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NUCLEAR REGULATORY COMMISSION

IN THE MATTER OF:

POLICY SESSION 78-9

RECOMMENDATIONS ON COURSE OF ACTION FOR
ESTABLISHING NUCLEAR FACILITY DECOMMISSIONING REQUIREMENTS

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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

POLICY SESSION 78-9

RECOMMENDATIONS ON COURSE OF ACTION FOR
ESTABLISHING NUCLEAR FACILITY DECOMMISSIONING REQUIREMENTS

Room 1130
1717 H Street, N.W.
Washington, D.C.

Thursday, February 16, 1978

The Commission met, pursuant to notice, at 9:50 a.m.

BEFORE:

- DR. JOSEPH M. HENDRIE, Chairman
- PETER A. BRADFORD, Commissioner
- VICTOR GILINSKY, Commissioner
- RICHARD T. KENNEDY, Commissioner

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1

P R O C E E D I N G S

2

CHAIRMAN HENDRIE: One, two three. Why don't

3

we go ahead.

4

We're meeting this morning on -- I guess the first item will be round 2 on decommissioning requirements.

5

Lee, I guess -- go ahead. I assume you will

6

turn it over to Bob Bernero.

7

MR. GOSSICK: Right. We're here to provide some additional information that came out of the first briefing on this subject on the 23rd of January.

8

So, Bob, go right ahead.

9

MR. BERNERO: Mr. Chairman, Commissioners, we were with you three weeks ago to discuss decommissioning and you asked that we go back, sharpen our thoughts -- particularly with respect to the choice of doing a single comprehensive program, as we proposed; or trying to do something in a more timely fashion, by segmenting that program and at least starting out doing individual proceedings or rule makings, as we started, perhaps, with the PWR.

10

We had extensive discussions with your technical staff members, and with OPE since that briefing three weeks ago. And in sharpening our thoughts, we have prepared some notes which you have, in which I would like to review briefly the program we proposed before -- just to refresh your memory -- and then address some questions, the

11

12

jwb 1 specific questions that we have to confront about
2 decommissioning and decommissioning policy.

3 I will go over what we are doing now, in order
4 to get our thoughts more sharply focused on our needs and
5 on the urgencies, and then address the choice of rule
6 making: what are the factors, and what are the choices
7 we have?

8 So, if we just review, firstly, the notes we
9 had last time — could I have the first viewgraph, please?

10 (Slide.)

11 I might add: There are two additional slide
12 notes that I left at your places this morning. We'll
13 address those as we come to them. They were prepared after
14 the ones that were sent to you.

15 If you recall, the last time we said, on MBO A,
16 this is the portrayal of those studies that are going on
17 right now that are under contract. These are the technical
18 basis studies being done by Battelle.

19 The important thing to note is that, by mid-79
20 we will have in hand both reactors and the principal fuel
21 cycle facilities which bound the total problem, which will
22 give us an address of the different types of nuclides and
23 the different types of waste disposal that need to be
24 addressed in a comprehensive policy.

25 Turning to NBO B, the next one, please.

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1 (Slide.)

2 This is the overall program, based on that set
3 of information reports, and little more than a year from
4 now it has these mid-79 staff interim reports that would
5 draw on the information reports and make public, tentatively,
6 through a Nu Reg document, the tentative staff thinking on
7 each of the principal issues — the financial assurance
8 question, the radioactive residue question, and the
9 generic applicability question — so that states, other
10 agencies, the public can react to it, can comment on staff
11 thinking even before we come out with an EIS.

12 The EIS would follow. The states, if you looked
13 on this one down at the bottom, you could see represented
14 state workshops so that we could carry through the
15 important work of liaison with the states on the radioactive
16 residue criteria, and on the financial assurance criteria.

17 May I have the next viewgraph, please?

18 (Slide.)

19 MBO C was what we presented as the schedule for
20 addressing the PIRG petition. Once again, I would just
21 emphasize that, as shown, it presumes a rule developing
22 from the treatment of that petition.

23 If, on the other hand, the determination is that
24 the petition be denied, then of course it would come to an
25 abrupt termination this summer, just in a few months.

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1 So, let's turn to the next viewgraph and look
2 at the questions we're trying to confront.

3 Are we dealing with decommissioning now? And,
4 if so, how are we dealing with it? What are we doing?

5 What are the weaknesses in our present policy?
6 Let's point out these weaknesses and be candid in admitting
7 them.

8 Where is the urgency? And let's identify what
9 is urgent, what isn't urgent, and then ask ourselves what
10 will pace our address, and how should we proceed?

11 May I have the next viewgraph, please?

12 (Slide.)

13 The existing criteria for decommissioning -- much
14 of this you have heard before. On reactors, we have a
15 number of regulations concerning financial assurance, the
16 decommissioning plans. The key element in the criteria for
17 reactors is that Reg. Guide 1.86. It's a very important
18 thing in our existing policy on decommissioning, and I will
19 speak to it in more detail in a moment.

20 On the fuel cycle side, we don't have quite so
21 much. We have Appendix "F" to Part 50 on Fuel Reprocessing
22 Plants, which we've discussed before. There are financial
23 criteria for financial qualifications: Regulations 50.33,
24 70.23.

25 We have a variety of criteria in regulatory guides

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1 such as 3.5 on uranium new applications, which address
2 criteria for disposition or management of fuel cycle
3 wastes.

4 And lastly, on the fuel cycle, we have residue
5 limits that are virtually the same as the residue limits
6 in Reg. Guide 1.86. They're handled as a branch position,
7 though.

8 May I have the next slide, please?

9 (Slide.)

10 Now, this document -- Regulatory Guide 1.86 -- is
11 the crux of the present treatment of decommissioning on
12 reactors. We have, in print, the advice to the applicants
13 in Regulatory Guide 1.86 that identifies four acceptable
14 decommissioning modes: mothballing, entombment, dismantling,
15 and conversion.

16 If you examine those modes for a while, you can
17 see some problems. Mothballing is not "decommissioning";
18 it's a holding action. It's a temporary action awaiting
19 some decay, or some accumulation of funds, or some other
20 proceeding before one goes into a final decommissioning.

21 Entombment, as read in Reg. Guide 1.86, implies
22 that you would cast in concrete, or entomb in some fashion,
23 that would hold the radioactivity safely until it had
24 decayed away. The Reg. Guide does not address the difficult
25 question of saying: What sort of radionuclides can be dealt

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1 with in this way? Can you really take reactor residues
2 and cast them up in concrete and leave them there,
3 effectively, in perpetuity? So, there's a real question
4 about the validity or viability of that decommissioning
5 mode.

6 "Dismantling" is a reference and choice
7 decommissioning mode which means: clean up all the residue
8 to an acceptably low level so that you can release the site
9 and dispose of it in repositories. That we clearly endorse
10 as an acceptable mode.

11 "Conversion" is perhaps a facetious choice. It
12 speaks to what you do at the site after it's released, and
13 is not really a separate mode of decommissioning. It's an
14 action subsequent to some decommissioning.

15 COMMISSIONER GILINSKY: What do you do if you
16 decommission the residue?

17 MR. BERNERO: If you decommission the radioactive
18 residue -- remove it to an acceptable level so you can release
19 the site for some other use in an unrestricted fashion --
20 then it's an academic point whether one converts the turbine
21 to run off the fossil boiler or converts the site to a park --
22 converts, or whatever.

23 If, on the other hand, you have entombed the
24 radioactivity in some way to require surveillance, then you
25 still have a monitoring of that site, or a custody of that

jwb 1 site required. And once again, it's somewhat academic
2 what you're doing on the site — whether you're still
3 generating power there, or have converted it into something
4 else.

5 COMMISSIONER GILINSKY: "Conversion," that is
6 not the decommissioning mode.

7 MR. BERNERO: No. Really, it's not a proper
8 choice as a decommissioning mode.

9 So, what you see in Reg. Guide 1.86, we've got
10 what is now, in retrospect, a poor choice of decommissioning
11 modes offered.

12 The thinking in the industry, I might add, if
13 one takes the Atomic Industrial Forum research into account,
14 in their recent report on decommissioning all the thinking
15 in the industry -- and ours is running in this way, too --
16 is that dismantling is the mode of choice, and the only
17 discussion is how long you should wait. What are the
18 tradeoffs, the cost/benefit, of reducing dose rates by
19 letting some radioactive decay take place — reducing costs,
20 manpower costs, at the same time you're accumulating custody
21 costs and uncertainties the longer you wait.

22 So those are tradeoffs of "when," not "whether"
23 you will dismantle. The choice really is when you will
24 dismantle.

25 If you look in the AIF study, they use the term

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1 "entombment" as a variation of "mothballing." It's just a
2 variation on a theme. It's a different way to padlock the
3 door while you're waiting.

4 Now, Reg. Guide 1.86 also has some residue
5 limits in it --

6 COMMISSIONER BRADFORD: Let me just ask about the
7 dismantling. What volume of material -- stuff, metal,
8 whatever -- are you talking about when you talk about
9 "dismantling"?

10 MR. BERNERO: Right now, we're estimating that
11 to dismantle a pressurized water reactor -- a large one,
12 like Trojan -- is more than half a million cubic feet.
13 And in our scrutiny of the report we're working on right
14 now, we are suspicious that that number may be low.

15 So I would say that we're somewhere in the range
16 right now of, say, half a million to a million cubic feet.

17 COMMISSIONER BRADFORD: That would be the
18 low-level waste?

19 MR. BERNERO: Tentatively, that's all low-level
20 waste. We're doing a subset calculation on the assumption
21 that some of the activated products -- that is, the core,
22 shrouds, and things like that that have activated niobium 94
23 in it, since that's a very long half-life material and would
24 have a dose rate at the surface on the order of R per hour,
25 that one might have to send that to the high-level

jwb

1 repository, and that would add cost.

2 MR. MINOGUE: Your quantity is relatively small
3 of that kind of material.

4 MR. BERNERO: But we're bringing in the delta
5 cost that would accrue if you had to do that, and that can
6 add up to a million or two million.

7 COMMISSIONER GILINSKY: You say that's low?
8 Because it's on the surface?

9 MR. MINOGUE: Activation is throughout the
10 material. It's just that there isn't that much stuff that's
11 in high neutron flux.

12 COMMISSIONER KENNEDY: There's not that much
13 material.

14 MR. MINOGUE: There's not that much material
15 exposed to the direction of the neutron flux.

16 MR. BERNERO: It's the pieces immediately around
17 the core assemblies. There's even a question, when you get
18 out to the reactor vessel itself, to the pressure vessel
19 itself, whether you'd have to do this.

20 COMMISSIONER GILINSKY: So it is basically on the
21 surface?

22 MR. BERNERO: Where the flux is highest,
23 immediately near the surface of the core assembly, and in the
24 core structures -- any of the core structures.

25 MR. MINOGUE: It's not surface contamination that

jwb 1 you can remove.

2 COMMISSIONER GILINSKY: I understand.

3 MR. MINOGUE: The activation is higher toward
4 the surface, but it's integral to the material. It's not
5 readily removed.

6 It's not like taking off a layer of contamination.

7 COMMISSIONER BRADFORD: To give me a point of
8 reference: How many thousand cubic feet is available, say
9 at a site like Sheffield?

10 MR. BERNERO: I made a rough estimate. I was
11 looking at the thing and saying: approximately how many
12 yards, or acres of burial ground are we talking about? And
13 I don't know what ultimate criteria will be on burial
14 grounds, but if one assumes something like a 20-foot depth
15 of burial of this waste, reasonably compacting it, in the
16 numbers we're coming up with we're speaking of one, maybe
17 two acres of land for a reactor decommissioning.

18 It's not an insurmountable land area involved,
19 not an extremely high number.

20 COMMISSIONER BRADFORD: If you had a facility
21 say the size of Sheffield, how many reactors could you put
22 there?

23 MR. BERNERO: Off-hand, I don't know the acreage
24 of the Sheffield facility. The only low-level burial grounds
25 I visited --

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1 COMMISSIONER BRADFORD: Pick one that you
2 visited.

3 MR. BERNERO: In Hanford, Washington, the burial
4 ground up there. As I recall, that burial ground must be
5 somewhere around 1.00 acres. And if you were dealing with
6 1 or 2 acres per reactor, you'd have 50 or more reactors
7 that go in there.

8 But the bulk of their business seems to be
9 gloves, and hospital waste, and things like that. So I
10 don't know if one can dedicate burial grounds to reactors,
11 but at least this gives the scale of burial that we're
12 dealing with.

13 Now these residue limits in Reg. Guide 1.86, we
14 really need to appreciate what they are and what they are
15 not. These have been used for years. These residue
16 limits have been around for 15, maybe 20 years. They are
17 surface contamination limits.

18 They are specific limits telling you how many
19 counts per minute you can swipe off of the surface. They
20 are good practice values. They're responsible. Health
21 physicists have used them for years.

22 They are not established criteria. They are not
23 something that has been tested in the public forum; that has
24 gone through any kind of a rigorous test for validity on a
25 valid basis.

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1 There's nothing in there for soil contamination;
2 there's nothing in there for activated materials; no criteria
3 there that say what to do with niobium 94 contaminated core
4 pieces; and there's nothing for buried activity — for how
5 to deal with something that's buried.

6 May I have the next slide, please?

7 (Slide.)

8 So if you look at the evaluation of decommissioning
9 in a reactor application, the whole thing is jaundiced by
10 the existence of Reg. Guide 1.86 and the criteria we have
11 out, with all their weaknesses.

12 The licensee looks to Reg. Guide 1.86. He
13 identifies the tentative mode to decommission, calculates
14 the cost, and submits it to the staff.

15 The staff looks at that. Typically, one gets
16 either mothballing or dismantlement. In the cases I've seen
17 and discussed recently, people are tending to use the AIF
18 number, now. Previously, they were tending to use a
19 mothballing number that was on the order of \$10 million, or
20 something like that.

21 COMMISSIONER KENNEDY: What's the other number?

22 MR. BERNERO: The other number, if you use a
23 relatively prompt dismantling, AIF comes out about \$20-odd
24 million, \$21- or \$22- something on that order.

25 Well, the staff looks at the applicant's numbers

1 and as part of our financial qualifications finding, examines
2 how that fits into his cash flow problems. And the staff, as
3 part of the licensing, has to say that this applicant is
4 financially competent to operate the reactor.

5 And as you've heard before, when you're looking at
6 the scale of costs and expenditures associated with building and
7 operating reactors in a power utility system, the cost of
8 decommissioning appears rather smaller than scale. It does
9 not get a highlight or emphasis. But it's considered.

10 The staff considers the cost in its NEPA cost-benefit
11 analysis. In the supplementary information paper we sent up
12 a little more than a week ago, we attached a 50-33 finding, a
13 typical one, and the current standard analysis of cost benefit
14 with respect to decommissioning that the staff uses in all its
15 FES accounts.

16 The staff no longer does the FES cost-benefit with the
17 applicant's number for decommissioning. We standardized on the
18 AIS dismantling decommissioning number, in order to calculate a
19 mills per kilowatt hour, to use our standard calculation.

20 COMMISSIONER GILINSKY: What is the significance of
21 that when you get into the cost?

22 MR. BERNERO: It's fairly small. It's a real cost.

23

24

25

jwb 1 It has to be assigned, and it has to be assigned and
2 weighted. It comes out to be 10ths of a mil per
3 kilowatt hour, or hundredths of a mil per kilowatt
4 hour -- a relatively small number.

5 COMMISSIONER GILINSKY: At what point would it
6 affect anything the staff does?

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1 MR. BERNERO: In the justification of coal
2 versus nuclear.

3 MR. MINOGUE: It's part of the NEPA evaluation.

4 MR. BERNERO: We have to show that it's
5 cost-beneficial to generate the electrical power by this
6 nuclear plant rather than a hydro plant or a coal plant. And
7 the principal argument for economic benefit is mills per
8 kilowatt hour of delivered electricity. The commissioning is
9 treated as a cost of generating the electricity; so that's
10 how it gets in there.

11 But now the staff in looking at the decommissioning
12 stops short of any specific requirement on funding assurance.
13 At this point, we've looked at the commissioning in
14 perspective, made a finding that the applicant has the
15 financial integrity or power to handle costs of this
16 magnitude, but then it is left to the state regulating bodies
17 to handle this, to say this is the way you should accumulate
18 those resources for decommissioning or this is the level of
19 assurance you should have for the accumulation of those funds.

20 Let's have the next viewgraph.

21 (Slide.)

22 I've inserted -- and this is in one of the
23 supplementary notes I left at your places -- an example of
24 funding for reactor decommissioning, such as one of the states
25 is doing.

1 A number of states are following this pattern.
2 This one comes from New York State, which is a relatively
3 experienced public service commission that is experienced in
4 dealing with nuclear reactors in that State. Now, their
5 approach is based on the principle that decommissioning costs
6 should be borne by the customer served, and they approach it
7 that the proper way to get the resources for the commissioner
8 is to set up a cash sinking fund and get the maximum yield on
9 that cash sinking fund to obtain the lowest cost to the
10 consumer. Since, you know, the electricity user is paying for
11 this, they want the most efficient way of accumulating the
12 funds.

13 Now, that cash sinking fund is done in this way.
14 They select a depreciation value, a negative salvage value
15 which can be written off this decommissioning expense as a
16 depreciation cost --

17 COMMISSIONER KENNEDY: Your net negative salvage.

18 MR. BERNERO: Your net negative salvage value.

19 So, what it does, it gives them a great amount to
20 write off as depreciation expense.

21 Now, the conventional depreciation, which is
22 depreciation of capital, they've already got in the ground,
23 you know, they've already built, that is part of their rate
24 base. They're entitled to a return on that investment, and
25 they are entitled to get bonded indebtedness to put liens on

1 that investment. But this reserve for decommissioning,
2 though the state allows them to bill the customer, they
3 have to put that into a reserve that is not in a rate base.
4 Therefore, the shareholder in the company gets no return on
5 it. And also --

6 COMMISSIONER KENNEDY: It's in the rate base, but
7 not in the --

8 MR. BERNERO: It's in the charge to the customer.

9 COMMISSIONER KENNEDY: Okay.

10 MR. BERNERO: But not in the rate base used to
11 calculate rate return to the investor. And they are not
12 allowed to bond against it.

13 MR. RATHBUN: Bob, isn't that treated as though
14 it were the customer's money?

15 MR. BERNERO: No. In that sense, the investors
16 can't get a return on it, and you can't bond against it. Yes,
17 it's treated as customers' money, but what is done --

18 MR. RATHBUN: It's not a fully funded reserve,
19 however?

20 MR. BERNERO: It is funded in the sense that those
21 funds are put directly into the short-term cash flow of the
22 company, and they may be in physical plant equipment. And
23 this state, in particular, argues that this puts these funds
24 into a position where they will earn the maximum return. It's
25 basically the customers' money put in position of the greatest

1 leverage, and it's there under day-to-day, year-to-year
2 scrutiny by the regulating body, accumulated so that at the
3 time the decommissioning of the plant is needed it is a
4 ready possibility for the utility to raise money directly
5 on those resources that are not encumbered and the resources
6 are, of course, there.

7 The State of New York argues that, by doing this,
8 a typical rate of return and, consequently, interest leverage
9 is about 15 percent rate of return; whereas, if you turned
10 with the customers' money and said "I want to put that into
11 a high-security bond or an escrow fund or something," you get
12 7 or 8 percent, something like that.

13 So, you just double the leverage; you double the
14 interest.

15 COMMISSIONER BRADFORD: Where does that 15 percent
16 come from?

17 MR. BERNERO: That's the allowable rate of return
18 on the short-term funds of the utility in New York, at least.

19 MR. RATHBUN: I think it's as though the customers'
20 -- this money -- the customers' money is invested in the
21 utility at their rate of return vis-a-vis in federal securities that
22 earn 7-1/2 percent, something like that.

23 COMMISSIONER BRADFORD: Then, it's as though it were as-
24 sumed to be a common stock investment.

25 MR. RATHBUN: It's whatever the weighted cost of

1 capital is.

2 COMMISSIONER BRADFORD: It wouldn't be anywhere near 15 percent.

3 MR. BERNERO: New York, on the short-term cash flow,
4 says that the typical rate of return is about 15 percent, the
5 allowable --

6 CHAIRMAN HENDRIE: It replaces the need to borrow
7 money on which they would otherwise -- short-term rates and up
8 being 15 percent.

9 MR. RATHBUN: I think it's to raise money, actually.

10 COMMISSIONER BRADFORD: Incremental growth capital?

11 MR. RATHBUN: It may be, because the customers will
12 provide the capital to the utility to payments for decommission-
13 ing before the utility just for New York. The utility will incur
14 any cash outlay for the purpose -- if the utility's need to raise
15 capital in the market is reduced by receipts of the money from
16 customers, that reduction in cost would be passed on to the
17 consumers, who will thus get a rate of return on their money of
18 about 15 percent. The reason was that the cost of new money
19 and related income taxes during this period was about twice the
20 return of 7 1/2 percent that they would be likely to be earning
21 through --

22 COMMISSIONER BRADFORD: Okay. So it's the income tax
23 that does it.

24 MR. RATHBUN: I'm sure that has an impact.

25 COMMISSIONER BRADFORD: It must be. You're taking

1 a much lower rate of return, and you're getting the tax
2 effect.

3 MR. RATHBUN: Yes, sir. I think that's part of it.

4 MR. BERNERO: But once again, if we go back and say
5 what is our concern as NRC in this instance and in all other
6 reactor instances, currently, we defer to the state or the
7 other regulating body to see to a specific form of financial
8 assurance. What the NRC does is merely look at the general
9 financial capability of the company, subject to a review.
10 We, of course, have a continuing review responsibility as
11 the plant operates as time passes, so that we could, even 10
12 years into the future, look at the plant and say, "You're
13 getting kind of shaky. It doesn't look like you have enough
14 money to decommission."

15 So that the real significance to us is, should we
16 be getting into this specific assurance form, or should we
17 leave that to the state?

18 Let's turn now to the next viewgraph and see what
19 we do now on the fuel cycle currently. I use, for simplicity,
20 the uranium mill application, where the treatment is the most
21 developed.

22 (Slide.)

23 Because the bulk of the licensing work in fuel
24 cycle is there, the applicant prepares a tailing stabilization
25 and decommissioning plan. I've split the two, although they

1 are both really part of decommissioning.

2 There are criteria available in sources, if you
3 know where to look, for how to prepare and what to project
4 for these things. The interim criteria for tailing
5 stabilization can be found in Reg. Guide 3.5, which tells
6 you what to put in a uranium mill application license.

7 There are few criteria available for mill residues.
8 By that, I mean for what to clean up a mill to, what soil
9 levels, what surface contamination levels. We have a branch
10 position, like Reg. Guide 1.86.

11 Did you have a question?

12 COMMISSIONER BRADFORD: No.

13 MR. BERNERO: The applicant, then, with these
14 interim criteria, estimates the cost of decommissioning. He
15 has a tentative decommissioning plan, and he proposes a surety
16 arrangement and says, "I intend to see to the funds being
17 available by such-and-so means."

18 Typically, on a mill that's a performance bond,
19 we're talking somewhere in the range of \$2-4 million for the
20 total cost.

21 The staff then reviews it and licenses that mill,
22 based on the acceptability of the tentative plans for tailing
23 stabilization and decommissioning, on the reality or realism
24 of the estimated cost, and on the acceptability of the surety
25 arrangement.

1 May I have the next viewgraph, please.

2 (Slide.)

3 What are the weaknesses in what we're doing now?

4 The first and most prominent weakness is we don't
5 have recognized criteria for radioactive rescue. We've got
6 some good practice numbers for surface contamination. We've
7 got some questionable criteria for decommissioning modes in
8 Reg. Guide 1.86.

9 But we don't have good radioactive residue criteria
10 for soils, for surfaces, for burial, for activation products.
11 And we don't have a clear policy on the permissible modes of
12 decommissioning.

13 We've got to confront this question of is it
14 acceptable to fix radioactivity in place and then walk away
15 from it. The concept of a low-level burial ground or
16 stabilized mill tailings or perhaps an entombed reactor, or
17 should we as a matter of policy be requiring dismantling of
18 virtually all cases.

19 We don't have a clear policy about timing. Is it
20 reasonable, is it rational, for reactors to be shut down and
21 then allowed to sit in mothballs for 100 years before one
22 dismantles them.

23 We talk about institutional changes that are
24 possible, then. We can be talking of quite a bit different
25 society, perhaps.

1 We don't have a clear policy on financial
2 assurance. We've got a dichotomy. On the reactor side, we
3 look at financial integrity; on the fuel cycle side, we tend
4 to look at a fixed or rigid assurance. So, we need some sort
5 of coherent statement of policy there.

6 And lastly, a very important thing, I think, little
7 is being done to see that plants are being designed to
8 facilitate decommissioning. When you really focus on
9 decommissioning, it brings the designers to work. They accept
10 the costs. They focus on them, and they do something with
11 them.

12 A good example: the uranium mills with the recent
13 pressure on decommissioning. The mill designers have started
14 to take a harder look at the tailings and how they accumulate.
15 In many instances, they used to build the tailings dam out of
16 tailings and accumulate tailings behind the tailings dam made
17 of tailings. But then, when you go to decommission the thing,
18 you now have to decommission the dam. So, that led to a
19 generation of thought that said, "No, let's make an earthen
20 dam and then put the tailings behind it."

21 Now, further thoughts on decommissioning are
22 getting to still another generation, and that is: excavate
23 and further simplify the decommissioning.

24 MR. MINOGUE: I'd like to add a comment in regard
25 to decommissioning reactors.

1 Of course, the steps that are taken to reduce
2 occupational exposure, to design to facilitate maintenance
3 and to cut exposure in the course of maintenance also
4 serve to facilitate decommissioning.

5 So, I think it's a little too strongly stated
6 to imply that nothing is done in the design to facilitate
7 decommissioning.

8 MR. BERNERO: Yes. I was intending things like
9 making pieces more readily segmented —

10 COMMISSIONER KENNEDY: Specific design criteria
11 aimed at this type of result.

12 MR. BERNERO: Casting bore holes in concrete so
13 that you could, with a very small charge, spall off the
14 contaminated piece.

15 May I have the next slide, please.

16 (Slide.)

17 So, if you look at the factors, we've got two
18 questions to answer here: What do we need urgently? Where
19 is the critical path in getting to a policy and rulemaking
20 on decommissioning?

21 First of all, I think we have to recognize that
22 responsibility for decommissioning is the urgent thing. It's
23 not the act of decommissioning. What's urgently needed is
24 the assignment and acceptance of the clear responsibility for
25 what to do about decommissioning. The act of actually cutting

1 up the plans and hauling the pieces away is something that
2 is in the future.

3 Now, when we go into this policy of rulemaking,
4 as we said in the supplementary paper, there are four
5 principal factors that have to be considered: the
6 acceptability of a decommissioning mode; the residual
7 contamination limits, whether they be in soil, on surfaces,
8 in burial, or whatever; the timing of decommissioning; how
9 long one should wait to minimize radiation exposures, how
10 long one can wait in spite of the pressures to get the job
11 done; and lastly, what are appropriate financial or surety
12 arrangements.

13 There's a subset question that can tie the last
14 two together. It's possible that we would want to build in
15 inherent financial pressures of some sort that would promote
16 the decommissioning of a plant to make it worthwhile to clean
17 it up and clean it up promptly.

18 Now, the factors that will control the schedule
19 of dealing with these four principal issues, we think, are,
20 first of all, the residue limits.

21 This is a very complex thing, and it definitely
22 involves the Environmental Protection Agency, and it involves
23 all of the states in setting residue criteria that the EPA
24 can endorse, that we are confident of and can endorse, and
25 that all of the states or virtually all of the states will

1 accept.

2 We already have certain criteria in place. The
3 State of California right now is furnishing the criteria for
4 the decommissioning that DOE is doing at Santa Susanna, and
5 they're using a criterion of no detectable radioactivity,
6 which is a very tough one to live with, because, you know,
7 it's like saying zero release. It only makes sense if you
8 say no detectable measured in such-and-so way.

9 So, we project that the critical path is getting
10 residue limits that are sound and acceptable.

11 And the second piecing item is getting a consensus
12 of opinion on sound arrangements for financial assurance.

13 Now, this is not to say that we would use the same
14 financial assurance policy right across the board, but perhaps
15 we would at least think out and very clearly enunciate
16 differences for different licensees and the bases for those
17 differences.

18 COMMISSIONER BRADFORD: What's going on in that
19 area now? Is it essentially the assumption that, if it's a
20 utility and qualified to build the plant, it would be
21 qualified to decommission it?

22 MR. BERNERO: We are actually making the finding
23 in 50-33 as part of the satisfaction of that regulation. Our
24 staff evaluates the total financial capability of the licensee
25 or applicant and his total responsibilities, operation as well

1 as decommissioning, and makes the positive finding that he
2 can afford to do any and all of it. And that is subject to
3 re-review during the existence of the license.

4 But that's as far as we go. We do not, then,
5 specify how he keeps his books, whether he accrues the funds
6 in this way or that way. That, we leave to the state or other
7 regulatory body.

8 MR. MINOGUE: Of course, there's a distinct
9 difference in the financial situation between the fuel cycle
10 companies and the reactors.

11 MR. BERNERO: In the fuel cycle companies, they've
12 been pressing forward with decommissioning plans on people
13 other than mill owners, the fuel fabricators, and they're
14 getting more and more information and plans on that. And
15 the question of financial assurance is being raised there.
16 Big companies who own several plants or who are very large
17 corporations are arguing that their liquid assets may be
18 sufficient to be a basis of judgment, like 50-33.

19 So, if we look at individual rulemakings --
20 May I have the next slide, please.

21 (Slide.)

22 This is a slight variation of the argument we made
23 before, that although individual rulemakings can give you
24 rules tailored to the specific facility and, perhaps more
25 important, get you something at the earliest opportunity, we

1 are still troubled that a piecemeal approach will not
2 establish general policy, that it would be difficult to
3 define a set of facilities.

4 If you go back and recall the schedule that's on
5 NBOA, the first of your notes, really, one would define a
6 set of just one facility, a PWR, probably, and then a general
7 proceeding. It wouldn't be a subdivision into PWR, BWR fuel
8 fabrication plant, or whatever. It would probably be an
9 initial reactor rulemaking, followed by a general clean-up
10 rulemaking, sort of an interim and then a final.

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1 That raises the question, will that be confusing
2 to the public? Will that be confusing to the other agencies?
3 Will that actually save time?

4 COMMISSIONER GILINSKY: The proposition is whether
5 to separate out reactors.

6 MR. BERNERO: In the schedule we have, as we
7 discussed before, the PWR comes out earliest.

8 COMMISSIONER GILINSKY: Right.

9 MR. BERNERO: That's very shortly.

10 Then the BWR and the other bases in the general
11 plan come out next year.

12 COMMISSIONER GILINSKY: Yes.

13 MR. BERNERO: So that the choice would be going
14 with the PWR now or perhaps using it as representative of
15 reactors and then going with a final policy based on all of
16 them next year.

17 I wouldn't propose the solution of four sets or
18 10 sets — you know, one for every facility — but about the
19 only segmentation I think that could be done rationally is
20 using the PWR report as the basis for an interim rule making.

21 MR. MINOGUE: That might be applicable to both
22 types.

23 COMMISSIONER GILINSKY: This was the question I
24 raised last time. The PRW report is coming in fairly early.

25 MR. BERNERO: Fairly shortly, yes. To use it as

1 representative.

2 COMMISSIONER GILINSKY: My thought was that the
3 principal decommissioning problem, which, as I see it, is
4 the one that deals with reactors, is the one that we need
5 to address rather quickly.

6 I was asking whether in fact we could do
7 precisely that -- start with the PWR as representative of a
8 certain class of reactors.

9 MR. BERNERO: We could reasonably take the PWR as
10 representative of light water reactors.

11 We expect that the volume of waste with the BWR
12 will be greater, at least AIF does. AIF has a substantially
13 different figure. And there is some logic for that.

14 We're not certain about the occupational exposure,
15 how that will go. But again, I would expect it to be in the
16 same order of magnitude. At least we might prorate or
17 estimate whatever influence that would have on policy.

18 There would be technical validity to using the PWR
19 as a representative reactor. The real question would be,
20 could we proceed and effectively with what amounts to a
21 reactor policy enunciation and rule making in the full
22 respect of decommissioning modes, residue limits, financial
23 assurance, the works.

24 COMMISSIONER KENNEDY: Could I ask another
25 question.

1 (A) there is no public health and safety issue
2 here, at least certainly not an urgent one of that kind.

3 MR. BERNERO: It's a waste management.

4 COMMISSIONER KENNEDY: Number two, when is the
5 first decommissioning we are talking about?

6 MR. BERNERO: Well, depending upon our policy,
7 if we said — and I'm just going to hypothesize a number —
8 if we said thou shalt dismantle a reactor 10 years after
9 you shut it down as, say, an early extreme, then there are a
10 number of reactors that should start decommissioning right
11 now. They've been in moth balls for 10 years. So that now
12 I would expect that we would probably, just to minimize
13 occupational exposures, we'd probably go longer than that in
14 years. The first decommissioning would probably be in the
15 future even after we enunciate a policy in 1979.

16 MR. MINOGUE: In any event, there is no immediate
17 public health issue.

18 CHAIRMAN HENDRIE: But get on to the punch line
19 you're preparing to deliver. In view of the residual limits,
20 the need to set those, the need to set general aspects of
21 decommissioning modes, financial arrangements and so on, the
22 clear need for state workshops —

23 MR. BERNERO: That we see as the critical path.

24 CHAIRMAN HENDRIE: — liaison working these details
25 out with EPA and so on. Suppose you went ahead on the BWR.

1 Never mind all the other facilities. When would you get a
2 rule in place?

3 MR. BERNERO: Well, we would be proposing the
4 rule along with the policy statement in December '79, which
5 is a year from this December.

6 COMMISSIONER GILINSKY: That is just the BWR?

7 MR. BERNERO: No, that's the total program.

8 Now, in advance of that there are two things that
9 I think are worth some recurrent attention here that affect
10 this trade-off of whether to do it separate or whether to do
11 it total program. You may recall in the first briefing we
12 discussed the PIRG petition which addresses this active
13 financial assurance, or passive financial assurance, you
14 might call it.

15 Should NRC continue to do what we do just looking
16 at financial integrity or should we put our hand in the pot
17 and require some sort of a surety bond held in escrow?

18 We propose to address that issue and to do that
19 issue just a few months from now, and that is a significant
20 part of policy to be enunciated.

21 Now, the other thing that I think is worth going
22 into in a little more detail — may I have the next slide,
23 please.

24 (Slide.)

25 This is the second of the two slides I put up at

1 your place.

2 The last time we were here I spoke of the need
3 that NMSS had asked for clarification of existing regulations
4 because they are seeking and obtaining decommissioning plans
5 and information with very little basis in regulation on
6 which to base their requests. And we prepared and are
7 holding in abeyance, pending the outcome of this discussion
8 here, a paper to give to you on a clarification of existing
9 regulations with respect to decommissioning.

10 And basically this paper and regulation change
11 would state how NRC, of course, holds the licensee responsible
12 for decommissioning.

13 The reason for our clarifying the regulations is
14 that right now, if you look for any evidence in the
15 regulations for how NRC requires the information about
16 decommissioning, you really need a guide to find it. You'll
17 find it in Reg Guide 4.2. You'll find it in Reg Guide 3.5.
18 You'll find it in the correspondence of individual licensing
19 cases. But it's not standing out there clearly, publicly
20 enunciated in the regulations.

21 If you look in part 51 -- 51.20, to be specific --
22 the Commission has said very explicitly what the reactor
23 environmental report should treat. It should discuss this,
24 that, and everything in detail. But it doesn't say a word
25 about decommissioning.

1 So what that clarification would be --

2 COMMISSIONER GILINSKY: What report is this now?
3 The environmental report?

4 MR. BENERO: Yes, this is the environmental
5 report on a reactor, Section 51.20 of the regulations. It
6 tells you what to address in that. And then Section 51.40
7 of that same part 51 says, for other major facilities, go
8 thou and do like a reactor. It refers to 51.20.

9 COMMISSIONER GILINSKY: How do you get the data
10 for the cost-benefit analysis? Does that come from another
11 section of the environmental report?

12 MR. BERNERO: Well, on decommissioning, that
13 section of the regulations is mute. Where you'll find the
14 decommissioning covered is in the supporting regulatory
15 guide. It is only stated explicitly in the supporting
16 regulatory guide, Reg. Guide 4.2, on the fuel cycle where you
17 do find such information in supporting regulatory guides, and
18 now it's doubly derivative, doubly obscure.

19 Did we clearly expect this sort of information?
20 We clearly see this kind of responsibility. So what we would
21 propose in this subsequent clarification is a change to 51.20
22 that specifically applies to reactors, and by reference in
23 51.40, also applies to any other major facility, I think
24 bigenough to require an environmental report. And that
25 section would say, we must have the tentative plans for

1 decommissioning, the tentative cost for decommissioning,
2 and surety arrangements for funds. These are the criteria
3 for decommissioning. We don't have any better ones to give
4 right now, and we won't have any better criteria for
5 residue.

6 CHAIRMAN HENDRIE: It's not clear to me that if
7 you haven't provided any improved guidance to applicants,
8 that that's necessarily very helpful.

9 Let me go back to the question I was trying to
10 get an answer to before. The reason that we're here is to
11 discuss whether or not we should go ahead with the
12 decommissioning plan on a generic basis, or whether we should
13 begin to split off parts of it and do, for instance, a
14 decommissioning plan for pressurized water reactors.

15 Let me ask once again, if we were to start now to
16 move ahead to do a separate decommissioning rule making for
17 pressurized water reactors, in view of the need for the
18 state workshops, a need which I believe will be there when
19 there is doubt whether the matter dealt solely with PWRs or
20 generically, the need for liaison with the EPA and the
21 working out of the residue limits and so on, which I assume
22 would be necessary for the individual proceedings as well
23 as the generic ones, et cetera; when would we get the BWR
24 rule making in place, or when would we get the proposed --
25 where would the PWR triangle come out on the MBOB chart?

1 MR. BERNERO: It would come out almost the same
2 position.

3 CHAIRMAN HENDRIE: Good. Just stop there. Say
4 that again, please.

5 (Laughter.)

6 MR. BERNERO: Well, since the pacer --

7 CHAIRMAN HENDRIE: Just Say it again.

8 MR. BERNERO: It would come out at very nearly the
9 same time.

10 CHAIRMAN HENDRIE: Plus or minus a month or two.
11 Two months?

12 MR. BERNERO: At best, a few months.

13 CHAIRMAN HENDRIE: Three months?

14 I think that's the essential point that I'm trying
15 to bring out here.

16 Now, what else do you want to tell me?

17 MR. MINOGUE: Well, to the extent that we might
18 waffle one or several of these issues, you could conceivably
19 do some kind of an interim rule making prior to that related
20 to PWRs, as, for example, these surface contamination limits.
21 That's not something we would recommend.

22 CHAIRMAN HENDRIE: I find that a totally
23 unattractive proposition.

24 If the objection to the present situation is that
25 the Commission's directions are fuzzy, I find the proposal to

1 to go off and create yet a second level of fuzz not a
2 helpful one.

3 MR. MINOGUE: I'm not proposing that, Mr. Chairman.
4 What I'm saying is that if we try to do something earlier, the
5 only way we can do that and save a lot of time would be to
6 fuzz one of these issues. I'm not recommending that.

7 CHAIRMAN HENDRIE: Okay. I think that draws
8 rather clearly the issues then.

9 Commentary?

10 COMMISSIONER KENNEDY: What can we do in the
11 meantime?

12 MR. BERNERO: Well, it may not be clear from MBOB,
13 but there are two generations of liaison with the states and
14 other agencies, and perhaps I should emphasize what they are.

15 (Slide.)

16 The first generation this year is liaison with the
17 states and other agencies on the information in hand, namely,
18 the PWR report, the fuel reprocessing report, and any pieces
19 of the MOX report that become available.

20 Then the second generation of that liaison with
21 the states requires us to deal with them on a level higher
22 than what the contractor is saying. And the level higher
23 than what the contractor is saying is this set of staff
24 reports on the three critical issues, plus the subsequently
25 available contractor reports, so that now the states are not

1 dealing with simple factual data from the contractor, but
2 they are dealing with what the regulatory staff is reading
3 into it, what conclusions we are starting to draw from it.

4 And it's that second generation that is being
5 done and I believe turns out to be the critical path.

6 So we are actually doing something right now.
7 We have already undertaken liaison with the states and with
8 other agencies on this and are publishing all the materials
9 we get as rapidly as possible and soliciting comment on it.

10 COMMISSIONER GILINSKY: Let me understand this.

11 You're saying there is basically nothing to be
12 gained by going forward with the reactor part, specifically.

13 MR. BERNERO: Well, what we're saying is that if
14 you elect to go forward with the PWR part, you have to go
15 through the cycle with states, EPA, and the like. And there
16 are extensive times involved in that, and there are two
17 generations of that.

18 There are two basic approaches.

19 One is, you have to give the states something to
20 see and to understand and react to, and the first thing we
21 have available is what the contractor has generated. They
22 made a fuel reprocessing plant report and the PWR report.

23 As we go over that with the states, the contractor
24 is still working and the staff is working analyzing that
25 information and drawing conclusions from it, delving into it

1 for whatever significance is there.

2 Then the next level of discussion with the states
3 and with EPA is, what does that all mean to the staff? Does
4 that lead us to believe that we can promulgate standards
5 such as these, or policies such as these, that NRC will take
6 whatever position we seek? That is the second generation
7 of discussion we feel is vital to have while it's still
8 tentative, before we get sort of cast in bronze with
9 proposed policy statements, to discuss that with the states
10 and with EPA and whatever other agencies are involved.

11 And then with that second generation of insight,
12 then we go into the policy statement, EIS, and the works.

13 So really we are on that accelerated schedule
14 with the present schedule. We are not waiting to do the
15 staff work. If you look at MBOB, those lines are now --
16 they are now to get the financial analysts working, to get
17 the residual activity analysts working, working with the
18 states and EPA. That's to do it now with the information at
19 hand.

20 It's not as if we were proposing to get the whole
21 set of information reports and then start to work. We already
22 have proposed an overlapping schedule, and that's why the
23 critical path still remains the degree and extent of liaison
24 you have with states, EPA, FERC, the works.

25 CHAIRMAN HENDRIE: Your recommendation then is as

1 before —

2 MR. BERNERO: Yes, sir.

3 CHAIRMAN HENDRIE: — in the base paper, mainly
4 to go forward on this broad-front schedule and push forward
5 to get these things in place on the basis that it takes them
6 all into account, and which schedule, you tell me, differs
7 from that for a single thing like BWR's by —

8 MR. BERNERO: A few months, at best.

9 CHAIRMAN HENDRIE: — a couple months, at best.

10 MR. MINOGUE: Yes, sir.

11 CHAIRMAN HENDRIE: Further discussion?

12 COMMISSIONER BRADFORD: Is there any reason between
13 now and then not to at least require in the applications that
14 we are considering for individual facilities a statement of
15 their current decommissioning plans and their finances?

16 MR. BERNERO: We do require it. We do require it
17 in a rather obscure way.

18 COMMISSIONER BRADFORD: Why aren't we requiring it
19 in a clear way?

20 MR. BERNERO: That's the issue, because — I'm
21 jumping the gun because I haven't presented you with the
22 paper and the discussion thereof, but this last note on
23 clarification —

24 (Slide.)

25 — that's one of the principal merits of doing

1 that, is to be more explicit so that one can clearly say,
2 look, our regulations require it; it's not buried in some
3 Reg. Guide.

4 CHAIRMAN HENDRIE: There is that merit to it.
5 It doesn't improve the guidance.

6 MR. BERNERO: No. It doesn't change the
7 technical effect.

8 CHAIRMAN HENDRIE: It's similar to the argument
9 that I keep having to make when Congressmen ask, couldn't
10 the NRC implement a number of the things in the draft
11 legislation on its own present authority? And the answer is
12 yes, but it certainly would be nice to have the blessings of
13 seeing it in the statute, having been considered by the
14 Congress, which is precisely the same sort of situation,
15 instead of having to dig it out, such as it is, from the
16 present guidance. They would like to see it in the
17 regulations that make it clear. People just won't argue
18 about it.

19 So having argued their sort of argument, the other
20 place, I must admit some sympathy for it.

21 COMMISSIONER BRADFORD: Do you also contemplate
22 a little housecleaning on that one Reg. Guide that you
23 indicated was deficient in several respects?

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1 MR. BERNERO: Reg Guide 1.86 is a natural victim
2 of this policy development.

3 (Laughter.)

4 MR. BERNERO: I think it's out of date. It's at
5 least obsolescent. I think it will be substantially revised
6 in order that it will later reflect proper residual activity
7 criteria and a much clearer definition of decommissioning
8 modes and timing.

9 Now much of that may end up in regulation, I don't
10 know right now how much will end up in regulation and how much
11 in Reg Guide. But right now, what we have, as the Chairman
12 put it, is fuzzy. And I think one of the biggest balls of
13 fuzz is that Reg Guide.

14 COMMISSIONER BRADFORD: I take it you're not
15 recommending, for example, to strike the word "conversion"
16 from it now rather than waiting until 1979.

17 MR. BERNERO: I see no merit in trying to do any
18 patch on it at this time. Once again, since the general
19 trend in industry treatment, and certainly in staff treatment,
20 is to look at the cost of decommissioning for prospective as a
21 dismantling cost, the staff is tending to use latest available
22 data on dismantling costs, and I don't think anyone would deny
23 that that's the best option to use as a first estimate.

24 I think it becomes a moot point whether the Reg
25 Guide says conversion or entombment, because no one's really

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1 going that way. No one's using it.

2 CHAIRMAN HENDRIE: Other discussion?

3 COMMISSIONER KENNEDY: I agreed with it the first
4 time, and I haven't changed my mind.

5 CHAIRMAN HENDRIE: I'd propose, just to see if there
6 is in fact a consensus, I'll ask the Commission if it would
7 vote to approve the Staff's recommendations in the 78-13
8 paper, supplemented by the proposals submitted today for the
9 other tidying up, for which there will be a paper.

10 Agreed?

11 (Nods in the affirmative.)

12 CHAIRMAN HENDRIE: So ordered. Thank you very much.

13
14 (Whereupon, at 10:45 a.m., the hearing in the above-
entitled matter was adjourned.)

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