers. In looking at it, I don't know
25 that it's explicit when it talks about the scenarios,

1 but certainly, when you're looking at site specific
2 characteristics and additions, when you apply 61.58,
3 it lends itself to a logical conclusion that you would
4 base your scenarios on the characteristics of the
5 site. So if, for example, you're talking about a
6 facility that's in an arid environment or that has
7 groundwater that's not potable, that you take that
8 into consideration when you look at assessment,
9 whether or not you meet those performance objectives.
10 So I think a lot of the infrastructure is
11 really there. It was interesting to hear some of this
12 discussion. Maybe part of the issue may be awareness
13 of what's already there, so that might be something
14 that we may want to explore a little bit and we look
15 forward to hearing comments on, on some of those
16 things as well. So those are just a few comments I
17 had on 61.58.
18 Another comment I had on that particular
19 angle that a lot of emphasis has been placed on, on
20 61.58 is recognition of a state's regulations as well.
21 As everyone has acknowledged, the facilities that are
22 currently operating and that are under consideration
23 now are all in agreement states. And agreement states
24 have their ability to actually -- as agreement states,
25 they have to satisfy NRC's requirement in terms of

1 compatibility but they have some flexibility in
2 establishing those requirements. And in one case, in
3 South Carolina actually has a similar type provision
4 to 61.58 in its regulations and that lends some
5 flexibility what you can do at the Barnwell site.
6 The State of Utah doesn't have that
7 provision. So one question that I have and would like
8 to explore a little bit, talk about, I'm not familiar
9 with whether Texas has it or not. One issue I'd like
10 to explore a little bit is if you look out -- and this
11 is helping us in the sense of priorities. This is
12 partly why I'm getting to this issue. If you look out
13 into the future a little bit, and Barnwell does
14 actually close its doors to compact waste in two
15 years, to have invested a lot of time in revising
16 61.58 or providing guidance around 61.58, it could be
17 potentially be questionable when the State of Utah
18 doesn't have that provision in its state regulations
19 and the State of Texas, I don't want to prejudge the
20 outcome, but the State of Texas may likely only be
21 limited to only a few states. So it becomes something
22 to explore.
23 You know, maybe there is some real good
24 reasons why we still want to have that additional
25 guidance around 61.58, but in terms of applying

1 resources and prioritizing activities, this potential,
2 you know, scenario to be placed on it, we wanted to
3 take that into consideration as we try to prioritize
4 what our activities are. So that may be an issue that
5 you may want to explore.
6 CHAIRMAN RYAN: Oh, sure, yeah. I mean,
7 there's a range of views there. I mean, you could
8 take the view that you've expressed, the eminent
9 closure is certainly coming but by the same token, if
10 there was some ways in which people could take
11 alternate views for their existing BNC waste so that
12 there could be kind of a better cleaning up of the
13 house before Barnwell does lose access, it might speak
14 that we need it quicker rather than later.
15 DR. FLANDERS: That could be and that's what
16 we want to explore through this.
17 CHAIRMAN RYAN: And I think your point is
18 the right one is that needs some careful consideration
19 among the spectrum of possibilities to see what you
20 want to do. You could argue that, you know, having
21 waste in BNC storage wherever it is, nationwide after
22 2008 might not be as an effective health and safety
23 priority as having it disposed with the other BC waste
24 in Barnwell that's already in inventory. So, again,
25 you know, who knows what the right answer is. We're

1 not here to try and gin up the answers at the table
2 but certainly to shape the questions and see the range
3 of views on how those questions might --
4 DR. FLANDERS: I wanted to propose that
5 because, as I said, we have fellows registering those.
6 It's an opportunity for people to think about it and
7 maybe provide some perspectives or views on that in
8 their input to use as part of their response to the
9 Federal Register.
10 Two other things that I wanted to touch on
11 going back to very low levels of waste, there was
12 certainly some discussions earlier and certainly at
13 the National Academy of Sciences report that came out
14 they talked about the need for -- the need to risk
15 inform how waste of similar hazards, if you will,
16 should be treated and handled in the same manner and
17 that there's a need to do that and the challenge in
18 dealing with the origin based requirements that we
19 currently have. Certainly, we're looking for
20 information in terms of actions that will guide our
21 activities. And I guess from a practical standpoint,
22 to focus heavily on trying to change that -- the
23 current structure, I don't know how beneficial that
24 is, but certainly within the current structure, we're
25 open to hearing potential things we could do in terms

1 of interfacing with the other agencies to try to
2 coordinate activities so that, you know, risk --
3 things can be handled in a more risk informed manner
4 across the different spectrums.
5 But in some situations, for example, the
6 example that was mentioned earlier today with Maywood,
7 even with a waste -- different waste classification
8 scheme, I'm not necessarily sure that that would fully
9 address that problem. Part of that problem is borne
10 out of the unique situation that the Corps finds
11 themself in with the owner of that site and that's
12 presenting some challenges that the staff is
13 continuing to work through.
14 We understand the Corps' views and we
15 understand their concerns. And we really want to work
16 through that and we're in the process of working
17 through that issue as well. But I'm not sure that
18 necessarily changing the current legal structure would
19 necessarily benefit that situation.
20 Another and the last point I wanted to
21 mention was concentration and averaging of dissimilar
22 metals. I thought that was an interesting point that
23 Bill brought up and I just wanted to try to follow up
24 a little bit on that. If he could give us some sense
25 of what kind of benefit, resultant benefit, could come

1 from examining concentration or the averaging process
2 for dissimilar metals and dissimilar type container.
3 What kind of -- how often do you see that, what kind
4 of a benefit would it have in terms of facilitating
5 disposal of waste?
6 MR. HOUSE: I can comment on that. One
7 case that we're evaluating now and working on is a
8 power plant that is no longer operating and they have
9 some stainless steel and some zirconium metals. It's
10 getting near the end of the fuel pool clean-up as far
11 as non-fuel bearing hardware is concerned and the
12 amounts of metal collectively are equivalent to two
13 shipments for transport and disposal at Barnwell. And
14 following the strict interpretation that we've lived
15 to, to characterize the zirconium by itself and the
16 stainless by itself, the niobium concentration, as I
17 recall, is slightly above the Class C concentration
18 limit in one of the metals.
19 If the full amount of metal taken
20 collectively and put in those same two liners could be
21 averaged together, they would meed Class C
22 concentration limits. The container itself, each
23 container would meed Class C concentration limits and
24 would be acceptable for disposal at the site. If you
25 look at a different aspect to the curies of each of

1 the radio-nuclides, the quantities in each of those
2 shipments is no different than an individual shipment
3 where there's sufficient amount of that same metal to
4 use the averaging rules and become a Class C disposal
5 container. That's one example there.
6 I would like to follow up on your asking for
7 suggestions on, you know, in evaluations. The
8 Barnwell license references the BTP on concentration
9 averaging an encapsulation. And that's pretty
10 descriptive when it comes to encapsulation of sources;
11 the amount of encapsulation, the size of containers,
12 et cetera, that are allowed for averaging. If we
13 could consider again the potential that -- to get a
14 particular sealed source disposed, a generator or
15 processor, we'd be able and has been willing in
16 certain cases, to go to several layers of containment
17 for that sealed source, to provide a more robust
18 container for disposal.
19 And that should be considered in possibly
20 the NRC's evaluation of the -- that BTP could be
21 someplace you could focus to evaluate without really
22 changing regulations or regulatory structure.
23 CHAIRMAN RYAN: Okay, thank you. Alan.
24 MR PASTERNAK: I wonder if I can take up a
25 different subject. Did you want to stay on the same

1 subject?

2 CHAIRMAN RYAN: Well, let's see if there are

3 any other comments on this topic at the moment. If

4 not, we can certainly move to another one. Any

5 additional comments? All right.

6 MR PASTERNAK: May I turn to your consultant

7 for some help. Is that cricket? Can I ask him a

8 question?

9 CHAIRMAN RYAN: Extra couple of -- I'm just

10 kidding. Sure you may, of course.

11 MR PASTERNAK: Mr. Kocher.

12 MR. KOCHER: Probably not.

13 MR PASTERNAK: As the Chair has noted, I

14 tend to dwell more on the political aspects than on

15 the strictly regulatory aspects of these issues, but

16 I did pose a suggestion for a regulatory review. The

17 question I put out was, is there -- are there any

18 regulatory issues that come up with agreement state or

19 NRC licensees disposing of their waste at a DOE

20 facility under DOE rules and I guess the question I

21 have for you is, have I asked the question properly,

22 that has to do with shaping the questions that Mr.

23 Ryan mentioned a moment ago, and do you have any

24 thoughts that you could respond to that question at

25 this moment?

1 MR. KOCHER: I interpret the question as a
2 political policy one. I mean, there's nothing wrong
3 with the DOE rules. There's nothing wrong with the
4 performance assessments that are done at DOE sites.
5 We basically play -- we have a different set of rules.
6 I don't work for DOE any more. DOE has a different
7 set of rules but the game more or less plays out in
8 the same way. It's, perhaps, a little less public.
9 They don't do rule making through the Federal
10 Register, that kind of thing, but the performance
11 assessments look alike. The facilities are more or
12 less the same. Waste is waste. So it's -- I
13 interpret that question as a policy political question
14 because DOE has access to commercial facilities.
15 MR PASTERNAK: Yes.
16 MR. KOCHER: Why not the other way around?
17 MR PASTERNAK: Exactly, DOE -- there's
18 competition for DOE waste. We talked about the free
19 market and competition, but there's competition for
20 DOE waste between DOE facilities and Envirocare. It
21 doesn't occur for the other waste, but I appreciate
22 your response you know, to my question. Would the
23 Commission see any regulatory issues, and I guess the
24 answer is no.
25 MR. KOCHER: I'm certainly not going to

1 judge the Commission.

2 MR PASTERNAK: Yeah.

3 MR. KOCHER: If I were a Commissioner, I

4 would have a fair amount of initial reservation about

5 this because it's the perception of giving up control

6 over things that you're licensing.

7 MR PASTERNAK: Yeah, I see.

8 MR. KOCHER: Because I think the key -- to

9 me what flipped my hearing aid on was when you said

10 under DOE rules.

11 MR PASTERNAK: Yeah.

12 MR. KOCHER: The NRC might have a hard time

13 swallowing that part.

14 MR PASTERNAK: I see. Well, could they find

15 a regulatory basis that would -- time is short. We've

16 got two years. There isn't time to relicense these

17 facilities according to NRC rules and I don't know

18 that DOE would want to do that. We're trying to find

19 an expeditious path to a safe disposal facility. I

20 understand that acceptance criteria at DOE facilities

21 are tougher than they are at 10 CFR 61 facilities.

22 That's what I've been told by one --

23 CHAIRMAN RYAN: I want to just offer a

24 thought. They're not tougher, they're just different.

25 MR PASTERNAK: Different, okay. So

1 basically that's what we're talking about. We're
2 talking about different but roughly the same safety.
3 CHAIRMAN RYAN: And I think that's the point
4 that Dr. Johnsrud mentioned, and I think that's where
5 we all ought to make sure we have at least one line to
6 that question is protecting the public health and
7 safety is the root of all of the system and that's one
8 thing that we always have to keep mind. We can get
9 there by lots of paths, perhaps, but that's going to
10 be the focus. Whether it's tough or easy, you know,
11 who cares?
12 MR PASTERNAK: DOE facilities might be --
13 CHAIRMAN RYAN: You've got to do what you do
14 to get it right.
15 MR PASTERNAK: DOE facilities may be one
16 such path.
17 CHAIRMAN RYAN: Maybe, but again, I think
18 our speculation of what, you know, the Commission may
19 or may not think about it probably is not as
20 productive and helping Scott think through some of the
21 technical issues. So let's see if there are any other
22 questions. Any other topics, Alan?
23 MR PASTERNAK: No.
24 CHAIRMAN RYAN: Okay, Dave, anything else?
25 Okay, let's start with Jim Clarke. Jim, any

1 questions, comments?

2 MEMBER CLARKE: Yeah, just a few. I'd just

3 like to pick up on that exchange. I think when you

4 say disposing of non-DOE waste at DOE facilities, this

5 is a new concept to me and I just want to ask a couple

6 of basic questions because what do you mean by DOE

7 facilities? DOE has landfills that accept DOE waste,

8 for example, at the Nevada Test Site. DOE also has

9 constructed a number of disposal cells under the RCRA

10 guidelines, they're called RCRA circular landfills and

11 they have been constructed to deal with the waste that

12 they will generate as they restore those sites.

13 So just are we talking about existing sites,

14 and which DOE facilities, I guess is the question?

15 MR. KOCHER: I would think the answer is

16 facilities for newly generated or stored low level

17 waste at DOE sites. This is not clean-up waste we're

18 talking about --

19 MEMBER CLARKE: Uh-huh.

20 MR. KOCHER: -- although on purely health

21 and safety grounds, if one of the -- if one of the

22 issues is high volume, low specific activity stuff,

23 that's a lot of what goes into these circle cells, so

24 why not?

25 MEMBER CLARKE: Exactly, and they're

1 constructed in accordance with the RCRA design, which
2 came out several times in the course of this meeting.
3 MR. KOCHER: One issue that could arise is
4 that DOE doesn't have this A, B, C business. They
5 don't really -- well, there's just a lot of
6 ramifications of that, that we don't need to go into
7 here, but that's --
8 CHAIRMAN RYAN: That's the point. I really
9 think we're kind of getting sort of far afield from
10 our mission over these two days. We could probably
11 spend two weeks on the details of Alan's report and
12 interesting questions. But what I want to maybe draw
13 us back to is we're looking at low level waste as it's
14 dealt with under 61 and we're looking for
15 opportunities for improving that system and the way it
16 links out and we've touched on 2002 and other issues.
17 So we sure appreciate your suggestions and views but
18 I think I'd like to move us back to what is our main
19 mission which is to give advice to the Commission on
20 things within the 61 rule.
21 MR PASTERNAK: Well, what we're saying
22 essentially is this; we have two years till we lose
23 access for disposal of B and C waste and by "we" I
24 mean just not the members of Cal Rad Forum, but I mean
25 organizations that use radioactive materials in 34 to

1 36 states.

2 CHAIRMAN RYAN: Alan, I think we've heard

3 that. You've given us those details over the last

4 couple of days. So --

5 MR PASTERNAK: Is there something in

6 existence that could be opened that would dispose of

7 those wastes at least for some -- you know, we don't

8 want to do this forever but could those wastes be

9 safely disposed of at a DOE facility and would the

10 Congress authorize that in order to solve this eminent

11 problem?

12 CHAIRMAN RYAN: And I did capture your main

13 point, which is what would the NRC view this, how

14 would they view it. So we have captured your thought

15 well, I think. I mean, we certainly have it in our

16 record. We have the transcript that we can mine

17 later, but I want to, in our remaining time, see if

18 there are any other questions that we can address for

19 the benefit of our other colleagues who are here as

20 well.

21 And let me first turn our attention to

22 member questions. So, Jim, do you want to continue

23 on?

24 MEMBER CLARKE: That's fine. It seemed to

25 be part of the discussion but I accept that and --

1 CHAIRMAN RYAN: Well, I mean, it sure has
2 been and I don't mind it at all, but we really -- with
3 time being short, we probably ought to make sure we
4 cover all the issues, not just that one.
5 MEMBER CLARKE: No problem.
6 CHAIRMAN RYAN: Ruth.
7 MEMBER CLARKE: Thank you.
8 MEMBER WEINER: Turning to a totally
9 different subject, I'd like to ask Susan to comment on
10 the -- inciting your facility in Texas, what kind of
11 competing resource use did you run into because I know
12 in that area of the country, you have oil drilling,
13 you have gas drilling. We at least on the WIPP have
14 phosphate lining and I wondered if that was a question
15 that you came up against and how it's being handled.
16 MS. JABLONSKI: Well, it's kind of tied to
17 some of the issues that we talked about yesterday with
18 the land ownership. Part of why the mineral rights
19 question on the site is so complex and really there
20 are so many parties involved is because this is an
21 active oil and gas area and one of the most active in
22 the country. It is in the premium basin, an area that
23 has had historic oil and gas production. Actually on
24 the site owned by Waste Control there's an active well
25 on that site that has been active for many, many

1 years.

2 And so it is a consideration that we're
3 currently looking at as part of the requirements to
4 see what other resource competition there is. There's
5 potash mining near this as well, as well as the salt
6 formation which we've talked, you asked some questions
7 about, its relation to WIPP. There's actually a salt
8 formation moving through this whole region. It varies
9 somewhat but yeah, that's one of the other issues that
10 we're looking at as well.

11 So you know, being in the middle of the
12 technical review, I really can't say what are
13 conclusions are yet on that but it is an area that
14 we're having to look at because this is an area of
15 active mineral production.

16 MEMBER WEINER: I think this is a problem
17 that may come up in siting facilities in the arid
18 west, anyplace where there is construction. The other
19 question I have and I'd just like to open this to
20 whoever wants to answer it, being quite sensitive to
21 what the Chairman has said that the primary mission in
22 disposition of radioactive waste, low level waste is
23 protection of health and safely, human health and
24 we've also discussed other -- health of other species
25 but let's say human health and safety.

1 How do you balance the siting of a facility
2 and the disposal of radioactive waste in that facility
3 with putative negative impacts, potential that say
4 negative impacts on the population, how do you balance
5 that off against protection of the health of someone
6 who needs a medical procedure involving radioactive
7 materials and can't get it because there is no way to
8 dispose of that particular medical radioactive waste?
9 This, I believe, is a dilemma that is faced and that
10 the -- is faced by everyone and I'd like to get
11 anybody on the panel, the panel's reaction to that.
12 CHAIRMAN RYAN: Any volunteers? Judith,
13 please.
14 DR. JOHNSRUD: Well, having raised the issue
15 repeatedly today, I think that -- so far as I know,
16 all reasonable people recognize that in both medical
17 practice and some research and a few other realms, the
18 radioactive materials are of extreme importance and I
19 am not acquainted with those who would say, "None,
20 none, none", for medical uses and probably some
21 others. However, without the influx of large
22 quantities from the other generators and, of course,
23 the power companies are high on that list, highest
24 perhaps, apart from the military, we've really gone
25 into those wastes particularly, probably a community

1 would be reasonably willing to consider a site if
2 there were assurance of the sources of the content.
3 And this is one place where the source does,
4 indeed make a difference but not where -- we've found
5 certainly that no community was willing to take the
6 wide open and potentially very expansive amounts of
7 waste that were likely to be disposed of.
8 MEMBER WEINER: It's a nice idea in
9 principle; however, the cost of disposal has economies
10 of scale and I doubt you could site a facility, and I
11 believe we all heard Dr. Ring say earlier that it is
12 the medical institutions and the universities who
13 really have a problem. The utilities can build on-
14 site storage, but even Harvard has a problem and
15 Harvard is probably financially best able to handle
16 its waste, far more able than the university I was
17 associated with. This -- I think -- I don't mean to
18 start an argument here.
19 DR. JOHNSRUD: No, no.
20 MEMBER WEINER: But I do think there are
21 economies of scale. You can't just have a site that
22 says, "Okay, we're only going to take medical waste,
23 nothing else".
24 DR. JOHNSRUD: Well, I think it could be
25 argued that health benefit that accrues to the

1 patient, perhaps, needs to be covered as part of a
2 health system. That there are sources of financing
3 that we currently are not considering, but if, for
4 instance, we were to go to single pair system for
5 medical care. So my point would be that that's a
6 matter that is, indeed, in need of a lot of
7 exploration.
8 CHAIRMAN RYAN: Anything else, Ruth?
9 MEMBER WEINER: No, that was my question.
10 CHAIRMAN RYAN: William Hinze.
11 MEMBER HINZE: Well, a couple of comments ,
12 no questions in response to perspectives on NRC's
13 strategic assessment. Perhaps Scott would like to
14 respond to them. I really resonated with his first
15 two points that he made in his off the cuff comments
16 here. First of all, I think that to be true to
17 itself, the Commission should consider the possibility
18 of working towards risk informing in all aspects, and
19 that includes low level waste. That's a hard task but
20 perhaps some -- as part of the strategic plan, one
21 could look at ways in which -- develop various paths
22 forward to move towards risk informed.
23 I think the community is looking for that.
24 Larry mentioned yesterday and Scott mentioned today
25 the importance of timeliness, I think, in the criteria

1 in developing the strategic plan and I'm concerned
2 about timeliness in the strategic plan. I've really
3 jumped onboard strategic planning, but I also know
4 it's a terrible time sync. It's a time sync and it's
5 a thought process sync. And as a result of that, you
6 know, I keep hearing this 2008. If the Commission
7 wishes to do nothing about preparing for the closure
8 of Barnwell, then I think that perhaps one of the
9 options they should consider is stating that. But if
10 they want to do something about the proactive -- and
11 as you've mentioned proactive and getting ahead of the
12 curve, you don't have much time to get ahead of the
13 curve in my view on Barnwell and I don't know that you
14 have the time to wait until you've got all of the
15 editing and all of the gloss done on a strategic plan.
16 We heard from Mark Carver on another topic.
17 We heard from Mark Carver that his utility is in great
18 shape regarding B and C waste and if Energy is in
19 great shape, I assume that the rest of the utilities
20 are, but as we've just heard, as I believe Ruth just
21 said and Joe said so well today, the non-utility
22 sources of low level waste are the ones that I would
23 think would be doing some fingernail biting at this
24 time. And I don't know that it is fair to separate
25 utility and non-utility. I don't really -- I'm not --

1 obviously, an expert on low level waste regulations
2 but it seems to me that that whole thought which I
3 think was generated this morning, is worthwhile
4 looking at in terms of separating out those aspects.
5 I guess there's just a minor point that I
6 want to -- that I want to make in terms of the
7 strategic assessment because I'd like to see it not
8 get in there. And that is we've heard over the last
9 two days some comments about arid sites versus humid
10 sites. That's slippery slope. That is a very, very
11 slippery slope. It's not so much -- it's not just
12 the amount of precipitation but it is how -- what is
13 the form of that precipitation, how it occurs. I
14 could go -- you know, I'll give you the hydrology
15 class some other time, but that is a slippery slope
16 and I don't think that you -- I would recommend that
17 you be careful about moving into that area in the
18 strategic plan. I guess that's enough for now.
19 CHAIRMAN RYAN: And just one question, Bill,
20 on that. I think if I read you right, you're saying
21 if you want to look at different sites --
22 MEMBER HINZE: Right.
23 CHAIRMAN RYAN: -- you look at
24 characteristics and systems in total and in their
25 behavior rather than individual --

1 MEMBER HINZE: Categorizing, that's a very
2 slippery slope.
3 CHAIRMAN RYAN: Fair enough. Thank you.
4 DR. FLANDERS: If I could just respond to
5 the comments. The first comment regarding the
6 timeliness of the strategic assessment, no one is more
7 concerned about the timeliness than I am. We really
8 want to get on with the strategic assessment. And as
9 I said, part of the reason why we feel as though it's
10 so important, I think pointed out a few times before,
11 is the importance of being practical in looking at
12 specific actions that we can take.
13 We're not attempting to take on a strategic
14 assessment similar to what Dr. Knapp talked about
15 yesterday which was very involved and really the low
16 level waste piece was a component, as he well-
17 described, was a component of the larger assessment
18 for the agency as a whole and was at a much different
19 level. It truly was a strategic assessment. When you
20 started looking at whether or not NRC should continue
21 with the responsibility of regulating low level waste
22 or send that responsibility to the EPA. I mean, it
23 truly was, you know, in the classical sense it was a
24 strategic assessment.
25 We use the term strategic assessment from

1 the standpoint of having orderly thought in terms of
2 how you take on your activities, you know, so that
3 you're working with the sense of purpose, as I said
4 earlier. So our strategic assessment, while we use
5 that term to describe it, is not as sophisticated as
6 what Dr. Knapp talked about. So our concern really is
7 identifying specific activities that we can take
8 primarily in the near term or that we need to take in
9 the near term to position ourselves to deal with
10 current issues and upcoming future issues. So we need
11 to look out a little bit into the future but we're
12 primarily focused on near term activities.
13 Part of the challenge that I really see is
14 is once we -- not so much completing the strategic
15 assessment. As Larry mentioned earlier, we're trying
16 to shoot by the end of this year to complete the
17 strategic assessment. It's the following activities.
18 You know, strategic assessment is going to lay out
19 here are the things you should do and when. It's
20 doing those things and completing all those activities
21 in a timely way, which is really going to present a
22 challenge as we talked about the resource constraints
23 that we have. So that's really where we're going to
24 be faced with a lot of the challenge. So I agree with
25 your comments there and we are sensitive to focus on

1 that and that's why we wanted to be very practical and
2 that's why we're interested in hearing from
3 stakeholders and their views on issues that are most
4 critical.
5 As Susan well pointed out, most of this work
6 is going on in the states, so certainly to hear from
7 the state regulators and their views or from
8 generators or disposal operators such as Bill and
9 generators, are important to us to help focus on what
10 activities we can take on that would be most
11 beneficial.
12 In terms of non-utility sources of low level
13 waste and separating them out from utilities, as we
14 look forward to the Barnwell situation, that's
15 something that we've given thought to and we're
16 actually thinking about as well, and recognizing for
17 example, I'll use an example, the extended storage
18 guidance. Looking at that and whether we need to
19 update the guidance, how we need to update it, the
20 time in which we do that, which -- where should we
21 focus our energies first, we're thinking about that
22 because as Ralph Andersen mentioned yesterday, for the
23 utilities, they're taking it on their own initiative
24 in some ways to look at what they need to do around
25 storage, where other generators, non-utility

1 generators, I'm not as aware of any particular
2 activities and there may be a need for us to focus on
3 guidance in that area for them first as opposed to
4 focusing on utility guidance. So we're taking that
5 into consideration. That's an example, but we're
6 taking into consideration the need to potentially look
7 at --
8 MEMBER HINZE: That's great but the
9 financial assurance aspect of it that we heard about
10 today you know, from a university atmosphere, that's
11 terrible important.
12 DR. FLANDERS: We understood that, yeah, and
13 those points were well-taken this morning and there is
14 certainly good information for us to consider.
15 CHAIRMAN RYAN: A personal dimension, Scott,
16 that I just want to add to that point. Sorry to
17 interrupt but I've often heard people raise the
18 question of capacity when they really mean price.
19 "Oh, there's no capacity for low level waste. Oh,
20 there's, you know, a dwindling capacity". Well,
21 that's not really the case. At the moment, there's
22 lots of capacity. Even if Barnwell closes its doors
23 to outside of the compact, they've got a lot of
24 licensed space that won't be used or will be used over
25 some longer haul. So it is access at a price that

1 folks are willing to pay. So in the one case where
2 the utilities do have more robust resources, that's
3 within their scope to manage, but it's the
4 universities and the hospitals and others that,
5 perhaps, don't have the wide body of resources.
6 So I just want to make sure that everybody
7 is clear when we talk about access to capacity for one
8 segment versus another, we're really not talking about
9 capacity, we're talking about sometimes the cost
10 drivers that are out there more than capacity.
11 DR. FLANDERS: I agree with you on that.
12 CHAIRMAN RYAN: Just a second, let him
13 finish.
14 DR. FLANDERS: And the last point you talked
15 about was arid versus humid. We recognize that and
16 it's primarily site characteristics is where we focus
17 and that's what we do when we're doing performance
18 assessment, we focus on the characteristics of the
19 site, not -- we don't make assumptions of whether
20 something is arid or humid. I think people use that
21 as a convenient way to describe site characteristics
22 in some way but your point is well-taken, yeah.
23 CHAIRMAN RYAN: We used have semi-arid and
24 semi-humid, so that's even worse trouble. So this is
25 another step down the slope. Alan, comments?

1 MR PASTERNAK: The issue of economics, and
2 Ruth referred to it, is important. What we want is,
3 speaking again on behalf of users of radioactive
4 materials of various kinds, is assured, affordable
5 access, three A's, AAA, assured, affordable access and
6 our organization has never supported the idea of a
7 separate facility, disposal facility for universities
8 and medical centers and other research institutions as
9 opposed to utilities because obviously, you get the
10 most economic outcome if everybody is using the same
11 facility. One advantage of relying for a few years to
12 meet this 2008 problem, one advantage of relying on
13 DOE facilities is that they are already taking
14 substantial quantities of waste. So if, for whatever
15 reason, large generators choose to store their waste
16 on site and small generators don't and want to send it
17 off for disposal to a DOE facility, they can do it
18 without suffering a financial penalty because that
19 site they're using is already taking a lot of waste.
20 CHAIRMAN RYAN: That's an interesting view,
21 thanks. Any other questions or comments? We are at
22 the hour for our -- how about moving down the line
23 just a little bit, all right.
24 MR. CAMPER: I just want to clarify
25 something on 20.2002.

1 CHAIRMAN RYAN: Now might be the best time.
2 Sorry? Tell us who you are, use the microphone.
3 MR. CAMPER: Larry Camper, Director Division
4 of Waste Management and Environmental Protection with
5 the NRC. Thank you, Dr. Ryan. Several times today
6 the 20.2002 process has come up in our discussions and
7 often times, the word "exemption" is used when that
8 regulatory pathway is mentioned. And sometimes there
9 have been some concerns expressed about the process.
10 I know, Susan, for example, a few moments ago
11 expressed some concerns about better understanding the
12 process and I frankly thought it might be worthwhile
13 to take a moment or two for the benefit of the
14 Committee and others in attendance and just touch upon
15 that particularly regulatory pathway.
16 And the first point that I would make is, is
17 that 20.2002 is not an exemption per se. If you look
18 at the regulatory part, what you find it says is that,
19 "A licensee or an applicant for a license may apply to
20 the Commission for approval of proposed procedures not
21 otherwise authorized in the regulations". It does not
22 necessarily -- so the process is not pursuing an
23 exemption as such. Now, it goes on to describe the
24 contents of the application and it's things you might
25 expect; of course, a description of the waste, an

1 evaluation of information relative to the nature of
2 the environment where the waste will be disposed, the
3 nature and location of any potentially effected
4 licensed or non-licensed activities and last but not
5 least, of course, is considerations of ALARA and
6 meeting the dose limits in this part.
7 Now, with regards to the dose limits in this
8 part, there is no dose constraint implied or explicit
9 for 20.2002. In this part means Part 20. And several
10 years ago, when I had the decommissioning program, I
11 recall communicating with the Office of General
12 Counsel about what did that mean because -- and I see
13 Jim is smiling. Because in fact, the staff had
14 gravitated toward, as a matter of practice, implying
15 dose constraint of a few millirem. And while I
16 thought that was a good thing to do, in terms of a
17 place to be, it nonetheless troubled me that I didn't
18 have a clear regulatory position to stake that
19 position upon.
20 The feedback that I received from the Office
21 of General Counsel was is that the dose that's being
22 referred to should be interpreted to mean 100
23 millirem. One hundred millirem is exposure that's
24 allowed to a member of the public. However, we have
25 never approved a 20.2002 disposal approach that even

1 closely approximates that number. As a matter of
2 fact, they've been on the order of a few millirem and
3 they continued to be so.
4 CHAIRMAN RYAN: Just a clarifying question,
5 Larry, if I may. Is that because it's kind of an
6 overriding view of ALARA?
7 MR. CAMPER: It is. There's an overriding
8 view of ALARA.
9 CHAIRMAN RYAN: Thank you.
10 MR. CAMPER: Absolutely. The next point I
11 would make is that the question of exemption, how did
12 exemption come into this? Given that I said that this
13 regulatory mechanism is not an exemption, per se,
14 because it is not, in fact, there have been 20.2002
15 authorizations granted in the past that contain no
16 exemption. Historically, as I mentioned yesterday in
17 my comments, back in the days with this was 20.302, I
18 believe it was or 304, 302, I think, the majority of
19 such requests were disposal on site.
20 The industry has gravitated away from that
21 practice because of the implementation of the License
22 Termination Rule in 1997, which, of course, has a 25
23 millirem dose limitation and ALARA. Why bury
24 something today that you may have to exhume later to
25 meet a dose standard. Most of these requests in the

1 recent past have been for material to be disposed of
2 in RCRA facilities and the dose evaluation has been on
3 the order of a few millirem. Where the exemption came
4 into this discussion and I think it causes some
5 confusion, is that the Office of General Counsel
6 within the last couple of years, has advised the staff
7 that the recipient or the material needs to be exempt
8 for it to be received at a RCRA facility and I don't
9 use those terms interchangeably easily because at
10 first we were told by the Office of General Counsel
11 that it was, in fact, the material that needed to be
12 exempted but then more recently we were told that it
13 is, in fact, the recipient of the material that needs
14 to be exempted, that being the RCRA operator.
15 We continue to have dialogue with OGC. In
16 fact, Scott recently sent a memo to OGC asking for
17 further clarification on that point so we can do it
18 consistently and the process is more clear. I mean,
19 Susan raises some valid points about the process and
20 it's not so much what the regulation itself says, it's
21 more about how it gets handled. Now, we -- the other
22 point that we're pursuing is how these types of
23 requests are handled within the agency on the two
24 different major sides of the organization, that being
25 NRR and NMSS are handled differently.

1 A 20.2002 request on the NRR side of the
2 house is processed via a letter back to the licensee.
3 In our world, it's processed via a license amendment.
4 So we're working, again, to get consistency in the
5 process. And then the last point I would make is that
6 we -- in terms of process, I think what's really
7 needed and we are working on this, it's not so much
8 what the regulation says or even the review process.
9 It's the decision criteria that we use and we're
10 working to find ways to better articulate that so it
11 could be more readily understood. The process,
12 therefore, becomes more clear in terms of outcomes are
13 reached.
14 And the last point I would make is that the
15 Commission, as I again mentioned just briefly in my
16 comments yesterday, the Commission recently directed
17 the staff to make the 20.2002 process more publicly
18 available, more aware for those that are effected by
19 it. And we propose some actions to the Commission
20 which the Commission agreed to accept in an SRM and
21 we're moving to put more information on the website
22 for example, and make requests of this nature and the
23 outcomes more publicly aware so that certainly those
24 effected meaning those that are nearby these sites or
25 those that have concerns about this type of issue or

1 these types of disposals, can in fact, have an
2 awareness. So I thank you for taking the time to do
3 this, but I thought it would be worthwhile to clarify
4 just what this process is and how it generally works.
5 CHAIRMAN RYAN: Great, thank you. At this
6 point, we're open for any other comments,
7 observations, questions?
8 MS. D'ARRIGO: Since we're on 20.2002, I'll
9 -- Diane D'Arrigo, Nuclear Information and Resource
10 Service. Since we're on 20.2002, I wanted to ask how
11 many applications there have been and at one point I
12 thought none had been rejected, but it was referred to
13 that some have been rejected, so I wanted to know how
14 many there have been, how many accepted, how many
15 rejected and how many are under consideration right
16 now.
17 DR. FLANDERS: Obviously, I don't have those
18 numbers right at my fingertips in terms of how many
19 applications we've received and how many have been
20 rejected, but over the last couple of years, I would
21 say we've been averaging about three to four requests
22 a year and I'm -- I would need to check but I don't
23 believe we have any currently under review right now.
24 There's -- we talked about the Maywood issue that
25 that's somewhat unique. It's akin to a 20.2002

1 process but I think the Court clearly pointed out the
2 challenges and the legal interpretation and their
3 ability to use the 20.2002 process which we're looking
4 at but which, you know, we're continuing to work with
5 them on those issues.
6 But off the top of my head, I can't think of
7 how many we currently have under review.
8 MS. D'ARRIGO: But you said some had been
9 rejected? Have there been some that have been
10 rejected that you know of?
11 MR. CAMPER: Yes, there have been.
12 DR. FLANDERS: Yes, there have been.
13 MR. CAMPER: Two come to mind. One is the
14 one that's already been discussed and that was the
15 recent one by the Corps of Engineers because it did
16 not have standing for the agency to grant such a
17 request. The other was probably now it's been three
18 or four years ago, Big Rock Point came in with a
19 20.2002 request. The first time around it was
20 rejected. It was subsequently approved. The basis
21 for rejected in the first time around was that they
22 were -- the utility was wanting to dispose of certain
23 material in a landfill. And the landfill had as a
24 condition of operation that it could not receive
25 radioactive material.

1 The utility asked us below a certain level,
2 I don't recall the details of just what that level was
3 now, but below a certain level, we would not view that
4 material as, in fact, radioactive. Well, that simply
5 wasn't possible. We could not do that and we so
6 notified the utility. Subsequently, the utility was
7 able to negotiate an understanding with the operator
8 of the landfill site that they could, in fact, receive
9 quantities of radioactive material at very low levels
10 that were envisioned by the request. That one, again,
11 dosed out I think at something on the order of three
12 millirem I believe, one to three, probably three at
13 most.
14 DR. FLANDERS: Jim, do you have a feel for
15 how many we currently have under review?
16 MR. KENNEDY: Jim Kennedy on the staff.
17 Yes, Diane in SECY 06-0056, that's the Commission
18 paper on improving transparency, there's a table in
19 the back of that table that has all of the 2002
20 requests for the last six years.
21 MS. D'ARRIGO: Okay, and that's public?
22 MR. KENNEDY: Yes, it is. It's on the
23 website.
24 MS. D'ARRIGO: Great.
25 MR. KENNEDY: There's been 20 in the last

1 six years and I think there -- I know there are at
2 least three, there's maybe four that are still open
3 that are pending right now.
4 MS. D'ARRIGO: And does that say where they
5 went in that report? Does it say --
6 MR. KENNEDY: Yes.
7 MS. D'ARRIGO: Okay, thanks.
8 CHAIRMAN RYAN: Could you just give that
9 SECY number again for everybody's benefit?
10 MR. KENNEDY: 06-0056.
11 MS. D'ARRIGO: I had other questions but I
12 could come back in a minute.
13 CHAIRMAN RYAN: Does anybody else have
14 questions or observations? If not, please proceed.
15 You thought you were going to get a break, didn't you?
16 MS. D'ARRIGO: I thought I could --
17 CHAIRMAN RYAN: Take your time.
18 MS. D'ARRIGO: I think what I wanted to
19 convey is that generally, we'll be opposing the risk
20 informing proceedings partly due to the experience on
21 the reactor side that risk informing has actually led
22 to relaxation in protections and also due to the
23 concern that all of the risks are not being fully
24 evaluated and that those who are doing the evaluation
25 have a bias or a tendency not to be looking at it in

1 a fully objective way or not balancing the concern of
2 the public for concerns about low dose radiation
3 health effects.
4 So that's another reason why we would not
5 support it. We'd also want to -- another problem with
6 the risk informing -- well, actually what I would say
7 is somewhat interesting is that for years on the low
8 level waste issue, and part of the reason that many of
9 the proposed sites were defeated in the last 20 years
10 or so since that signing was taking place is that the
11 radioactive material that was to be disposed has a
12 hazardous life longer than the institutional controls.
13 And many organizations, environmental groups,
14 including the Sierra Club have policies supporting a
15 redefinition of low level waste that would exclude
16 materials that are hazardous longer than that 100-year
17 institutional control period.
18 So from that perspective, the public
19 interest has been calling for -- public interest
20 groups have been calling for reassessing radioactive
21 waste on the basis of hazard or longevity of hazard
22 for decades but now the way that this is being -- that
23 this is being reflected now and I haven't had a chance
24 to go through the whole National Academy Report, nor
25 the whole White Paper, but it looks to me like the

1 entire trend in risk informing and risk evaluation is
2 to reduce protections and to deregulate or reduce --
3 is to go in the exact opposite direction. Instead of
4 taking the most concentrated and longest lasting
5 materials and pop that up into a high level waste
6 category and deal with it with the other long lasting
7 wastes that give somewhat similar doses, what we're
8 looking at here is taking a big bulk portion of it and
9 treating it as not radioactive or putting it into
10 other regulatory structures with less protection for
11 the radioactive -- the presence of radioactivity.
12 So I guess what I'm pointing out is that
13 since the way that risk informing has been utilized on
14 the reactor side, since the way that it's being
15 discussed is all that I've seen so far in the reports
16 that are being looked at are in the opposite direction
17 of protections against exposure to radiation, we would
18 have to oppose it and then I would say one other thing
19 about -- that I reiterate from earlier, is that if the
20 public isn't involved, if those who were going to be
21 exposed to the stuff are not involved, those who don't
22 have a legitimate concern about the health effects of
23 low doses are not involved in the process, you only
24 take people who generate the waste and have waste
25 streams to deal with and make the decisions on the

1 risk, then it's not going to be publicly accepted and
2 I don't know in which final court the decision is
3 made, is it an NRC rule or site-by-site rule but we're
4 going to come up against this over and over, because
5 there is across the country and around the world, a
6 big campaign toward more precautionary protection and
7 this is going in the exact opposite direction.
8 CHAIRMAN RYAN: Thanks, Diane, I appreciate
9 your comments. I'd offer you two thoughts. One is
10 we've been very particular and scrupulous in the White
11 Paper to not offer any interpretation or
12 recommendations. We simply tried to document as
13 accurately and precisely as we could the history of
14 regulation so that folks who don't have access to
15 things about ocean dumping in the '60s and other
16 things, have the facts and we tried to be very
17 factual. So we really appreciate any comments folks
18 have or corrections. We've gotten several on the
19 original White Paper drafting. We're working toward
20 NUREG.
21 So this is not a policy document of any
22 kind. It's simply an attempt on our part to document
23 the legislative and regulatory history from the
24 beginning of the world of radioactive waste management
25 forward. So hopefully you'll see that and appreciate

1 the information that's been compiled in a hopefully
2 useful way.
3 The second is the Academy Report which I've
4 been involved in, has -- and again, I'd appreciate
5 your views after you've had a chance to read it fully,
6 rather lengthy chapter written by folks I view to be
7 experts on issues of participation so I hope that you
8 will share your insights when you've had a chance to
9 take a thorough look at it. I know it's a relatively
10 new publication but there was a very concerted effort
11 to address those issues. Now, whether we've done them
12 adequately or whether you'd like to offer comment on
13 it, we'd sure appreciate anything you can offer, but
14 there was a very concerted attempt to try to address
15 how to do exactly what you're saying and the phrase
16 was to involve the publics, plural, not just one but
17 you know, and I learned a lot from the participants on
18 that committee that were expert in that area. So
19 again, I offer that observation to you to think about
20 as you digest the stack of materials from this
21 meeting.
22 MS. D'ARRIGO: And then I did make, and the
23 one opportunity that we had to talk to that committee,
24 I pointed out that there were a number of people on
25 that committee who had been active proponents of

1 either BRC or equivalent type deregulations for their
2 agencies or their in some cases international, in some
3 cases non-governmental and in some cases governmental
4 agencies that were actually actively participating in
5 promoting the BRC type or clearance concepts. And so
6 it seemed like it wasn't a big surprise that it would
7 come out as a conclusion here, that that would be a
8 way to go and we've --
9 CHAIRMAN RYAN: Again, I would recommend
10 that you direct that to the Academy because they have
11 a process balance on their committees and like it or
12 not, that's the process they use.
13 MS. D'ARRIGO: Well, if you recall, I did
14 make that point to the committee and to the NAS at the
15 time, but I'm just reiterating it now because I don't
16 know how much value is going to be weighted on this
17 report and I'll say that, again, we need to have those
18 of us that have concerns and opposition, at least part
19 of the discussion more than a 10-minute presentation
20 and then it's given lip service, but it's not really -
21 - and then you line up people that support risk based,
22 risk based, risk based and who even knows if they --
23 you know, what their perception of that means, and I'm
24 saying that there's a perception of that that could be
25 good if you were talking about taking higher risks and

1 putting it into a better regulatory structure but what
2 it's interpreted to mean thus far appears to be one
3 that is in the opposite direction.
4 CHAIRMAN RYAN: And again, I'm not trying to
5 dissuade you of your view. I'm simply saying you said
6 you hadn't had a chance to read it. I was just kind
7 of --
8 MS. D'ARRIGO: Not your advisory -- or your
9 December 27th document, no.
10 CHAIRMAN RYAN: Okay. Any other questions
11 or comments? Alan, one last comment.
12 MR PASTERNAK: Just an administrative
13 comment. I will be e-mailing to Mike Lee Cal Rad's
14 critique of the low level waste forms discussion of
15 issues document.
16 CHAIRMAN RYAN: Thank you. I think we
17 agreed that we have that in the record.
18 MR PASTERNAK: Yeah, Mike asked me to put
19 that on.
20 CHAIRMAN RYAN: You will make that
21 available. That will be part of the package that will
22 be publicly available for all the materials we've
23 gathered, slides, all that will be available.
24 MR PASTERNAK: Mike has --
25 CHAIRMAN RYAN: Probably the NUREG document

1 as well.

2 MR PASTERNAK: Mike asked me to put that on

3 the record.

4 CHAIRMAN RYAN: Thank you. Yes, Dr.

5 Johnsrud?

6 DR. JOHNSRUD: And may I ask, is there a

7 time limit to comment on the documents?

8 CHAIRMAN RYAN: I don't think there's any

9 strict time limit. Do you have a time when you could

10 offer comment or --

11 DR. JOHNSRUD: Well, I'd love to try, yeah,

12 yes.

13 CHAIRMAN RYAN: We typically put these

14 packets together fairly quickly, so Mike, do you have

15 any sense of -- a couple of weeks?

16 MALE PARTICIPANT: (Inaudible)

17 DR. JOHNSRUD: Both the White Paper -- I'm

18 sorry, both the White Paper and the NAS. I assume

19 those --

20 CHAIRMAN RYAN: The NAS comments are due to

21 the NAS. That's their process.

22 MR. LEE: The ACNW White Paper is available

23 on the Internet at the ACNW home page. I think, as

24 Dr. Ryan pointed out earlier, our time line for trying

25 to finalize the NUREG now is some time by the end of

1 the summer, before the end of the summer.

2 DR. JOHNSRUD: So any comments need to be

3 immediate.

4 CHAIRMAN RYAN: Fairly quick, up to three

5 weeks would be great.

6 DR. JOHNSRUD: Very good.

7 MR. LEE: And I'd just like to point out

8 that --

9 CHAIRMAN RYAN: I want to emphasize we

10 worked very hard to make that a factual document,

11 documenting the history, so -- and, you know, Mike and

12 I both find it fascinating because we kept pulling

13 strings and finding things to, you know, mention and

14 tie together in a time line and it was quite a good

15 exercise and hopefully it will be a useful resource to

16 everybody that's interested in the topic.

17 MR. LEE: Just to put a spin on it, the

18 version on the Internet is kind of the first shot out

19 of the cannon. We've spent some time improving on it

20 and fine tuning and as Dr. Ryan pointed out,

21 connecting a few more of the dots, so --

22 CHAIRMAN RYAN: And we've gotten a lot of

23 good comments from that initial read, saying, "Oh, you

24 didn't", "Okay, we'll put that in", and we've added

25 some other documents we didn't have listed initially

1 and so forth.

2 MR. LEE: It's a work in progress.

3 CHAIRMAN RYAN: Any other questions or

4 comments?

5 MS. D'ARRIGO: One more. 61.58, is there

6 also a SECY or some kind of a public document that can

7 tell us what applications have been made, if that's

8 the process that's used for implementing 61.58?

9 DR. FLANDERS: If you could clarify your

10 comment. Are you asking if there's been any

11 applicational use of 61.58?

12 MS. D'ARRIGO: I'm asking that but rather

13 than expecting you to recite the answer, I'm asking if

14 there's a public document that I can go to like you

15 gave me the SECY paper for 20.2002.

16 DR. FLANDERS: Actually, there's not. I

17 think the most applicable application of that has

18 probably been done in the State of South Carolina.

19 It's been reported a few times recognizing that their

20 regulations are similar to ours. So that that might

21 be the most applicable case but in terms of NRC

22 application of 61.58, I don't know that there's been

23 any cases of that.

24 MS. D'ARRIGO: But there seems to be

25 encouragement of it or --

1 MR. LEE: If I could just offer this
2 observation, if you go to the Statement of
3 Considerations for both Part 61 in the draft and the
4 final rule and places like that, you usually begin to
5 get a sense for what the staff's thinking at the time
6 was for what the intent and the -- of a particular
7 requirement in the regulation, be it 61.58 or anything
8 else.
9 DR. FLANDERS: Certainly. The Statement of
10 Considerations gives you a global explanation of the
11 regulation and the staff's intent for the use of that
12 regulation but in terms of specific examples of where
13 it's been applied, the most applicable information
14 would be from the State of South Carolina.
15 MR. LEE: And I see Paul Lohaus sitting
16 against the wall over there. He may be able to help
17 us out. I don't know if there was anything in the
18 draft or the final EIS on 61.58.
19 MS. D'ARRIGO: But it would be the state
20 regulations that are compatible to 61.58?
21 MR. LOHAUS: Thank you. Paul Lohaus. A
22 couple comments on this question; one, I talked a
23 little bit about Section 61.7, Diane on the first day.
24 And one of the reasons we put 61.7 into the rule was
25 to provide some institutional knowledge on the intent

1 of the staff in developing the rule and there is
2 discussion at the end of the discussion on the waste
3 classification system relative to the purpose and
4 intent of 61.7.
5 That particular provision my memory, my
6 recollection is that it's a Category D matter of
7 compatibility but I would rely on the staff to answer
8 that question which means that it's not required that
9 each agreement state adopt that provision.
10 MS. D'ARRIGO: You're talking about 7 or 58?
11 MR. LOHAUS: Section 61.58. And I think
12 during discussion at the meeting, I think there was at
13 least one state that was identified, Utah, that may
14 not have developed that provision.
15 Second, in looking at the draft and final
16 Environmental Impact Statements, I would look first at
17 the final Environmental Impact Statement and the
18 section within the final Environmental Impact
19 Statement that addresses the waste classification
20 system. I believe there's discussion in that section
21 as well relative to the intent of the staff, not only
22 on the overall classification system but also the
23 important -- the importance of maintaining flexibility
24 given the staff's knowledge at that point in time.
25 In other words, we recognize there would be

1 changes in waste form, improvements in processing,
2 greater use of engineered barriers and reliance on
3 engineered barriers in disposal technology and some of
4 the areas that were talked to in this meeting to me
5 are very good example of what the staff intended in
6 terms of use of that provision. The example that
7 Bill House raised relative to the different metals and
8 the practical problem that's presented there, that's
9 a very good example that the staff intended that could
10 be addressed through this provision. And I think but
11 Mike Lee mentioned the Statement of Considerations on
12 the Rule, both the draft and final. I would also look
13 at those as well.
14 I hope that answers your question, gives you
15 some further information --
16 MS. D'ARRIGO: No, I mean, you're talking
17 about the philosophy of it and the thoughts about it,
18 and I want to know if it's been used or if it's in the
19 process of being used.
20 MR. WIDMAYER: Diane, Derek Widmayer of the
21 ACNW staff. I think the staff is kind of challenged
22 to go back and try to remember everything that's
23 happened over the last 25 years but I don't think
24 there has ever been any application of 61.58 to come
25 up with an alternative classification system for low

1 level waste. I think that's fair to say. And what
2 they're talking about now is doing something new.
3 CHAIRMAN RYAN: So the answer is, we're not
4 sure but we don't think so.
5 MR. WIDMAYER: Correct.
6 CHAIRMAN RYAN: Is that the answer? Okay.
7 MS. D'ARRIGO: But South Carolina has done
8 it.
9 CHAIRMAN RYAN: I don't --
10 MR. WIDMAYER: I think South Carolina --
11 CHAIRMAN RYAN: -- came up with an alternate
12 concentration table. Henry is here. He can speak for
13 himself.
14 MR. PORTER: Henry Porter with the State of
15 South Carolina. We haven't looked at -- let me say
16 what we have looked at. We have reviewed some
17 requests that have come under our regulation that's
18 similar to 61.58 and those are discrete waste. I
19 think over the past five years or so we've done about
20 five of those. We've had about five over the past
21 five years about one a year. Some examples of that
22 would be some small discrete material that was within
23 a reactor vessel that was disposed of.
24 Most of the waste there was within the Class
25 C limit. There was, from what I recall, probably less

1 than a cubic foot of waste that was within that
2 container that it exceeded Class C limits.
3 Significantly more radioactivity associated with the
4 waste that was within the Class C limits than that
5 that was outside of those limits. We haven't ever
6 done a more global type of approval allowing a certain
7 waste stream or a certain radio-nuclide that exceeded
8 the concentration limits for C, for Class C waste to
9 be approved, though.
10 As far as having something like the SECY
11 document that has a list of those in it, the state
12 doesn't have anything like that. We have those
13 requests in our files and our files are certainly open
14 to the public to be reviewed if you would be
15 interested in that.
16 MR. LOHAUS: Maybe one further comment, too.
17 I'm not aware of any SECY document that provides
18 quote, "a listing". One case that I recall and the
19 staff may want to comment further here, but I believe
20 the State of Washington did a specific review relative
21 to disposal of the Trojan Reactor Pressure Vessel at
22 the Hanford facility and I believe that that analysis,
23 the State also asked for some technical assistance
24 from NRC and that analysis was reviewed by the staff
25 as well. But what I don't recall is whether the state

1 applied an equivalent -- actually applied 61.58 or did
2 an independent analysis which demonstrated that the
3 performance objectives would be met.
4 DR. FLANDERS: I believe it was the latter.
5 I believe it was --
6 MR. LOHAUS: Okay, thank you, Scott.
7 DR. FLANDERS: I think they demonstrated the
8 performance objectives would be met and not
9 necessarily 61.58 alternate classification. But that
10 is another example that's worth looking at if you're
11 interested in this.
12 CHAIRMAN RYAN: All right, thank you, Paul.
13 Appreciate the clarification, the questions and the
14 responses. We're at the point in our agenda where
15 we'll typically sum up. I think it's clear that we
16 will develop a letter that will go to the Commission
17 on the fabulous body of information we've gathered
18 over these couple of days and we appreciate every
19 panel member and every speaker's presentations,
20 participation and enthusiasm for the topic. I think
21 we've garnered quite a large fraction of the national
22 expertise in this area from many points of view and
23 many parts of the regulated community and the
24 interested communities and we appreciate everybody
25 coming in.

1 So I guess the themes that I heard were kind
2 of a couple of general ones. One is that wholesale
3 changes to 61 don't seem to be the vote. That there
4 is increments of improvement or change over a number
5 of areas and perhaps folks have different views on
6 what those incremental changes should be, but that
7 that was an approach that we could maybe identify what
8 we heard as the range of views on topics and offer the
9 Commission insights as to what the body of folks here
10 were offering in that area. So incremental changes.
11 I think it's also helpful to have a bit of
12 the history for past sites and I think Todd Lovinger's
13 comment of, you know, mine the successes as well as
14 the failures is a very good caveat. I don't know if
15 Todd is still here or not. Todd, and we appreciate
16 that insight. That's very helpful so we need to think
17 about that.
18 We've gotten good input from generators,
19 from waste site operators on their issues and I think
20 we'll mine the transcripts and certainly from the
21 applicant community. We've heard effectively from the
22 applicant and from the regulator that's reviewing the
23 application and I think that's really very helpful
24 because you know, it's in process, yet you've come and
25 updated us on your process and how that's going both

1 from the applicant's point of view and your own. So
2 we have a current view of how 61 is working along in
3 Texas.
4 I think it's helpful to have the dimension
5 to have the NMSS staff here that have to deal with the
6 unintended consequences of what we think about going
7 into other areas, 2002 and perhaps others because when
8 you pull the definition of low level waste string you
9 find it leads to many other connections, so we're
10 happy to have that. And again, I thank the audience
11 participants and everybody at the table for their
12 attention during the two days and their open, honest
13 and clear communications and we have a wide variety of
14 views. So that's kind of my general sum. Allen, do
15 you have anything you want to specifically identify at
16 this point?
17 VICE CHAIRMAN CROFF: No, I don't.
18 CHAIRMAN RYAN: Okay, Ruth, how about you?
19 MEMBER WEINER: Well, I think -- we still
20 talk into the microphone, I guess.
21 CHAIRMAN RYAN: Of course, we're on the
22 record.
23 MEMBER WEINER: Oh, we're on the record,
24 okay. I think there were several themes that came out
25 it seems to me and I'm sure everybody had captured the

1 same thing. I think we have a difference of opinion
2 on the if it ain't broke don't fix it, that everybody
3 is dealing with Part 61 as it is and certainly we
4 can't do anything about the legislation, only Congress
5 can do that. But there is a difference of opinion as
6 to whether something else needs to be done regarding
7 Part 61.
8 I think it was very clear to me that there
9 seemed to be a sentiment that you don't change the
10 rule which having worked as an NRC contractor at one
11 time, I can certainly appreciate. It's tough to
12 change rules and that you use the other mechanisms
13 available to do this. I believe we should address the
14 question of the closing of the Barnwell facility in
15 2008 to out of compact B and C waste. I'm quite
16 sensitive, as I said before, to what Dr. Ring said
17 which is that this -- the availability whether it's by
18 cost -- and I quite agree -- whether access is because
19 of cost or because of space, that something -- that
20 question needs to be addressed.
21 That's all I can think of off the top, but
22 I've got a lot of notes.
23 CHAIRMAN RYAN: Great. Dr. Clarke?
24 MEMBER CLARKE: Well, I thought you put it
25 very well, Mike. I'm not sure there is a difference

1 of opinion on if it's not broken don't fix it. The
2 way I interpreted that was we don't need regulatory
3 change but within that, there are opportunities
4 possibly through guidance or other mechanisms, as Ruth
5 stated, to look at a number of things. And I think
6 those are the sub-topics that we'll identify as we
7 mine the transcript. I've written down several.
8 CHAIRMAN RYAN: And I think, we heard, you
9 know, several levels of that. We heard about license
10 condition changes. We heard about case-by-case types
11 of analysis that looked at things. We heard about
12 regulatory guidance in a couple of different forms and
13 you know, single case kinds of determinations which
14 would be case specific. And then, you know, we heard
15 about generalized guidance which typically takes the
16 form of one or a different form of documents. You
17 could think of a Reg Guide or SECY document or other
18 kinds of things that would help the staff become more
19 uniform in its thinking and interpretations and, you
20 know, there's a wide dimension of those kind of things
21 that happen within the agency.
22 So I agree with you, Jim. I think mining
23 that is effective and we can certainly develop a
24 pretty good letter that covers these bases.
25 MEMBER WEINER: One more?

1 CHAIRMAN RYAN: Sure.

2 MEMBER WEINER: I think we should consider
3 the presentation -- very carefully the presentation
4 made by the Army Corps of Engineers that deals with
5 large quantities of very low activity waste and that's
6 a question that, again, I'm not proposing any kind of
7 rule change or I don't think we've heard that, but
8 that is something that we should look at as an issue.

9 CHAIRMAN RYAN: Yeah, I think that's right
10 and I think it runs the gambit. As I said earlier, we
11 deal with a wide range of concentrations and a wide
12 range of quantities. And it's in the consideration of
13 all those elements that you can identify and assess
14 risk across the board for any situation. So we can't
15 look at part of it. We have to look at all of it and
16 I think, you know, when we do that, we can come to a
17 better insight into risk and perhaps what schemes
18 would be useful.

19 With that, again, I just for schedule
20 purposes, I think we will be dealing with our draft
21 letter at our July meeting and that's scheduled for
22 the week of, anybody can help me, please.

23 MR. LEE: The 19th.

24 CHAIRMAN RYAN: The week of July 19th. It
25 will be on our agenda that will be posted on the web

1 according to the Federal Register requirements
2 sometime in June. So look ahead to that for those of
3 you that may want to follow-up and observe that
4 letter-writing session. Jim?
5 MEMBER CLARKE: Well, if we start the week
6 with Monday, it's July 17th.
7 CHAIRMAN RYAN: July 17th is the Monday of
8 that week, but the exact days and the agenda will be
9 on the Web, so stay tuned. Any other questions or
10 comments? Yes.
11 MR PASTERNAK: I wanted to thank you, Mike,
12 and the Advisory Committee. This is a very important
13 role that you all are playing in terms of developing
14 the background paper and hosting this workshop to
15 bring all the stakeholders together and provide an
16 opportunity to share views and as I sort of talk
17 through and really didn't go into a lot of detail,
18 this, I think was really key to helping solve the low
19 level waste issues that were present in the late '70s
20 and early '80s and provided the substance of Part 61.
21 And it's a very valuable process to bring everybody
22 together, share their views, identify what's here and
23 I think the Committee is playing a very valuable role
24 and just want to express appreciation.
25 CHAIRMAN RYAN: Thank you very much. I take

1 that as high praise coming from your years of
2 experience in this context. So thanks very much. We
3 appreciate it. Any other last comments? Yes? Help
4 yourself, who you are and --
5 MR. HEARTY: Brian Hearty, Army Corps of
6 Engineers. And I just wanted to say thanks for that
7 consideration of the large quantity that we generate.
8 What I wanted to point out specifically is that while
9 we're doing this under CERCLA and we're going out and
10 cleaning up these old sites from 40 or 50 years ago
11 that are contaminated in neighborhoods and moving that
12 waste to other facilities, most of the waste that
13 we're cleaning up is not currently licensed. It's not
14 subject to licensure, most of it, so therefore, when
15 we have exceptions that take NRC case-by-case basis,
16 or guidance changes, under CERCLA, we can only look to
17 promulgated rules to develop clean-up levels or to do
18 standards. We can't really incorporate guidance into
19 our decisions.
20 So that's why we really did want to look at
21 rule changes, because that way we can address it under
22 CERCLA when we're doing our clean-ups.
23 CHAIRMAN RYAN: Thanks. That's a helpful
24 clarification. Thank you. Any other comments?
25 Hearing none -- I'm sorry, Mike.

1 MR. LEE: I just want to thank everyone for
2 participating the last two days. We know some people
3 have come very far and we hope that participants have
4 also got something out of the meeting besides the
5 Committee. So thank you.
6 CHAIRMAN RYAN: Yeah, I know, it's very
7 helpful to have everybody's input which we appreciate
8 very much. The Committee will take up a letter that
9 we're going to write. Dr. Clarke's leading that
10 effort on our decommissioning effort and we'll take a
11 15-minute break and reconvene at 4:00 o'clock to take
12 up that letter. So those that wish to depart, please
13 do so. If you'd care to stay, it's an open session on
14 the decommissioning workshop that we held and we'll be
15 off the record at this point.
16 (Whereupon, at 3:44 p.m. the above-entitled
17 matter concluded.)
18
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25

CERTIFICATE

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

Name of Proceeding: Advisory Committee on Nuclear Waste 170th Meeting

Docket Number: n/a

Location: Rockville, MD

were held as herein appears, and that this is the original transcript thereof for the file of the United States Nuclear Regulatory Commission taken by me and, thereafter reduced to typewriting by me or under the direction of the court reporting company, and that the transcript is a true and accurate record of the foregoing proceedings.

Katherine Sykora
Official Reporter
Neal R. Gross & Co., Inc.

RadBench
Low Level Radioactive Waste
Data collected for GAO - 2005

Sean Bushart - EPRI

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Disposal Site Use by Operating Stations

- Respondents using Barnwell (Class ABC): 52 (96%)
- Respondents using Envirocare (Class A only): 50 (93%)
- Respondents not using Envirocare (will need to store all waste) 3 (6%)
- Respondents using Hanford (Class ABC): 1 (2%)

- The above results demonstrate the heavy dependence on Barnwell for Class BC disposal, as well as the need for interim storage of Class BC wastes beginning 2008.
- Most respondents ship some or all Class A waste to Envirocare. This option should continue to be available for 30+ years.

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Waste Disposition Options After 2008

- Envirocare = Open access to all generators (30+ years)
  - Will accept all Class A waste; no Class BC waste
- Barnwell (Atlantic Compact) = Restricted access
  - 13 operating + 2 actively decommissioning reactors
- Hanford (Northwest Compact) = Restricted access
  - 1 operating + 1 actively decommissioning reactors
- WCS (Texas Compact) = Restricted access (if licensed)
  - 5 operating reactors
- By 2009, Class BC waste will need to be stored by:
  - 21-27 operating + 2 actively decommissioning reactors
  - Pilot storage of Class BC waste from Advanced Nuclear Plants (ANPs)

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Response Statistics (as of 4/1/2005)

Data Year	# of Stations Responding	Response Percentage
2004	26	40%
2003	44	68%
2002	41	63%

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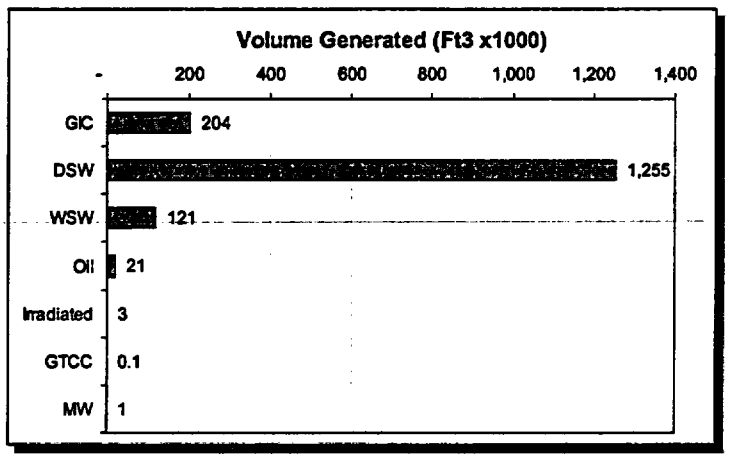
Operating Reactors: Annual LLW Generated by Waste Type



- DSW generation is 1.26 million ft3/year; nearly half is <1 mR/hr
- WSW generation is 0.12 million ft3/year; most of this is resin

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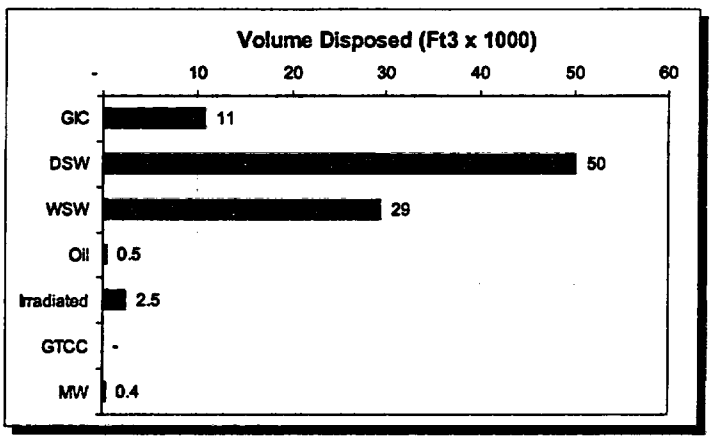
Operating Reactors: Annual LLW Disposed by Waste Type



- DSW disposal is 50K ft3/year; average VR is 25:1 (best in the world)
- WSW disposal is 29K ft3/year; average VR is 4:1; capability is >6:1; this area needs greater attention (resin and filter pyrolysis)

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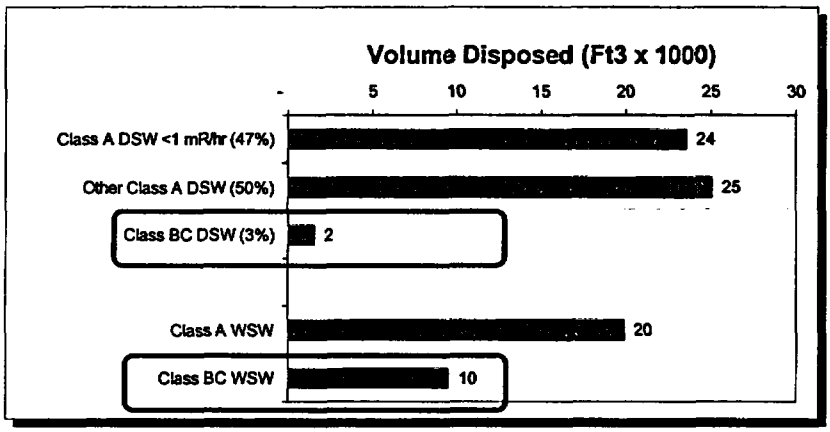
Operating Reactors: Annual LLW Disposed by Waste Class



- Roughly half of all DSW is < 1 mR/hr
- Total estimated Class BC waste is ~12,000 ft3/year

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Decommissioning Waste Volumes Generated (as of 4Q04)

	Rancho Seco *	Big Rock Point (lbs) *	San Onofre1 (ft3)	Conn. Yankee (ft3) **	Maine Yankee	Trojan (ft3)	Yankee Rowe (lbs)
Class A	162000 ft3	5,243,469	201,585		1,044,632 ft3 ***	431,222	
Class B-C	1122 ft3	4250	603		14076 ft3 ***	13,539	
GTCC Waste	168 ft3	3000	320		97 ft3 ***		
Mixed Waste	13,230 lbs	3673					
Hazardous Waste		<1000					
PCBs		1,406,618					
Total Radwaste	163,290	5,250,719	202,508	1,157,515	138,391,000 lbs		>50,000,000

* As of 4-03 ** Est. for completion *** As of 12-03

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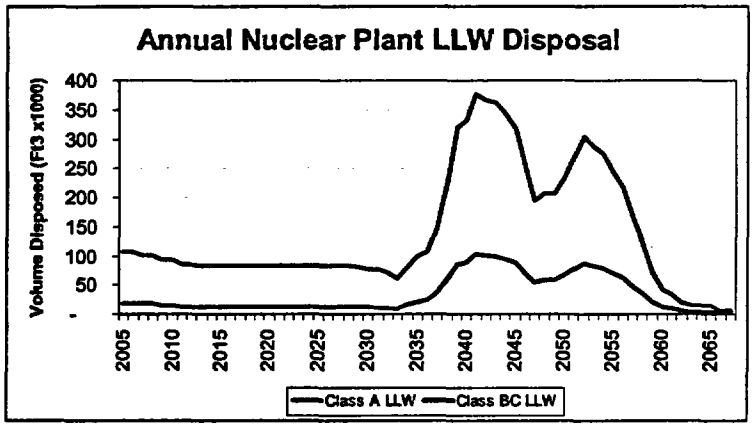
LLW Distribution in 21st Century (Assumes Life Extensions for All Reactors)



- Decreasing trend toward 2010 reflects current dismantling.
- Large bubble after 2035 reflects future decommissioning.

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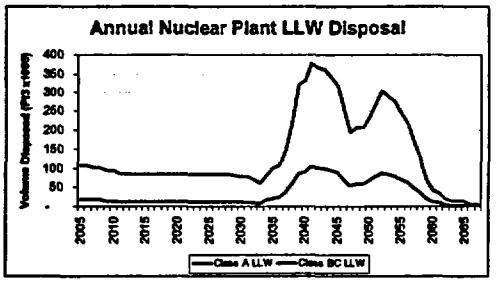
Long Range Waste Disposal Needs

The chart suggests the following:



- Disposal options for Class A should exist through 2035.
- All existing Class BC disposal will disappear by 2035.
  - 85-90 reactors will lose Class BC disposal in 2008 = forced storage.
- New Class A and Class BC disposal needed for decommissioning (after 2035)...or move to SAFSTOR.
- New Plants will Impact this, however:
  - The EPRI ANP LLW program has demonstrated life-of-plant storage, if needed.

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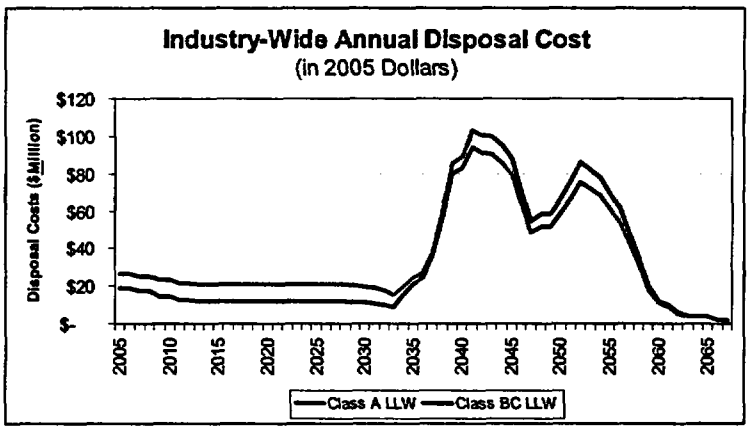
Industry-Wide Annual LLW Disposal Costs (Millions of Dollars)



- The above data is for disposal only; excludes VR, transport, etc.
- Assumes average $250/ft3 for Class A; $1000/ft3 for Class BC.

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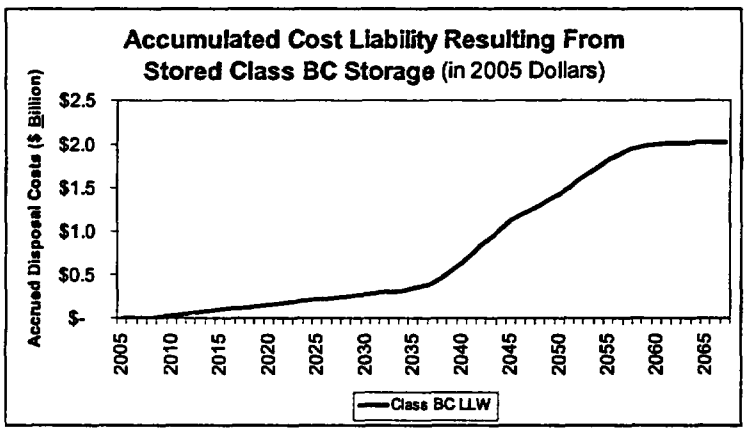
Industry-Wide Accumulated Cost Liability (Billions of Dollars)



- NOTE: By implementing aggressive Class BC source and volume reduction efforts beginning now, cost savings and liability could be one-half of total over remaining life cycle = $~1 Billion

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Most Common Waste Processing Technology Used for Class BC Cartridge Filters

- 26 stations responded to this question
- Results in order of most common to least common:
  - Direct disposal = 46%
  - Compaction = 8%
  - Overpack with resin = 8%
  - Pyrolysis (steam reforming) = 4%
  - Encapsulation = 4%
  - Filter shear = 4%
- This is the most expensive LLW to dispose due to the exceptionally poor packaging efficiency.
- Optimum approach for interim storage: Pyrolysis
- EPRI recommended approach: Use only non-metal filters and ship for pyrolysis; overpack with resin okay but less desirable. Industry recognizes benefit; has only begun to implement.

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Most Common Waste Processing Technology Used for Class BC Resin

- 26 stations responded to this question
- Results in order of most common to least common:
  - Pyrolysis (steam reforming) = 50%
  - Direct disposal = 46%
  - Solidification = 4%
- Second most expensive waste to dispose; most expensive to store.
- EPRI recommended approach: Pyrolysis is least expensive in most cases; cost analysis required.
- Optimum approach for interim storage: Pyrolysis

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LOW-LEVEL RADIOACTIVE WASTE FORUM, INC.
DISCUSSION OF ISSUES: Management of Commercial Low-Level Radioactive Waste

Introduction

The following statement was developed by the Low-Level Radioactive Waste Forum, Inc. (LLW Forum) to set forth its consensus views regarding several aspects of low-level radioactive waste management[1]. It is intended to guide decision-makers engaged in taking the steps necessary to serve the nation's need for services to manage low-level radioactive waste produced by industry, utilities, research institutions, medicine, and government. Through this statement, the LLW Forum highlights some of the complexities associated with addressing low-level radioactive waste management and disposal issues.

Background

The LLW Forum By its passage of the Low-Level Radioactive Waste Policy Act of 1980 and its 1985 amendments (the Act), Congress declared states responsible for the disposal of commercial low-level radioactive waste[2], and encouraged states to form interstate compacts to share this responsibility. As a result, it is states and interstate compacts that have the responsibility and authority for management of commercial low-level radioactive waste in the United States. Furthermore, in the majority of cases it is states, through agreements with the U.S. Nuclear Regulatory Commission (NRC) and independent state authority in certain cases[3], which regulate the use of radioactive materials and the low-level radioactive waste disposal sites.

The Low-Level Radioactive Waste Forum, Inc. was established in 1985 to facilitate communications and interactions among states and compacts—the parties responsible for implementing the Act. Voting members of the Board of Directors are appointed by governors or compact commissions and are authorized to speak for their states and compacts with regard to low-level radioactive waste policy. Non-voting board members include representatives of federal agencies, disposal facility operators, brokers and processors, generators, industry organizations, and other interested parties.

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[1] For purposes of this document, the term "waste management" is intended to be generic to refer to all services used for the management of commercial low-level radioactive waste, including disposal, treatment, processing, collection, packaging, consolidation, and storage. Note that the legal definition of this term varies by state and compact.
[2] The term "commercial low-level radioactive waste" includes most low-level radioactive waste produced by the federal, state, and local governments except for low-level radioactive waste generated by the U.S. Department of Energy, the U.S. Navy as a result of the decommissioning of naval vessels, and from the research, development, testing, or production of any atomic weapon.
[3] NORM/TENORM regulation is not under Agreement State authority. However, some states and compacts do regulate NORM/TENORM.

The Federal Law The Act was designed to be flexible and to allow for change in response to events and circumstances around the country. In that regard, most people did not expect that there would be a need for ten different compact sites, but rather that as site availability conditions were established, unaffiliated states would join compacts and existing compacts would merge or establish cooperative agreements. This has happened and continues to happen. Examples include the formation of the Texas Low-Level Radioactive Waste Disposal Compact by the three unaffiliated states of Texas, Maine, and Vermont, ratified by Congress in September 1998[4]; the merger of the Northeast Interstate Compact for Low-Level Radioactive Waste Management and the State of South Carolina to create the Atlantic Interstate Low-Level Radioactive Waste Compact in July 2000; and the contract between the Rocky Mountain Low-Level Radioactive Waste Board and the Northwest Interstate Compact Committee in October 1992 to allow eleven states to use a single regional disposal facility.

Since adoption of the Act, generators have substantially reduced the volume of low-level radioactive waste being produced, which has in turn resulted in less demand for new disposal facilities.

There is the perception that no new sites have been developed since the passage of the Act. This is not accurate. The Envirocare of Utah disposal facility, which takes Class A low-level radioactive waste from all states/compacts authorizing shipment to Envirocare, became operational after passage of the Act and continues to operate under agreements negotiated with the Northwest Compact. This is a prime example of the ability of the current law to adjust to changing needs.

Currently disposal access exists for all classes of low-level radioactive waste from all states in the country. In contrast, the federal high-level radioactive waste and Greater Than Class C (GTCC) disposal programs continue to encounter obstacles, delays and uncertainty that have led to spent fuel and GTCC being stored nationally for an indefinite period of time.

Positions and Issues for Consideration

Position 1: Commercial low-level radioactive waste is currently well regulated and managed safely.

The management and disposal of low-level radioactive waste are carefully regulated by states that have regulatory agreements with the NRC to be the lead agency in protecting public health, safety and the environment. The Agreement states of Washington, South Carolina, and Utah currently host low-level waste disposal facilities. The possession, transfer and disposal of such waste require that a license be issued by a regulatory agency of jurisdiction. Such a license is issued only after strict regulatory guidelines are met and is subject to significant appellate processes. In addition, such licenses are subject to regular public review and scrutiny. Public participation is a significant component in

[4] Maine later withdrew from the Texas Compact, effective April 2004.

licensing processes involving low-level radioactive waste management and disposal. As a result, the possession, transfer and disposal of low-level radioactive waste in the United States is a highly regulated and transparent activity.

Position 2: There is not an immediate crisis. The current national waste management system affords flexibility to make adjustments as conditions across the country change; however, it is important to continue working to meet all current and future disposal needs.

Since all generators currently have the opportunity to dispose of all Class A, B, and C low-level radioactive waste, there is no immediate crisis.

Disposal capacity for most Class A low-level radioactive waste is expected to be available for all generators for the foreseeable future. Future disposal capacity for Class B and C and certain types of Class A low-level radioactive waste is less certain as South Carolina state law requires that after July 1, 2008, the Barnwell regional disposal facility be limited to waste generated within the 3-state Atlantic Compact region. [5] If this import restriction is not amended and no new disposal capacity is developed,[6] 36 states will lack disposal capacity for Class B and C low-level radioactive waste after 2008.

It is significant to note that Class B and C low-level radioactive wastes are generated in very small quantities.[7] Moreover, the U.S. Government Accountability Office determined in a June 2004 report that most generators can store Class B and C low-level radioactive waste indefinitely on site.[8] While this is not the optimal solution, especially for many academic and medical radioactive material users, it does not pose a health or safety risk. This is evidenced by the fact that many of these same generators are currently storing GTCC and spent fuel due to the unavailability of federal government disposal capacity. In addition, generators continue to reduce the quantities of Class B and C low-level radioactive waste they generate.

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[5] The Atlantic Compact (Northeast Compact) statute states that no one can ship to the regional disposal facility without approval from the Commission and the host state (South Carolina).

[6] The State of Texas is undergoing a siting process for a proposed facility that, if successful, would provide disposal for Class A, B, and C waste for the two states in the Texas Compact, Texas and Vermont. The Texas Compact law provides a discretionary option for the compact commission to contract for the disposal of waste from outside of the compact.

[7] According to Chem-Nuclear, annual B/C waste generation is steady at about 22k cubic feet per year. States that may lose B/C access after June 2008 generate about 16k cubic feet per year, with medical and non-utility waste accounting for approximately 1,500 cubic feet of that total and utilities accounting for the remaining 14,500 cubic feet.

[8] "Low-Level Radioactive Waste: Disposal Availability Adequate in the Short Term, but Oversight Needed to Identify Any Future Shortfalls," GAO-04-604, June 10, 2004.

Despite such mitigating factors, it cannot be stated with certainty that a crisis regarding disposal of Class B and C low-level radioactive wastes will not develop. It is important that decision-makers continue to work toward developing solutions to ensure that disposal options are provided for all classes of low-level radioactive waste.

Position 3: When evaluating alternatives to the current national waste management system, it is important to take into consideration political realities, economic consequences, and regulatory concerns. Proposals need to be carefully analyzed from the perspectives of all affected parties.

States and compacts agree that the ultimate goal is to provide safe, environmentally sound, reliable, and permanent access for the disposal of all commercial low-level radioactive waste generated in the nation. States and compacts must be allowed to pursue that goal unfettered, allowing them to identify solutions appropriate to the needs of their generators and their unique political situations.

Disposal of Commercial Waste in Federal Facilities The use of federal facilities for the disposal of commercial low-level radioactive waste has been suggested as an alternative or complement to the current system. In evaluating this suggestion, it is important to recognize that federal facilities are located in states. Proposals to use federal facilities will encounter the same, if not elevated, local and state concern associated with the development of new facilities at non-federal locations.

Further, concern exists related to the timeliness of ongoing environmental remediation at some federal facilities. Until remediation is completed at federal facilities it will be difficult to convince citizens that these facilities should be allowed to develop new disposal capacity for acceptance of off-site wastes.

Development of Commercial Disposal Capacity by Private Entities There has been discussion about the possibility of changing the Act to allow private companies to develop commercial disposal facilities. As can be seen from the history of the Envirocare of Utah facility, such a change in the law is not necessary to allow private entities to develop commercial facilities. If a private company is willing to develop a disposal site, either on private, state or federally-owned land, the Act is flexible enough to accommodate such action. This is already permissible under many Compacts. Individual state law can be and has been amended in some cases, to allow private entities to develop commercial disposal facilities.

Requiring Access to New or Existing Sites There has also been discussion about requiring existing or new disposal facilities to allow access to out-of-region generators. However, pressuring states with existing sites or that are developing sites to accept waste from outside their region runs the risk of inviting new restrictions or shutting down those sites altogether. It also should not be assumed that private companies operating compact sites would support this. For example, the State of Washington and US Ecology have agreed to incorporate a clause in the new sublease for the disposal facility in Richland, Washington, allowing the state to terminate the sublease if compacts lose the

exclusionary authority provided by federal law. It is important to remember that equity in disposal burden is what originally led to the passage of the Act.

Position 4: The federal government is currently providing several forms of appropriate assistance to states and compacts related to the management of commercial low-level radioactive waste.

The LLW Forum believes that there are a number of appropriate functions for the federal government to perform in a state-federal partnership to preserve existing commercial low-level radioactive waste disposal capacity and/or to develop additional capacity. The federal government can and should continue to support state and compact activities. For example, DOE can and should maintain a national database, the "Manifest Information Management System," that provides decision-makers with current disposal information. Moreover, DOE financial support of the LLW Forum has helped to ensure that states and compacts remain aware of issues associated with the management of low-level radioactive waste throughout the nation.

Conclusions

The current system provides access for the management of Class A, B, and C low-level radioactive waste, including disposal, to all states throughout the country. Changing conditions, including the scheduled closure of the Barnwell disposal facility to out-of-region waste, may close off disposal access to Class B and C and some types of Class A low-level radioactive waste for a significant portion of the country, although other opportunities may alleviate or eliminate this problem. While the volume of Class B and C low-level radioactive waste is quite small, it remains important that disposal capacity for all classes of low-level radioactive waste be preserved and developed. Proposals for alternative approaches need to be carefully analyzed from the perspectives of all affected parties.

Waste generators can provide partial solutions through minimization and alternate procedures. This can reduce but not remove the need for reliable future disposal access.

States and compacts should continue to work with generators to ensure that disposal access remains available in the future. The LLW Forum stands ready to work with stakeholders through a collaborative process to identify a permanent solution regarding the management of all classes of commercial low-level radioactive waste. The LLW Forum is a resource for information and dialogue on national low-level radioactive waste issues.

Appendix

Statistics for the actual disposal of Class A, B, and C low-level radioactive waste over the last ten years (from MIMS)

Appendix to LLW Forum Discussion of Issues Statement:

Commercial Low-Level Radioactive Waste Disposal Summary

(Volume in million cubic feet and activity in million curies)

	Totals		Class A		Class B		Class C	
Year	Volume	Activity	Volume	Activity	Volume	Activity	Volume	Activity
1995	1.247	0.172	0.861	0.000	0.014	N/A	0.005	N/A
1996	2.174	0.456	1.961	0.000	0.021	0.001	0.007	0.000
1997	2.310	0.127	2.277	0.007	0.024	0.033	0.009	0.087
1998	1.066	0.335	1.031	0.010	0.021	0.075	0.013	0.250
1999	0.983	1.877	0.939	0.014	0.024	0.033	0.020	1.830
2000	2.939	0.782	2.909	0.015	0.019	0.067	0.012	0.700
2001	3.422	0.491	3.385	0.007	0.018	0.023	0.019	0.460
2002	2.641	0.140	2.619	0.007	0.011	0.019	0.011	0.114
2003	2.830	0.623	2.795	0.005	0.012	0.136	0.023	0.483
2004	3.864	0.338	3.833	0.007	0.015	0.026	0.017	0.304
Totals	***23.476***	***5.340***	***22.610***	***0.073***	***0.178***	***0.412***	***0.137***	***4.228***

Source of information: Manifest Information Management System (MIMS), September 2005, prepared by U.S. Department of Energy. (Note: The above data does not include any DOE waste shipped to commercial disposal.)

LLRW DISPOSAL ISSUES

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TALISMAN
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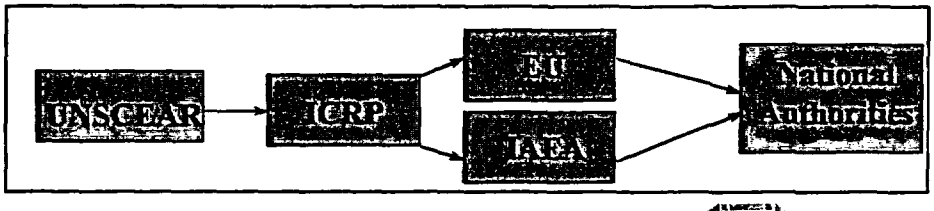
Responsibilities
International & National

UNSCEAR	-	basic biological data
ICRP	-	protection principles
IAEA/EU	-	safety standards
States	-	regulations, guides



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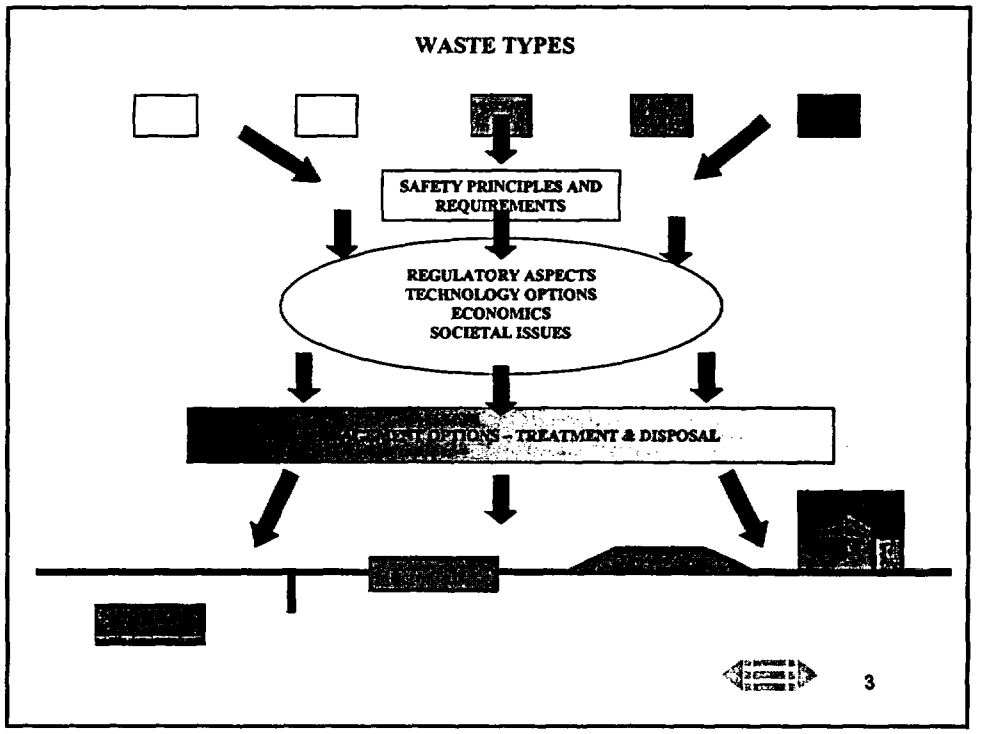

INTERNATIONAL STATUS

- Progress has been made in Europe establishing disposal facilities (e.g., Sweden, France and Spain)
- IAEA has established standards for LLW and HLW disposal, Decommissioning and guidance on Clearance.
- Disposal capacity remains a challenge, especially high volume low activity waste
- IAEA is addressing the gap in standards for VLLW disposal

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UNITED STATES PROGRAM

- Regulations controlling radioactive waste have evolved as patchwork over 60 years.
- Some wastes are currently over-regulated based on the risk involved.
- Demand for simpler approach for cost effective disposal of very LLW
- Approach needs to be protective of public health, safety & environment
- Approach needs public acceptance

5

UNITED STATES PROGRAM (Continued)

- Disposal in a Part 61 facility is protective
- However unnecessarily expensive for high volume low activity waste
- Some sites not aggressively decommissioning because of the cost of disposing of VLLW
- Authorization under 10 CFR 20.2002 to utilize local landfills has led to some inconsistencies and can undermine disposal site development

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PROPOSAL

- Develop risk-informed approach to dispose of low activity waste under AEA regulatory framework for VLLW
- Large volumes of low end Class A waste do not need all the current requirements of Part 61
- Use licensing program subject to oversight by Agreement States
- Model regulation after CRCPD Part M, 0.25 mSv/y
- Waste would be a subset of Class A
- Could consider unrestricted release after post closure period

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PROPOSAL (Continued)

- Performance objectives (PO) could provide intruder dose of 25 mr following post-closure period, 100 years
- During post closure period intruder dose could be limited to 100 mr
- Simplify the design requirements
- Waste Acceptance Criteria (WAC) set to comply with PO
- Segregation not needed
- Packaging not prescriptive

8

PROPOSAL (Continued)

- Government ownership may not be required
- Long-term control license (LTC) could be issued. Ohio uses a similar approach for restricted release sites
- Long-term control license would include conditions addressing site restrictions, financial assurance, maintenance, monitoring, and other post-closure activities
- Could consider independent party (for example an Indian tribe) to be the long term custody licensee

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BENEFITS

- Improved Waste Management
- Addresses limitation on disposal options
- Maintains public protection at lower cost
- Accelerates clean up of contaminated sites
- Avoids worker exposure at unlicensed facilities
- Consistent with the Low-Level Radioactive Waste Policy Amendment Act of 1985
- Regulated by States with extensive LLW experience

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BENEFITS
(Continued)

- Provides more flexible approach that should reduce the cost of disposal of LLW
- Consistent with plans in the International community for waste.
- Avoids inconsistent exemption approach
- Standardize regulatory approach to low activity waste provides consistent regulation for all states
- Defuse public concerns about unregulated radioactive disposal activities
- Avoid return to BRC concerns
- Could generate public acceptance

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PATH FORWARD

- Under LLRWPAA of 1985, LLW is a State responsibility
- States have extensive LLW experience, all LLW sites are in Agreement States
- States Develop a Suggested State Regulation for a VLLW Disposal Facility
- States could work with NRC under the National Material Program with States taking lead for rulemaking
- Close significant gap in current LLW disposal options

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TALISMAN
INTERNATIONAL, LLC.

May 23, 2006

Dr. Michael T. Ryan
Chairman
Advisory Committee on Nuclear Waste
US Nuclear Regulatory Commission
Washington, DC 20555

SUBJECT: Risk Informing Part 61 to Address VLLW

Dear Dr. Ryan:

In attachment 2 of the announcement for the May 23-24, 2006 Working Group Meeting on Low-Level Waste (LLW) Management Issues you asked a series of questions in the interest of identifying possible improvements in NRC regulations that apply to the management of commercial LLW. One area of interest listed was low-activity waste/VLLW disposal options. On behalf of Talisman International, LLC, we have been working on ideas to risk inform Part 61 to address VLLW. Last October, we provided the enclosed presentation to the Organization of Agreement States. We have also discussed with CRCPD the need to risk inform the CRCPD Suggested State Regulations (Part M) that addresses the disposal of VLLW.

As you are aware, regulations controlling low-activity radioactive waste have evolved as a patchwork over the past 60 years. The current Part 61, while providing protection for VLLW, may over regulate given the risks involved. As a result of regulatory requirements that might not be needed for VLLW, the regulatory scheme under Part 61 has created unnecessary regulatory burdens. The use of RCRA sites have been sought in light of the regulatory costs associated with Part 61 requirements for VLLW. NRC has found RCRA sites also to be protective for certain VLLW. However, use of RCRA sites for VLLW necessitates authorizations under the case-by-case approach of 10 CFR 20.2002 and associated exemptions from the licensing provisions of the Commission's regulations. This has the potential for creating inconsistent approaches with an uneven playing field between licensed and unlicensed disposal operators. Some argue that this also undermines the compact system. The RCRA approach has generated public acceptance issues because of a concern by some that the sites were not designed for radioactive waste and not licensed by the NRC or Agreement States (regulated by a regulator with a radioactive material focus). EPA has also received a substantial amount of adverse comments for their ANPR proposal to use the RCRA approach for low-activity waste.

We note that progress has been made internationally for establishing disposal facilities for VLLW. For example, we understand that France, Spain, Sweden, and Japan have or are considering such facilities.

In our view, there appears to be a need in our nation for a simpler approach for the disposal of VLLW that is both protective of public health, safety & environment and publicly acceptable. Specifically, the Talisman approach to the disposal of VLLW is to

develop a risk informed performance base approach under the Atomic Energy Act regulatory framework. In brief, the approach adopts the following basic concepts:

1) Disposal would be limited to a subset of Class A material that meets performance objectives that provide for an intruder dose of no more than 25 millirem a year following a post-closure period of 100 years. The intent is to achieve unrestricted release after the post closure period. The performance objectives would also be used to define the waste acceptance criteria (WAC) based on the site's performance assessment and simplify the design requirements as the concentration of the source term will be lower. During the post-closure period an intruder would be limited to the 100 millirem standard similar to the public dose limits in Part 20 limits.

2) During the post-closure period a long-term control license would be issued similar to that being proposed to support restrictive releases under the License Termination Rule in Subpart E of Part 20 (LTR). The long-term control license would include conditions addressing site restrictions, financial assurance, maintenance, monitoring, and other post-closure activities. There would be no requirements following the 100 year closure period as the site could be released for unrestricted release consistent with the LTR.

4) Government ownership would not necessarily be required. However, a deed restriction would likely be needed to last until the long-term control license is terminated.

5) There could be a provision to allow a different person to hold the long-term control license. This would allow an independent party (for example an Indian tribe) to be the long-term control licensee.

6) The basic framework of Part 61 would be preserved. However, given the lower concentration of material (defined in the WAC) that would be required to meet the performance objectives including the 100 year post-closure period, the extent of analysis and monitoring activities should be less than the current requirements for a Part 61 site. Similarly, segregation requirements would not be needed nor would there be need for packaging requirements.

We believe that this approach under the Atomic Energy Act framework will improved waste management by addressing economic limitations on disposal options. It should maintain public protection at lower cost thereby accelerating the clean up of contaminated sites. It regulates worker exposure at disposal facilities. It is consistent with the Low-Level Radioactive Waste Policy Amendment Act of 1985. It provides for regulation by Agreement States with extensive LLW experience. It should provide a more flexible approach that should reduce the cost of disposal of VLLW. It is consistent with plans in the international community for waste. Importantly, it avoids the potential for an inconsistent exemption approach. A standardize regulatory approach to VLLW provides consistent regulation for all states creating a level playing field for all disposal site operators. It should minimize potential CERCLA exposure for generators by disposing of waste in licensed facilities. It should also defuse public concerns about unregulated radioactive disposal activities. It avoids potential BRC concerns. Our approach may also generate public acceptance.

We recognize that these are ideas that need further work and interaction with others. Discussion with site operators would be needed to be sure this is a business model that could be economically implemented. However, given the states' responsibility for LLW,

in our view NRC should work with the Agreement States under the National Materials Program to develop the necessary regulatory changes both to Part 61 and Part M of the SSR.

We hope the above ideas may assist the Committee in its deliberations as it considers ways to risk inform Part 61.

Sincerely,

Jim Lieberman
John Greeves
Senior Regulatory and Nuclear
Consultants at Talisman International

Enc: LLRW Disposal Issues presented to OAS October 2005

cc:

Allen G. Croff, Vice Chairman
Dr. James H. Clark
Dr. William Hinze
Dr. Ruth F. Weiner

LLRW DISPOSAL ISSUES

John Greeves
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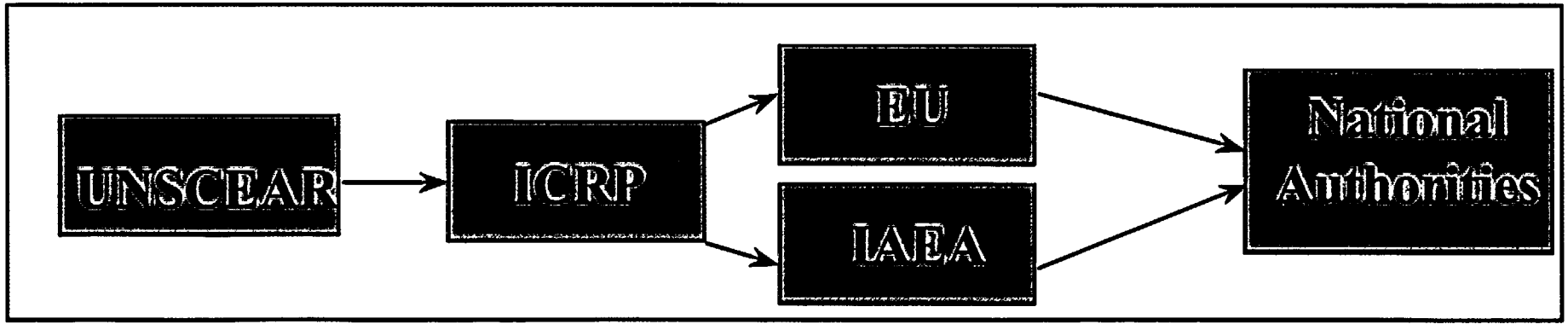
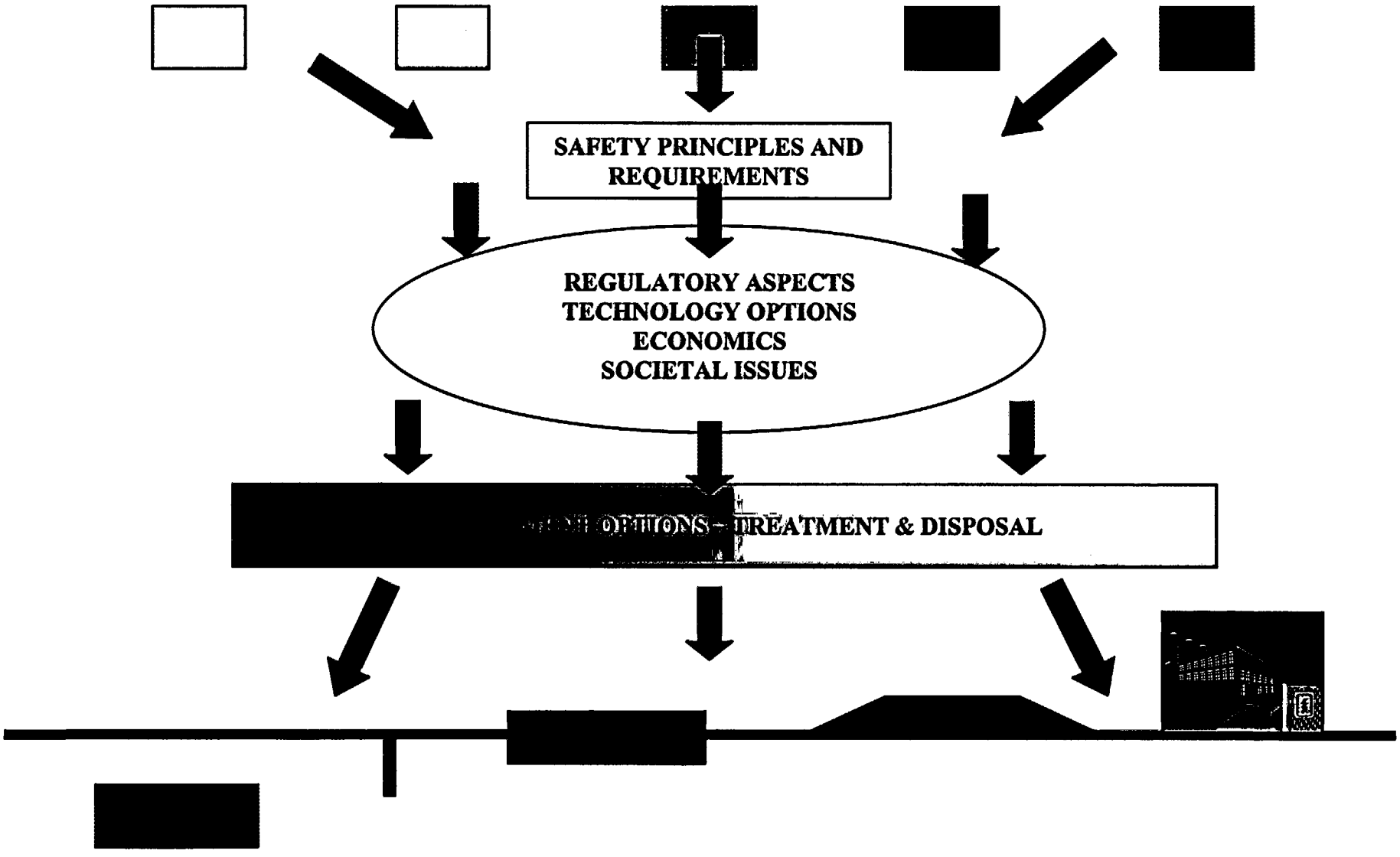
Responsibilities
International & National

UNSCEAR	-	basic biological data
ICRP	-	protection principles
IAEA/EU	-	safety standards
States	-	regulations, guides



WASTE TYPES


SAFETY PRINCIPLES AND REQUIREMENTS
REGULATORY ASPECTS
TECHNOLOGY OPTIONS
ECONOMICS
SOCIETAL ISSUES
OPTIONS – TREATMENT & DISPOSAL

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- States could work with NRC under the National Material Program with States taking lead for rulemaking
- Close significant gap in current LLW disposal options

Entergy – Utility Perspective on the LLRW Strategic Outlook

Mark L. Carver

Background Information
Waste Disposal Availability
Radwaste Liability Baseline
Strategic Outlook – Scenarios
Pre-requisites for Effective Implementation
Initiatives – including storage
Large Component – Irradiated Hardware Issue
Summary

Background Information

- New York & Massachusetts – No Compact Affiliation
- Arkansas, Louisiana, Vermont and Mississippi are in three different compacts
- Barnwell due to close in 2008
- Energy*Solutions* accepts Class A waste only
- Numerous waste processors throughout U.S. – consolidation of some processors is occurring

Background Information
LLRW Disposal Compact Affiliation

Pilgrim – No compact association for Massachusetts
ANO-1 & ANO-2 – Central Interstate Compact
Fitzpatrick – No compact association for New York
River Bend – Central Interstate Compact
IP-1 – No compact association for New York
IP-2 & IP-3 – No compact association for New York
Vermont Yankee – Texas Compact
Grand Gulf – Southeast Compact
Waterford 3 – Central Interstate Compact

Waste Disposal Availability

Class A waste currently accepted
- Barnwell Disposal Facility – Barnwell, SC
- Energy*Solutions* Facility – Clive, UT

Class B and C waste currently accepted
- Only at Barnwell Disposal Facility

Closure of Barnwell in 2008 to out of compact generators
South East Compact – No potential site
Texas Compact – Licensed but no earlier than 2009
Central Interstate Compact – Litigation settlement in 2004 with no plan in place

Radwaste Liability Baseline

- Combined plant pricing/cost increases since 1998 have in some cases doubled
- Tracking procedurally based
- Waste generation reconciled monthly based on shipment to processors / disposal facilities
- Each site has a liability goal set by Upper Level Management
  - Single Unit PWR - $650,000
  - Dual Unit PWR / BWR - $850,000

Strategic Plan Scenarios

- Scenario One – Barnwell closure in 2008 and Energy*Solutions* obtains license to accept all classes of waste (Best scenario – lowest probability)
- Scenario Two – Barnwell closure in 2008, one or more compact disposal site opens
- Scenario Three – Barnwell closure in 2008
- Scenario Four – No disposal available or due to economical decisions disposal option is not utilized
- Scenario Five – Barnwell allows continued access, business as usual

Prerequisites for effective implementation

- Adequate budgeted funds for waste processing and disposal
- A consolidated approach to implementation of strategies
- A consolidated use of contract services
- Aggressive schedule for disposition of waste requiring disposal at Barnwell
- Management support for appropriate strategy
- Review and oversight of implementation
- Active focus/peer group involvement
- Continued proactive industry leadership in the development of disposal options and alternatives
- Aggressive radwaste programs focusing on waste volume reduction, cost, and standard practices.

Initiatives

- Long term agreements for processing and disposal
- Maximize shipments of Class B & C before Barnwell Closure (including irradiated hardware)
- Storage capacity & volume evaluation per site – irradiated hardware, Class B/C waste
- Determine storage facility construction or modification requirements based on evaluation
- Storage for decay option
- Activity distribution over larger media volume as a philosophy
- Perpetual waste minimization to ensure lowered volumes generated at each site

Initiatives

- NEI Strategic LLRW Team – support all activities. Several initiatives closely tie into Entergy's long range strategy document.
- Entergy working in conjunction with EPRI on source term initiative issues
- Entergy supports initiatives – Compact, NRC, NEI, EPRI, individual States and all others

Storage Initiatives

- Entergy Sites will evaluate storage of Class B/C resin & filters on site
- Evaluations must be performed for storage of the processed resin onsite and dose rate considerations on fence line dose considered
- Evaluation if feasible to store resin (class B & C) onsite unprocessed. This option won't allow to go to end of license operation

Storage Initiatives

Entergy will evaluate the possibility of storing waste via NRC license amendment at another Entergy Site

Other precedents exist in the industry

Impact of doing this may be savings in transportation charges and substantial cost avoidance in need to expand storage capacity at certain Entergy sites

Large Components

Large components at Entergy

Decisions not standardized in the past

Projects utilize decisions of previous projects

- Status of new or different options not considered

Evaluation - decommissioning funds

Other potential options

Irradiated Hardware

- Volume inventory conducted periodically by each site
- Stored liability based on equivalent volume
- Ranges from a few hundred thousand to more than one million for Entergy fleet and differs on site specific basis (higher for BWR's)

Summary

- No immediate waste disposal capacity issues – volume of Class B and C waste evaluated for each site from 2008 to end of life generation compared to storage options/capabilities
- 2008 exists as first major capacity loss for Class B and C waste
- Ongoing initiatives before 2008 can mitigate impact Class B & C waste
- Outlook for further disposal capacity uncertain due to compact issues

Summary continued

- Energy*Solutions* facility capacity not unlimited
- Federal intervention needed in compact system for LLRW
  - NEI support (evaluation effort underway)
  - Individual utility support
  - Vendor support
- Other possible solutions
  - Compacts eventual site license & construction with Texas Disposal Facility currently only site planned
  - Energy*Solutions* or others generate disposal sites

US Army Corps
of Engineers.

US Army Corps of Engineers' LARW Disposal Experiences

Julie Clements, CHP

170th ACNW Meeting
May 23-26, 2006

US Army Corps
of Engineers.

"The radioactive waste classification system is complex, it is not transparent to the public, who are increasingly involved in decisions about management and disposal of waste, and it is not understandable by anyone but a studied expert."

NRCP Report No. 139

US Army Corps of Engineers

Outline of Topics

- USACE – What we do
- USACE site remediation framework
- Challenges with waste classification
- LARW waste classification example
- Desirable changes to the waste classification system

US Army Corps of Engineers

USACE – What we do

- Major Army command (MACOM)
- Organized geographically into 8 Divisions in the US and 41 Districts worldwide
- USACE supports or manages numerous environmental missions
  - e.g., EPA Superfund, BRAC, FUSRAP, FUDS
- Generate large volumes of LARW
  - Common radionuclides: U, Ra, Th, 11e.(1)
  - Physical form: soil or building debris

US Army Corps of Engineers.

USACE Radiological Site Remediation Framework

- Most work performed IAW CERCLA and its implementing regulation, the NCP
- Often as Lead Federal Agency
  - Responding to releases at DOD and FUSRAP sites
- Close correlation between CERCLA and MARSSIM remedial processes
  - Both involve site characterization
  - Waste streams must be identified and classified
  - MARSSIM used to demonstrate site closeout

One Team: Relevant, Ready, Responsive and Reliable Proudly Serving the Armed Forces and the Nation

US Army Corps of Engineers.

Waste Classification

- Must review BOTH:
  - Historical information about site operations to determine how, and when, waste was produced
  - Analytical data to determine the nature and extent of radioactive contamination
- Current system is "source-based"
- Shortcomings of a source-based system
  - It is complex
  - Not an efficient use of resources
  - Cannot be defended on grounds of health protection
  - Adverse impacts on competition, project schedule
  - Unnecessary utilization of Part 61 facility capacity

One Team: Relevant, Ready, Responsive and Reliable Proudly Serving the Armed Forces and the Nation

US Army Corps of Engineers

Waste Classification Example

- FUSRAP Maywood SF Site, Maywood, NJ
  - Rare earth and Th processing operations
  - Contaminated buildings, waste lagoons, offsite releases
  - NRC licensed site in 1954, 1978 limited to 3 burial pits
  - NPL 1983; FUSRAP via Congressional action
- Classification?
  - Tailings with > 0.05 wt% U or Th
- NRC 2001 letter – tailings for entire site are to be classified for disposal as 11e.(2) regardless of source material content

US Army Corps of Engineers

Waste Classification Example

- Soils contaminated with 11e.(2)
  - Lower specific activity, << USEI's WAC
- USACE is currently sending similar, or identical, material to USEI
  - Physically, chemically, and radiologically
- Submitted 10 CFR 20.2002 request to dispose material at USEI December 2005
- Dose/dose rate estimated with TSD-Dose and Microshield
  - Critical receptor: RTF worker
  - Worst case 4.7 mrem/yr TEDE-expected <1 mrem/yr

US Army Corps of Engineers.

Waste Classification Example

- April 2006 NRC response to USACE 20.2002 request:
  - USACE is neither a licensee nor an applicant
  - USACE is not eligible to request a 20.2002 authorization
- Maywood material cannot, at this time, be disposed at USEI

US Army Corps of Engineers.

Desired Approach to Waste Classification

- Eliminate source-based waste classifications
- Eliminate case-by-case exemptions
- Develop a classification system based on health risks that could arise from waste disposal
- A general class of exempt waste
  - Exempt for purposes of disposal
  - Risk from disposal would be negligible
- These views are consistent with recommendations of NCRP (endorsed by the HPS) and IAEA

US Army Corps of Engineers

Outcome of a Risk-Based Classification System

- Consistency, improved transparency, defensible
- Wastes within a single category would represent roughly equivalent risks following disposition
- Allows exempt materials to be handled at less cost – commensurate with risk
- Better utilization of stretched fiscal resources
- Will require changes in laws and regulations
- Could take many years to develop and promulgate

Radioactive Waste, an Academic and Medical View

Joseph P. Ring, Ph.D., CHP
Harvard University

Academic and Medical Radioactive Waste

- Short-lived materials
  - Decay-in-storage
- Longer-lived materials
  - Research
    - ^{3}H, ^{14}C, ^{36}Cl, ^{99}Tc (for example)
  - Medical
    - Flood Sources (^{57}Co)
    - Sealed Sources (^{60}Co, ^{137}Cs)

RAM Use Drivers

- Hassle Factor
  - Alternate methods are preferred
    - RAM cost and regulation are disproportionate to risk
    - Researchers switch to hazardous materials that are not as well regulated with a net increase in population risk
- Cost
  - Disposal
  - Surcharges
  - State and local surcharges
- Site availability
- Stability and predictability

Current Status

- Class A
  - Capacity exists
  - Lack of competition
  - Cost
  - Concern over future capacity and access
    - Lifespan
    - LLWPA restrictions
- Class B and C
  - Large level of concern

Sources
Class B and C

Existing sources

- Disused sources do not have a disposal option and are in storage
  - Lack of resources (options, space, money)

Concerns

- Capacity for Class B and C Wastes
- Disposal access

Regulatory Structure

LLRW Policy Act

- Intentions
  - Redistribute responsibilities to generating states
  - Reduce wastes
- Accomplishments
  - Reduced waste so it no longer applicable due to small volumes and economics
- Concerns
  - Decreased access
  - Significant expenditures with no new site
  - Do not penalize states

LLRW Policy Act Options

- Revise or Repeal
- Permit access to all DOE facilities
  - Class B and C in GTCC facility
- Consider a new facility on federal land

Regulatory Model

- Current Model
  - Overly complicated
  - Classification based on source
  - Disposal based on legislation

Model Revision

- Risk based classification and disposition
  - Harmonize with non-rad waste disposal
    - at least for Class A
- Revised Model Basis
  - Security
  - Public health and safety
  - Protection of the environment
  - Overall risk
  - Cost

Revised Model

- Risk based classification and disposal
  - NCRP 116 Limitation of Exposure to Ionizing Radiation
- Allow disposal in RCRA sites in compliance with EPA risk model
- Texas style short-lived exemption for municipal disposal facilities
  - Disposal in a Type I Municipal Solid Waste Facility or a Hazardous Waste Facility
  - Title 30, Texas Administrative Code (30 TAC), Subchapter C Section 336.225
- Consider Clearance
  - ANSI N13.12

Class A Options

- Risk based model allows environmentally responsible options:
  - RCRA Subtitle C or D facilities
    - Low Activity (LARW) and low activity mixed wastes (LAMW)
  - Uranium mill tailing impoundments (UMTRCA regulated sites)
    - HVLA
    - TENORM

Class B and C Options

- Create a national source recycling program
- Disposal not storage
  - Security concerns
  - Control long-term solution
- Consider inclusion in DOE GTCC program
  - Small volume

Storage Option

- Centralized Storage (not preferred)
  - Only when there is a proved societal advantage
  - Based on same criteria as disposition
  - Concern for additional costs and doses to workers and public from management and transportation

LLRW Disposal Under the Compact System and Issues for Consideration in Evaluating Alternative Options

Advisory Committee on Nuclear Waste Workshop

Todd D. Lovinger
Executive Director
LLW Forum, Inc.

May 24, 2006

LLW Forum, Inc. Members and Subscribers

Compacts

Appalachian Compact
Atlantic Compact
Central Compact
Central Midwest Compact
Midwest Compact
Northwest Compact
Rocky Mountain Compact
Southeast Compact
Southwestern Compact

Federal Agencies

Army
Army Corps of Engineers
Department of Energy
Environmental Protection Agency
Nuclear Regulatory Commission

States

Illinois
Massachusetts
Michigan
Nebraska
New York
Pennsylvania
Rhode Island
South Carolina
Texas
Utah
Washington

Companies

Clean Harbors

Energy*Solutions*
Nuclear Mngmt Co.
Perma Fix Envir.

R.E. Ginna Station
Southern Calif. Edison
US Ecology
Waste Control

Associations/Other

Congressional Research Service
Nuclear Energy Institute

2

LLW Forum Discussion of Issues Statement

- **Adoption of Statement:** Adopted on Sept. 22, 2005, the statement sets forth the Board of Directors consensus views on and highlights some of the complexities associated with LLRW management and disposal.
- **Background on Federal Law:** The Policy Act was designed to be flexible and allow for change in response to events and circumstances.
  - compacts and states continue to merge and realign—i.e., contract between Rocky Mountain Compact and Northwest Compact for use of a single regional facility in 1992, ratification of new Texas Compact in 1998, and merger of Northeast Compact and South Carolina to form Atlantic Compact in 2000.
  - Envirocare of Utah came on line after passage of the Act and continues to operate under agreements negotiated with the Northwest Compact.
  - Since the Act's adoption, generators have substantially reduced the volume of LLRW being produced, which has resulted in less demand for new facilities.
- **Access:** Currently, disposal access exists for all classes of LLRW from all states in the country. In contrast, the federal HLW & GTCC disposal programs continue to encounter obstacles, delays and uncertainty.

3

LLW Forum Discussion of Issues (continued)

- **Position 1: Commercial LLRW is well regulated and managed safely.**
  - The management & disposal of LLRW are carefully regulated by NRC Agreement States to protect public health, safety and the environment.
  - The possession, transfer & disposal of such waste require that a license be issued by a regulatory agency only after strict regulatory guidelines are met.
  - LLRW licenses are subject to regular public review and scrutiny. Public participation is a significant component in LLRW licensing processes.
- **Position 2: The current system is flexible & there is no immediate crisis. We must ensure all current & future disposal needs are met.**
  - There is no crisis since all generators currently have disposal access.
  - Disposal capacity for most Class A waste is expected to remain available for all generators. However, 36 states may lose disposal capacity for Class B and C & certain Class A waste if Barnwell closes as scheduled to out-of-region waste on July 1, 2008 and no new disposal capacity is developed.
  - Class B & C waste are generated in very small quantities. In June 2004, GAO found most generators can store such waste (i.e., HLW, GTCC) indefinitely. While not optimal, this does not pose a health or safety risk.

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Commercial Low-Level Radioactive Waste Disposal Summary

(Volume in million cubic feet and activity in million curies)

	Totals		Class A		Class B		Class C	
Year	Volume	Activity	Volume	Activity	Volume	Activity	Volume	Activity
1995	1.247	0.172	0.861	0.000	0.014	N/A	0.005	N/A
1996	2.174	0.456	1.961	0.000	0.021	0.001	0.007	0.000
1997	2.310	0.127	2.277	0.007	0.024	0.033	0.009	0.087
1998	1.066	0.335	1.031	0.010	0.021	0.075	0.013	0.250
1999	0.963	1.877	0.939	0.014	0.024	0.033	0.020	1.830
2000	2.939	0.782	2.909	0.015	0.019	0.067	0.012	0.700
2001	3.422	0.491	3.385	0.007	0.018	0.023	0.019	0.460
2002	2.641	0.140	2.619	0.007	0.011	0.019	0.011	0.114
2003	2.830	0.623	2.795	0.005	0.012	0.136	0.023	0.483
2004	3.864	0.338	3.833	0.007	0.015	0.026	0.017	0.304
Totals	*23.476*	*5.340*	*22.610*	*0.073*	*0.178*	*0.412*	*0.137*	*4.228*

Source of information: Manifest Information Management System (MIMS), September 2005, prepared by U.S. Department of Energy. (Note: The above data does not include any DOE waste shipped to commercial disposal.)

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LLW Forum Discussion of Issues (continued)

- **Position 3: When evaluating alternatives, it is important to consider political realities, economic consequences, and regulatory concerns.**
  - **Disposal of Commercial Waste in Federal Facilities:** Federal facilities are located in states and their proposed use will encounter the same, if not elevated, local and state concern associated with development of new facilities. In addition, until remediation is complete at federal facilities, it will be difficult to convince citizens that they should be allowed to develop new disposal capacity for acceptance of off-site wastes.
  - **Development of Commercial Disposal Capacity by Private Entities:** The Act is flexible enough to accommodate the development of a disposal site by a private company—either on private, state or federally owned land—as is evidenced by Envirocare's history. This is already permissible under many compacts. Individual state law can be and has been amended to allow private companies to develop such facilites (i.e., Texas).
  - **Requiring Access to New or Existing Sites:** Pressuring states with existing sites or that are developing sites to accept out-of-region waste runs the risk of inviting new restrictions or shutting down sites altogether. (For instance, the new Richland sublease provides that the state may terminate the lease if compacts lose exclusionary authority.) Equity in disposal burden is what originally led to passage of the Act & remains a vital consideration.

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LLW Forum Discussion of Issues (continued)

- **Position 4: The federal government provides appropriate assistance to states and compacts related to commercial LLRW management.**
  - There are appropriate functions for the federal government to perform in a state-federal partnership to preserve existing commercial LLRW disposal capacity and/or to develop additional capacity including
    - continuing to support state and compact activities,
    - continuing to maintain a national database, the "Manifest Information Management System" (MIMS), of current disposal information, and
    - continuing to support the LLW Forum.
- **Conclusions:** The current system provides access for the management of Class A, B and C low-level radioactive waste, including disposal, to all states. Changing conditions may close off disposal access to Class B and C and some Class A waste for a significant portion of the country, but other opportunities may alleviate or eliminate this problem. While the volume of Class B & C waste is quite small, it remains important that disposal capacity for all classes of LLRW be preserved & developed. Proposals for alternative approaches need to be carefully analyzed from the perspectives of all affected parties.

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United States Nuclear Regulatory Commission

NRC'S LLW Program

ACNW Working Group Meeting on
LLW Management Issues
May 24, 2006

Scott Flanders, Deputy Director
Division of Waste Management and Environmental Protection
Office of Nuclear Material Safety and Safeguards
U.S. Nuclear Regulatory Commission

United States Nuclear Regulatory Commission

LLW STRATEGIC ASSESSMENT

- Scope the issues
- Gather stakeholder input
- Factor in future needs
- Identify potential NRC actions
- Prioritize
- Develop implementation plan

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United States Nuclear Regulatory Commission

OBJECTIVES

- Position the LLW Program to meet current and future challenges
  - Ensure safe and secure disposal
  - Promote a reliable, stable, and adaptable regulatory framework
  - Address any gaps / vulnerabilities
  - Improve effectiveness and efficiency
- Ensure that limited resources are used effectively

3

United States Nuclear Regulatory Commission

STAKEHOLDER INPUT

- Stakeholder input critical to success of this effort
- Will review ACNW meeting transcript and consider all of the information provided
- Staff will issue a Federal Register Notice in mid-June soliciting additional stakeholder input
- What three issues do you think are most important for NRC staff to work on and why?

4

Basic Facts About Commercial LLRW

Disposal at Federal Facilities

A Roundtable Discussion

May 22, 2006
Presented by Bill House
Chem-Nuclear Systems, LLC

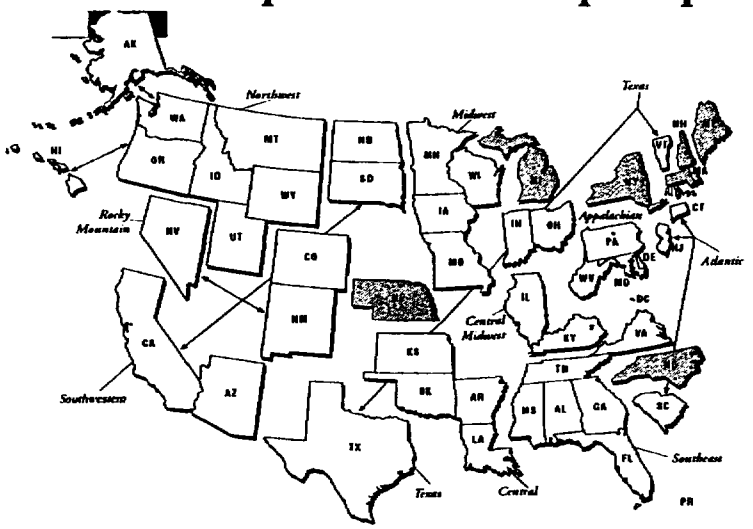
A wholly-owned subsidiary of
Duratek

Topics for Commercial LLRW Facts

- LLRW Compact Status
- LLRW Disposal Access in 2008
- LLRW Waste Volumes and Types
- LLRW Waste Volumes w/o Disposal Access

Duratek

2006 Compact Membership Map*



*LLW Forum Report

Duratek

2006 Compact Membership Listing*

Appalachian Compact - DE, MD, PA, WV

Atlantic Compact – CT, NJ, SC

Central Compact – AR, KS, LA, OK

Central Midwest Compact – IL, KY

Northwest Compact – AK, HI, ID, MT, OR, UT, WA, WY

Midwest Compact – IN, IA, MN, MI, OH, WI

Rocky Mountain Compact – CO, NV, NM

Southeast Compact – AL, FL, GA, MS, TN, VA

Southwestern Compact – AR, CA, ND, SD

Texas Compact – TX, VT

Unaffiliated States – DC, ME, MA, MI, NE, NH, NY, NC, PR, RI

*LLW Forum Report

Duratek

2008 LLRW Disposal Access

Hanford, WA Site	Northwest & Rocky Mtn.	Class A, B & C
Barnwell, SC Site	Atlantic Compact	Class A, B & C
Clive, UT Site	All States	Class A only
Andrews, TX Site*	Texas Compact	Class A, B & C

There will be 34 states (50+ nuclear power plant locations) without disposal access for Class B & C wastes after June 2008.

* License application under review.

Duratek

Barnwell Site Waste Volumes, Types and Activities

	2003			2004			2005		
Waste Types	Ship	CuFt	Ci	Ship	CuFt	Ci	Ship	CuFt	Ci
	#			#			#		
Resins/Filter Media/Filters	260	37,640	21,027	208	27,358	20,790	173	23,419	12,288
Dry Active Waste	86	11,500	47,869	86	12,358	242	55	8,861	23,233
Reformed Residue	23	2,767	7,635	35	4,225	13,913	59	6,685	15,188
Equipment & Components*	19	14,903	33,497	20	10,398	33,911	7	1,624	14,527
Irradiated Hardware	26	1,439	465,638	16	920	231,590	26	1,498	452,060
Solidified Liquids	10	1,473	297	5	519	57	3	493	28
Sealed Sources, Devices and Gages	19	830	66,770	18	985	1,032	19	433	369
Totals	443	70,552	642,733	388	56,763	301,535	342	43,013	517,693

* 2003 volume includes 9,536 cu.ft. for the ME Yankee RPV and 2,830 cu.ft. for the Big Rock RPV
2004 volume includes 7,607 cu.ft. for the CY RPV

Duratek

Barnwell Site Class B/C Waste

	FY2001/2002	FY 2002/2003	FY 2003/2004	FY 2004/2005
	Class B/C (cu. ft.)	Class B/C (cu. ft.)	Class B/C (cu. ft.)	Class B/C (cu. ft.)
Atlantic Compact	5,819	4,495	11,942[2]	2,894
Texas Compact (2 states)	809	1,081	909	1,127
34 States w/o Access 2008	16,055	24,694[1]	20,524[3]	16,923
Totals	22,683	30,270	33,375	20,944
Totals w/o RPVs	22,683	20,734	23,038	20,944

[1] Includes 9,536 cu.ft. for the ME Yankee RPV
[2] Includes 7,507 cu.ft. for the CY RPV
[3] Includes 2,830 cu.ft. for the Big Rock RPV

Duratek

Annual Class B/C Waste Volumes without Disposal Access after June 2008

Generator Segment	Class B (cu. ft.)	Class C (cu. ft.)	Total (cu. ft.)
Utility	9,200	5,320	14,520
Non-Utility	600	870	1,470
Medical	30	20	50
Projected Total	9,830	6,210	16,040

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