

# **UNITED STATES OF AMERICA NUCLEAR REGULATORY COMMISSION**

**Title:** INITIAL BRIEFING BY THE ADVISORY COMMITTEE ON NUCLEAR WASTE

**Location:** ONE WHITE FLINT NORTH, ROCKVILLE, MARYLAND

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1625 I Street, N.W., Suite 921

Washington, D.C. 20006

(202) 293-3950

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UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

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INITIAL BRIEFING BY THE ADVISORY COMMITTEE  
ON NUCLEAR WASTE  
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One White Flint North

Bethesda, Maryland

Wednesday, June 29, 1988

The Commission met, pursuant to notice, at 10:00  
a.m., the Honorable Lando W. Zech [Chairman of the Commission]  
presiding.

COMMISSIONERS PRESENT:

Lando W. Zech, Chairman

Kenneth M. Carr, Commissioner

Thomas M. Roberts, Commissioner

STAFF AND PRESENTERS SEATED AT TABLE:

S. Chilk, SECY

W. Parler, OGC

D. Moeller, ~~ACRS~~ ACNW

C. Smith, ~~ACRS~~ ACNW

M. Steindler, ~~ACRS~~ ACNW

CORRECTIONS 7/21/88

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

CHAIRMAN ZECH: Good morning, ladies and gentlemen.

Mr. Rogers will not be with us this morning. Today the Commission will be meeting with its Advisory Committee on Nuclear Waste for the first time. We welcome Dr. Moeller and Dr. Steindler and I understand, although Dr. Smith has not been formally sworn in yet, he's here today and we welcome you, Dr. Smith. We appreciate your willingness to take on this big responsibility for our country.

The new Advisory Committee on Nuclear Waste does, indeed, have a significant challenge. I believe the Committee will play an important role in the NRC pre-licensing and licensing activities associated with the National High Level Waste Repository, as well as other matters involving nuclear waste. This repository will be a first-of-a-kind facility and there will be significant technical issues on which the Commission will be expecting the Committee's well thought out advice.

In addition to advising the Commission, I would expect the Committee to work closely with the NRC staff, to identify and resolve as many issues as possible. I highlight the High Level Waste Program, but the Commission will be also looking for, of course, your best advice on low level waste, decommissioning and other related issues.

The Commission has confidence that this Committee

1 will meet the challenge and, like the Advisory Committee on  
2 Reactor safeguards itself, provide an outstanding service to  
3 the Commission and to our country. Today's meeting will focus  
4 on the prioritization of work activities for the Advisory  
5 Committee for the coming year.

6 Today's meeting will be general in nature and focus  
7 on issues that we will be discussing, rather than discussing  
8 the issues in great depth. There are, I understand, several  
9 administrative topics which the Committee would like to discuss  
10 today and we will be happy to discuss those, at least as time  
11 will permit.

12 This is an information briefing this morning and no  
13 Commission vote is expected to be taken at this meeting today.  
14 Do any of my fellow Commissioners have any opening comments  
15 before we begin?

16 Dr. Moeller, again, welcome to you sir. Thank you  
17 for taking on this big responsibility and you may proceed.

18 MR. MOELLER: Thank you, Mr. Chairman. It's  
19 certainly a pleasure to be here and particularly to meet with  
20 you as part of our first official meeting. We're pleased and  
21 excited that the Committee has now been formally established  
22 and we look very much toward working with you and the NRC  
23 staff.

24 We also very much appreciate the designation of Bob  
25 Bernero as a contact with the staff. We know that's going to

1 be very beneficial and Monday morning at the opening of our  
2 first meeting, Hugh Thompson came down and joined in the  
3 welcoming ceremonies, so to speak, and we appreciate that.

4 We look forward to working with you and as you have  
5 already said, today is more a informational type of discussion.  
6 We do not plan to give any long speeches. Mainly, we want to  
7 review with you some of the thoughts on our mind and  
8 particularly as you say, the priorities for the various topics  
9 that we will be addressing.

10 In the way of background, I wanted to point out that  
11 as a Subcommittee of the ACRS, when Dr. Steindler and I served  
12 there as members, the Waste Management Subcommittee, we have in  
13 recent weeks and months, submitted to you several reports. One  
14 was our comments with regard to the NRC staff's response on the  
15 consultation drafts site characterization plan and we, indeed,  
16 are meeting this afternoon with the NRC staff to gain first  
17 hand information on their response to our comments.

18 We already know from having seen the point papers  
19 that were submitted to the DOE, that, indeed, they responded, I  
20 think, quite favorable to all of our comments. We're pleased  
21 to see that working relationship. Another letter which we  
22 recently submitted was on the topic of below regulatory concern  
23 and yesterday, we received a written response from the staff on  
24 that. We've not had time to go over it with them, but I'm sure  
25 that we will be and we think this type of interchange and

1 feedback is very beneficial and we appreciate it.

2 At this meeting on Monday and Tuesday, we covered a  
3 number of topics. We met with the NRC staff and we also  
4 yesterday, for the majority of the day, had a briefing from DOE  
5 on the site characterization plan and most particularly, we had  
6 a report yesterday afternoon from Jerry Szymanski, who had  
7 developed the alternative model or concept for addressing the  
8 Yucca Mountain repository site. We do not have comments on  
9 that at this moment. There's a lot more to hear. The report  
10 is currently undergoing peer review within DOE and we, of  
11 course, would like to hear what comes from that.

12 As a result of our meetings on Monday and Tuesday, we  
13 will be issuing this month, two reports to you, Mr. Chairman.  
14 One is one DOE which has proposed a petition for setting  
15 accident dose guidelines for the pre-closure phase of their  
16 repository. We heard presentations from DOE. We had written  
17 copies of that petition -- of the proposed petition and so we  
18 will be writing to you, our comments, the majority of which, of  
19 course, are directed to DOE on things that we wanted to say to  
20 DOE about that petition.

21 A second topic on which we reviewed and on which we  
22 would like to, indeed, submit a written report to you at this  
23 meeting, is the NRC's proposed rule for on-site dry storage of  
24 spent fuel at the reactor site. We went over that in detail  
25 and, indeed, as I say, we will be submitting written reports to

1       you.

2               Two other topics which we talked about at this  
3       meeting and on which we have serious concerns on which  
4       undoubtedly we'll be interacting with the staff and submitting  
5       to you written reports in the future, are the high integrity  
6       containers for the low level waste and the various processes  
7       for solidifying low waste prior to disposal in a facility.  
8       Most particularly, the solidification of ion exchange resins  
9       and the use of cement in that process.

10              We want to thank you, too, for the interactions that  
11       we've had in terms of setting priorities for our work and we  
12       have your guidance provided in your letter of June 27th, and I  
13       would like at this time to call on Dr. Steindler to comment and  
14       respond to your remarks and guidance in that letter.  Dr.  
15       Steindler.

16              CHAIRMAN ZECH:  Proceed, please, Dr. Steindler, thank  
17       you.

18              MR. STEINDLER:  Thank you.  We've had a number of  
19       communications on the issue of priority and it's clear that  
20       because of the potentially very large workload, we will have to  
21       order the subjects that we tackle.  We've had communications  
22       from you, specifically outlining some things that we should pay  
23       attention to.

24              We have had a preliminary schedule as a part of our  
25       ongoing process from NMSS, NRR and Research, identifying some



1 topics that they are currently attacking and the priority with  
2 which they are attacking those issues. We've had a chance to  
3 review the transcripts, for example, of the most recent two  
4 briefings on high level waste -- one from the staff and the  
5 other one from DOE and had your comments back and forth on  
6 those briefings.

7 We've also gotten a long-term, a five year list of  
8 activities and planned activities on the high level waste from  
9 the High Level Waste Division, including an identification of  
10 what they intend to have as products. The overall background  
11 seems to point to the need to do two kinds of things -- one, to  
12 ensure that the processes and the licensing area are focused on  
13 early and in place as rapidly as possible.

14 The second issue to which we can certainly pay a  
15 great deal of attention, are the technical details of some of  
16 the issues that should be set aside as early as possible --  
17 either by rule making or by some other process so that DOE  
18 understands fairly clearly what the technical issues are that  
19 have been resolved or has helped to resolve.

20 We are in the process of putting together a specific  
21 topical list for that kind of activity and we've begun that,  
22 but not had a chance to iterate that, either with your  
23 technical assistance or with the staff directly, but that's the  
24 input that we intend to use.

25 To give you an idea of the kind of things that we're

1 currently engaged in, we've had, for example in the last two  
2 days, rather a full schedule of discussions and they included  
3 some of the things that Dade has already touched on -- the low  
4 level waste containers, the HICS and the issue of stability of  
5 polyethylene and meeting of the criteria that are in 10CFR61.  
6 We've talked about the dry storage of spent fuel and the kind  
7 of preliminary discussions that people are having concerning a  
8 new rule.

9           We've talked about the DOE petition on rule-making on  
10 the accident case -- the pre-closure accident limit and we've  
11 had a fairly long discussion from DOE on the responses to the  
12 NRC site characterization plan draft. The talk by Jerry  
13 Szymanski was certainly one of the aspects of it, but that was  
14 not the only thing we talked about.

15           In addition, we plan to visit the low level burial  
16 ground at Savannah River in August, to see what the low level  
17 waste disposal area is actually doing. We've prepared a draft  
18 agenda for our next meeting which is in July -- July 21st and  
19 22nd -- and that includes some additional discussions on the  
20 dry cask storage topic. We're going to review the staff's  
21 initial information on the unanticipated events, potential  
22 rule-making.

23           We're going to hear an update on the Nuclear Waste  
24 Regulatory Analysis Center that's been set up and review their  
25 charter and to see what kinds of activities they're currently

1 engaged in. We're also going to hear from the state of Nevada  
2 on their input to the site characterization plan. We have a  
3 rather diverse mix of activities -- all designed at least to  
4 review, to the extent that we can, the current technical  
5 progress that's being made.

6 I have nothing specific further that I would like to  
7 say, but we are certainly pleased to engage any discussion on  
8 these subjects and we would like to hear from you, to the  
9 extent that you can, identify some specific, either  
10 administrative or technical areas that you think we need to pay  
11 attention to.

12 CHAIRMAN ZECH: Thank you very much.

13 MR. MOELLER: In terms of the trip in August to South  
14 Carolina, we have scheduled -- it's a three-day visit -- one  
15 day at Barnwell, one day at the Savannah River Plant where  
16 they're, of course, tooling up to solidify high level waste.  
17 Then, the third day, we plan to meet with the state officials.  
18 In seeing Commissioner Carr, I know that on a number of his  
19 trips, reading the reports of them, you make a very strong  
20 point of meeting with the state officials and we're doing that.

21 Since South Carolina is an agreement state and is  
22 overseeing the low level waste disposal facility there, we  
23 thought it would be very helpful for us to meet with those  
24 people.

25 Continuing on with just an additional comment -- in

1 terms of the low level waste area and to cite an example of  
2 where individually, we find problems or areas that perhaps we  
3 should be addressing, this one that I'm going to mention, need  
4 not be a major item, but in looking at the indicators of  
5 performance for nuclear power plants, particularly looking at  
6 the list that INPO has developed, one of them is the volume of  
7 low level waste that's generated.

8 I'm sorry, I don't remember, and I did not have time  
9 to look up whether that's also one of the NRC's indicators of  
10 performance. The point I wanted to raise was that in a  
11 preliminary way, over the last month, we had looked into the  
12 states and into your individual licensees, non-nuclear power  
13 plant licensees and if the numbers I have are correct, we're  
14 finding that on the order of tens of, you know, 10, 20, 30, 40,  
15 50 of these individual licensees incinerate a certain portion  
16 of their waste.

17 In terms of nuclear power plants, if they, indeed,  
18 could incinerate some of their waste, it would further reduce  
19 the volume and so forth. Yet, on a preliminary basis, and we  
20 want to discuss this with the staff, but on a preliminary  
21 basis, in looking at it, we find that although 5, 6, 7, 8,  
22 nuclear utilities have incinerators, they apparently none of  
23 them are functioning -- none of them are being used.

24 So we find that intriguing and it's simply an example  
25 of one area that we'd like simply to explore and see if there's

1 anything that we could do to move that along. Cliff, do you  
2 have any comments on --

3 MR. SMITH: None specific, except that I'm delighted  
4 to be a part of this group and I look forward to working with  
5 each of you.

6 I do have one concern that I should mention though,  
7 in a general way. That is, whether or not the NRC will have  
8 the resources that are going to be necessary to meet the  
9 deadlines in terms of regulations and other activities that  
10 they have to do. I'm speaking specifically, of course, about  
11 the waste management group. They haven't said they haven't;  
12 that they don't, and I haven't talked to them about it. Having  
13 served in the NRC many years ago, I know that's sometimes a  
14 problem.

15 CHAIRMAN ZECH: I appreciate your following through  
16 on that when you get a chance to do it. We believe we do have  
17 the resources. On the other hand, we're in a new field. We  
18 recognize that we've made some assumptions and some estimates  
19 and we stand ready to make modifications if we feel the  
20 resources are not there. We simply must support this program  
21 and after the Committee gets a chance to be functioning,  
22 perhaps that's something you want to give your advice to the  
23 Commission on. I think we'd appreciate that very much.

24 It's a new field. We believe we are covering it  
25 properly, but it's a responsibility that we have to do so. So

1 we'd appreciate hearing from you when you have a change to look  
2 at it a little more carefully.

3 MR. SMITH: Sure, thank you.

4 MR. MOELLER: In terms of the letters -- the two that  
5 I mentioned on the comments on the NRC staff's review of the  
6 DOE consultative draft site characterization plan and the below  
7 regulatory concern; I realize both of those went to the EDO,  
8 but if you should happen to have any question on either of  
9 those reports, we'd be pleased to try to answer them -- either  
10 now or subsequently.

11 I think with that, certainly from our side of the  
12 table, we've finished or completed the discussion of the  
13 technical items. To repeat, we have your letter, I believe, of  
14 June the 27th. We have no problems with the listing that you  
15 have outlined and we plan to respond.

16 In terms of the administrative aspects, we do look  
17 forward to this being but the first of many meetings with you -  
18 - certainly not monthly or even bimonthly, but certainly from  
19 time to time, we look forward to meeting with you. We hope  
20 that our letters will be constructive. We hope they'll be  
21 understandable. We hope we can bring items to closure.

22 We've talked and you have developed what I referred  
23 to a few moments ago as the indicators of performance for the  
24 nuclear power plants. I would almost encourage you to develop  
25 indicators of performance for your committees and I hope you'll

1 let us know in no uncertain terms, from time to time, how well  
2 we're performing; whether we're doing what you need to have  
3 done; whether we're responding to what you desire to have us  
4 do.

5 Be frank with us, because our time is limited and  
6 yours is, too. We want to do the very best possible job and we  
7 think that's the way to jointly accomplish that objective.  
8 In terms of either items, we realize the trend numbers were  
9 rather short and we're hoping to come forth to you with a  
10 nominee over the next month or two -- a suggested nominee or  
11 nominees for a fourth member of this Committee.

12 Another item that we're working on or stays of  
13 interest to us and of course, you've indicated that, as  
14 appropriate and if appropriate, you'll move forward with it and  
15 that would be to consider working with Congress for perhaps  
16 having the Committee made a statutory committee.

17 Other than those remarks, I believe I've covered our  
18 agenda and the topics that we desire to discuss and if we've  
19 covered you're agenda, we've reached the point of completion.

20 CHAIRMAN ZECH: All right. Thank you very much.  
21 Questions from my fellow Commissioners? Commissioner Roberts?

22 COMMISSIONER ROBERTS: No.

23 CHAIRMAN ZECH: Mr. Carr?

24 COMMISSIONER CARR: Yes, I've got a couple items.  
25 I'm happy to hear you mention bringing issues to closure

1       because it's apparent to me that from our ACRS that I've  
2       watched, we bring a lot of issues up -- the staff brings a lot  
3       of issues up and sometimes we go with the staff and sometimes  
4       we go with the ACRS, but I never have a comfortable feeling  
5       that everybody's in agreement when we're through.

6               I think we need to be careful that where there is a  
7       genuine difference of opinion, we get both sides and have as  
8       much of the details as we can to work out. I think that's very  
9       important.

10              The other thing is, how often do you plan to meet  
11      with us? How often are you all meeting?

12              MR. MOELLER: We are trying as an objective to keep  
13      our meetings to a bi-monthly basis -- every two months. I'm  
14      hoping we can do that. Yet when you look at the amount of  
15      material on the table; when you look at the host of subjects --  
16      rule-making, everything that's ahead of the staff, and the  
17      tremendous workload that the staff is facing, it could well be  
18      that we're going to have to meet or certainly try to have  
19      Subcommittee meetings in between those meetings.

20              With you, I would think, shooting somewhat from the  
21      hip without having thought about it a lot, if we could meet  
22      every six months, that would be certainly a reasonable  
23      frequency from our point of view.

24              COMMISSIONER CARR: I would suggest that if you meet  
25      every two months, we might meet with you every other meeting



1       until we decide on how we're going and how we're working along.  
2       That would mean that we'd see you once a quarter, probably.

3               MR. MOELLER:   That would be very helpful because  
4       we're in a training mode or a tooling up mode and we found a  
5       number of glitches that have occurred during our first meeting.  
6       Yes, that would help us.

7               COMMISSIONER CARR:   Well, we've still got some  
8       questions about your staffing and how that's going to work out  
9       and membership, so I think at least through the working-in  
10      phase, we probably -- subject to my fellow Commissioners  
11      agreement -- we probably ought to make sure that we get  
12      together so that you and we are both comfortable with the  
13      direction we're going in.

14              MR. MOELLER:   Thank you.

15              Cliff, did you have something?

16              MR. SMITH:   No, no, that's fine.

17              COMMISSIONER ROBERTS:   Without asking any specifics,  
18      are you working on finding at least one more member?

19              MR. MOELLER:   Very much.   We're meeting this  
20      afternoon.   We have a substantial list of candidates and we're  
21      meeting this afternoon to discuss our thoughts.

22              COMMISSIONER CARR:   One of the GAO criticisms has  
23      been that the Commissioners are not getting involved in the  
24      problems soon enough to get it resolved early enough, so I  
25      would suggest that if problems do arise that look like they're

1 going to delay to the better end, but the sooner it becomes  
2 apparent to you that there's a problem, that we get involved  
3 early enough so that we can have some effect on it.

4 I think I certainly agree with the list the Chairman  
5 sent you on priorities and what we need you to work on. I'm  
6 sure agrees that if something comes up on the side of that,  
7 that's not on that list that you think is worth of our  
8 consideration, you wouldn't hesitate to bring it up.

9 MR. MOELLER: Thank you. In fact, his letter, I  
10 think, so indicates.

11 CHAIRMAN ZECH: All right. Let me also emphasize the  
12 closure of issues. You probably haven't had a chance to really  
13 think this through, but I agree with Commissioner Carr that  
14 some kind of a procedure for closing issues is important and I  
15 would suggest that this be one of the first items of business  
16 that you take up with the staff and see if you can't work out  
17 with them some kind of procedure for attempting to come to  
18 closure.

19 Many of the issues that you are talking about and the  
20 staff has been working on, the Commission has been addressing  
21 for many years. They have been in front of us; discussed at  
22 great length and closure never seems to be reached. We fully  
23 recognize the importance of the issues we're facing. We also  
24 recognize that there are technical and scientific uncertainties  
25 involved.

1           Perhaps some of these uncertainties are perhaps  
2       beyond our current scientific, technical knowledge. On the  
3       other hand, if we can make a conservative judgment and  
4       accommodate those uncertainties, or if you think we can and  
5       others who perhaps might be advising you, in my judgment, we  
6       might be able to come to closure with some of these important  
7       issues that have been with us a long time, and thereby  
8       contribute to safety, rather than not coming to closure.

9           So, we want to make the best decisions we possibly  
10      can. I know you do too. I hope you will try to keep the  
11      closure of issues in mind. Again, we want you to be confident  
12      and be comfortable with those kind of issues. We expect you to  
13      be conservative, careful. Public health and safety is our  
14      business and your business. I do think closure is awfully  
15      important. Sometimes, at least it's my personal opinion, that  
16      when we don't come to closure, we may not be carrying out our  
17      responsibilities to the extent that we should.

18           Again, we should be cautious, conservative, careful -  
19      - keeping public health and safety in mind. If we come to  
20      closure on some of these issues that have been before this  
21      agency for so many years, I think that's an effort that merits  
22      our attention.

23           It's my understanding that there's going to be a  
24      meeting in October, an international meeting on the subject of  
25      below regulatory concern. That may be a little soon for your

1 Committee to form any conclusions or even come to any tentative  
2 conclusions. On the other hand, it is an opportunity, I  
3 believe, for the NRC or the staff as well as your Committee, to  
4 make some kind of an input. I would hope that you would look  
5 at that international meeting and not only as an opportunity to  
6 watch and be educated into the views of other countries, but  
7 also to perhaps make some kind of an input to the extent that  
8 you would have confidence that you can make an input.

9 It seems to me that that is an important meeting  
10 which we should all take advantage of.

11 COMMISSIONER CARR: It's important that we go over  
12 there with the right position.

13 CHAIRMAN ZECH: That's right. It isn't very far  
14 away. On the other hand, I read with great interest, the  
15 response that Dr. Steindler made to you, Dr. Moeller, I believe  
16 in his letter of 6 May, if I recall. It discussed, I believe,  
17 10 principles which Dr. Steindler has very thoughtfully put  
18 together. He gave some conclusions which I thought were worth  
19 a great deal of thought. So, perhaps we might even be a little  
20 closer to -- at least you may be a little closer to a position  
21 on that important area than we might otherwise expect you to  
22 be, from such a newly formed Committee.

23 It's obvious that Dr. Steindler has been thinking  
24 about this for a long time. I'm sure that it's important that  
25 you have some kind of a session with the staff and perhaps, as

1 Mr. Carr points out, we can come to some kind of a -- at least  
2 a tentative U.S. position in that area and before that  
3 conference begins.

4 Again, I don't want to emphasize this particular area  
5 to the detriment of your high level waste repository and other  
6 high priority issues, but this is timely. Obviously you've  
7 gone into the area in some depth anyway, so perhaps it is  
8 something that you can look into before October. I would also  
9 suggest that you work closely with the staff so that we can  
10 perhaps, at least, as I say, have some kind of a tentative U.S.  
11 position to go into that meeting with.

12 You mentioned DOE and you're working closely with  
13 DOE. Have you discussed at any length at all so far, the  
14 statutory consultation site characterization plan with DOE?  
15 Have you had a chance to involve yourself with that, other than  
16 just superficially so far? Have you gotten into that in any  
17 depth?

18 MR. MOELLER: Yes, we've gone into it in a  
19 preliminary way. There is work to be done. Certainly, Marty  
20 and I were provided copies. We've been provided very complete  
21 copies of the NRC staff's response and we have critiqued that  
22 response. Now, the next step will be DOE's response to the  
23 NRC's comments and we certainly will be involved in seeing how  
24 well they're handling those criticisms.

25 Then, indeed, yesterday we heard quite a detailed

1 review -- as much as you can do, say, in a half a day -- where  
2 DOE went over the makeup of their site -- of the statutory site  
3 characterization plan; went over it in detail, what it consists  
4 of. They also went over what changes they're now making in  
5 response to the NRC staff's comments. So, we're heavily  
6 involved, yes.

7 CHAIRMAN ZECH: Well, I appreciate that because  
8 again, that's one of the most important items of your business.  
9 I know that even though you're newly formed, I know you've been  
10 involved. I've read some of your thoughts on that particular  
11 subject. I just hope that with all the other things that  
12 you're doing, that you will have a chance to continue your  
13 interface with the DOE people as well as with our NRC staff,  
14 because I think that's something that the Commission could  
15 benefit from -- your views. You mentioned going out to the  
16 site and so forth. That's important too.

17 I do believe that your oversight, your monitoring,  
18 your interface with the DOE people and program will be very  
19 important to the Commission, too. We look forward to that as  
20 something you'll continue to put high on your priority list.

21 MR. MOELLER: Well, the timing is, again, rather  
22 rapid. As I recall yesterday, DOE indicated they hope to issue  
23 their final, formal SCP on December the 30th of 1988, which is  
24 a lot of work to be done. It was very significant, the amount  
25 of work they have underway.

1           Didn't they tell us they have -- was it a hundred  
2 people full-time or something.

3           MR. SMITH: I was trying to estimate, but it was  
4 greater than a hundred.

5           MR. MOELLER: Greater than a hundred full-time  
6 equivalents working on that, so it's a tremendous amount of  
7 work.

8           CHAIRMAN ZECH: It's a gigantic task for you. I  
9 appreciate that. We really recognize that you're greatly  
10 outnumbered in this regard. Perhaps your background experience  
11 and so forth and your hard work in reviewing what they're  
12 doing, will give you the confidence that you can make some good  
13 judgments and recommendations to the Commission.

14           Just a word on some of your administrative topics.  
15 It's true that we're really here today really to kind of look  
16 at priorities. I appreciate the fact that you've reviewed my  
17 letter of June 27th -- just a couple days ago. It did have  
18 some modifications to your program, some minor ones, I really  
19 believe. It had a couple areas that I think you will be able  
20 to incorporate without too much difficulty.

21           I think that the priorities are important. The  
22 number of meetings we discussed; you are going to meet every  
23 couple of months. I agree with Commissioner Carr that perhaps  
24 we should at least attempt to begin by having you come before  
25 the Commission every quarter. We may not make that. It may be

1 every four months instead of every three. That might fit  
2 better with your own schedule.

3 On the other hand, I think we'd rather have more  
4 meetings than less meetings at first while we're getting going,  
5 because we want to hear from you and help you with any of your  
6 administrative initiatives as you form your Committee and get  
7 yourself in place, because we know we're asking a great deal  
8 from you.

9 As far as the new members are concerned, we did -- at  
10 least I did and I believe my fellow Commissioners supported my  
11 recognition that a fourth member would be appropriate and also  
12 the fact that we should look at the statutory potential of the  
13 Committee. In that regard, I would ask you to work with the  
14 staff -- with your staff, the ACRS staff that's supporting you,  
15 to work with the Office of General Counsel to perhaps initiate  
16 legislation that could come to the Commission that would make  
17 your Committee statutory.

18 I think you will -- I'm sure the General Counsel  
19 people will be able to assist you in that regard and something  
20 could be brought to the Commission. Maybe I should ask the  
21 General Counsel people to comment on that.

22 MR. PARLER: Well, we have that assignment, Mr.  
23 Chairman, in the directive you received a couple months ago.  
24 We have a good and longstanding working relationship with the  
25 staff that is serving these gentlemen. We will include the



1       proposal with the pros and cons in the legislative package  
2       which you all will receive later on this year.

3               I think there's one point that I would wish to make.  
4       With or without a statute, it is my impression from what I have  
5       seen and what I have heard here this morning, that it is this  
6       Commission's intent to look to this Advisory Committee on  
7       nuclear waste in the area of its charter as it has for a long  
8       number of years in other areas with the Statutory Advisory  
9       Committee on Reactor Safeguards. Therefore, with or without a  
10      statute, it is my impression that this Commission intends these  
11      gentlemen to be a completely independent advisory committee and  
12      to give their full, free and candid advice to the Commission.

13             Obviously, if one is statutory and the other is not,  
14      perhaps questions will be asked, but even in the absence of  
15      both being statutory, I gather that this group will be treated  
16      the same way as a statutory committee.

17             CHAIRMAN ZECH: Your assumptions are correct as far  
18      as I'm concerned; that's exactly what we have in mind. I think  
19      I speak for my colleagues --

20             COMMISSIONER CARR: That's true.

21             CHAIRMAN ZECH: -- when we support General Counsel's  
22      views. I think what we're saying is, we don't want to have to  
23      wait for statutory, nor do we want you to have to wait for it.  
24      We are under the assumption that you have all the authority  
25      that you need right now to give us the advice that you think is

1       appropriate. We will, of course, move with the statutory  
2       initiative, recognizing that that sometimes takes more time  
3       than we like to think it takes.

4               In the meantime, we want to have the benefit of your  
5       advice and hopefully, your status as non-statutory or statutory  
6       will not interfere with the advice you will give this  
7       Commission. This is the important thing as far as we're  
8       concerned. I think that those are the key things that I had in  
9       mind. Mr. Carr, please.

10              COMMISSIONER CARR: I've been impressed so far with  
11       your willingness to work with the staff and with our technical  
12       assistants. It's important to me to keep informed of what's  
13       going on, so I would assume that that will continue; that the  
14       technical assistants and the staff will be able to all have  
15       lively participation in your meetings and so forth.

16              The other one is, I don't know where you're going to  
17       go find your consultants that will be independent to you from  
18       all the other people working this same problem, but hasn't been  
19       worked. Have you given that any thought?

20              MR. MOELLER: Yes, we have. In fact, this is one of  
21       Dr. Steindler's main areas of interest and support and  
22       guidance. Marty, do you want comment?

23              MR. STEINDLER: Well, I think you pointed out the  
24       problem. The problem is not unique to us, the problem is  
25       unique to the NRC organization. We simply have to be very

1 careful who we tap and what they've done in the past and what  
2 their current activities are. In some areas, the number of  
3 experts available to us, I would say in the continental U.S.,  
4 so to speak, is very small. We're going to be scrambling.

5 COMMISSIONER CARR: Are we limited on only using U.S.  
6 consultants?

7 MR. STEINDLER: No, I don't mean that in that sense.

8 COMMISSIONER CARR: I was just asking the General  
9 Counsel. Is there any rules that say we can't go off shore to  
10 hire expertise?

11 MR. PARLER: We were asked that question before and  
12 the answer was, no. Of course, no matter where they come from,  
13 they have to pass muster under the conflict of principles.

14 COMMISSIONER CARR: You're right, some of the  
15 experts, I'm sure, are not in this country.

16 MR. MOELLER: Well, we're certainly giving that a lot  
17 of attention and, indeed, we had one new consultant, a young  
18 lady at this meeting and we're hoping to keep her as a regular  
19 consultant to the Committee and we're moving in that direction.

20 COMMISSIONER CARR: That's all I ask.

21 CHAIRMAN ZECH: All right. Thank you very much.  
22 Well, we'll close our first meeting here today with thanks to  
23 the Advisory Committee on Nuclear Waste and with our gratitude  
24 for your willingness to accept this big responsibility. Let me  
25 just point out that the Commission does, indeed, intend to rely

1 on your advice and counsel. We expect you to look at your  
2 resources when you have the opportunity and to tell us whether  
3 you believe that you can sufficiently carry out the  
4 responsibilities we've given you.

5 We would ask you to be reasonable about it, because  
6 nobody ever has enough resources. We certainly want you to be  
7 able to feel that you can do what we've asked you to do in a  
8 reasonable manner. There's a number of near-term issues, which  
9 at least I'd term them near-term, which we pointed out in our  
10 guidance letter to you of the 27th of June and you've already  
11 considered.

12 Many of them will require Commission review. It's  
13 important that we're kept abreast of these issues, not only by  
14 our staff, but by this new Committee. We'll be relying on you  
15 for advice on those areas. We do and we will want to meet with  
16 you, as I say, at least tentatively on a quarterly basis, but  
17 if it goes four months instead of three, to fit in with your  
18 schedule, that might be a better way to do it. I think that  
19 will be important for us to meet with you reasonably frequently  
20 as you get yourselves organized.

21 I'd like to comment again on the work that you've  
22 already done. I recognize it was done under the auspices of  
23 the Subcommittee and Advisory Committee on Reactor Safeguards  
24 on the subject of de minimis and also below regulatory concern  
25 issue and also the comments you've made in your review of the

1 NRC staff on the issue of DOE's consultation draft site  
2 characterization plan. I know you've made those comments again  
3 under the auspices of your previous role as the Subcommittee  
4 and Advisory Committee on Reactor Safeguards and I thought  
5 those comments were excellent.

6           You're transitioning now to your own Committee, but I  
7 think you've gotten off to at least what I consider a very  
8 strong start. Again, I think that even though you are newly  
9 formed, you have experience in this field and as evidenced as I  
10 mentioned earlier, Dr. Steindler's comments on the basic  
11 principles he talked about and the conclusions regarding the de  
12 minimis and below regulatory concern issue.

13           I hope you'll follow through on that again and  
14 perhaps even though October is not very far away, as we  
15 mentioned earlier, perhaps you can work with the staff to have  
16 some kind of a -- at least a tentative U.S. position, so that  
17 we go into that meeting being able to benefit from it to the  
18 maximum extent possible and listening to the views of the other  
19 nations.

20           Let me just say finally then, that although we have  
21 formed this Committee, I believe with the Commission's  
22 recognition of our great responsibilities for the high level  
23 waste program in particular and the waste repository; we've  
24 given you a great number of other issues to follow and some of  
25 them, again, we don't want you to dilute your efforts because

1 of the importance of the high level waste depository, because  
2 that's kind of the one that we asked you to really make sure  
3 that you feel confident about and we'd ask you to kind of keep  
4 that as your highest priority.

5 On the other hand, we are asking you to cover the  
6 wide range of subjects and if it looks like you feel that  
7 you're not being able to devote the attention you need to in  
8 some of these areas, I would hope that when you come before the  
9 Commission, you'll inform us of that, because, again, we don't  
10 want to give you a task that's impossible to perform. The high  
11 level waste depository and it's interface with DOE, with the  
12 state of Nevada, with the states and Indian tribes, you know,  
13 involved in it, related states and others of interest  
14 throughout our country; we recognize that as a very, very  
15 significant issue itself.

16 Again, that's our first priority and your first  
17 priority, although all these other waste issues, including low  
18 level waste, are important. We've given you an awful lot on  
19 your platter and we need to you to keep in mind the priorities  
20 yourself, so that you can bring it to the Commission's  
21 attention if you feel you need some assistance to cover that  
22 wide range of responsibilities.

23 So, unless there are other questions or comments from  
24 my fellow Commissioners, we thank you very much for this first  
25 meeting. We'll let you spend the rest of the morning back at

1 work and we thank you very much and welcome aboard.

2 MR. MOELLER: Thank you, sir.

3 CHAIRMAN ZECH: We stand adjourned.

4 [Whereupon, at 10:50 a.m., the meeting was  
5 adjourned.]

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CERTIFICATE OF TRANSCRIBER

This is to certify that the attached events  
of a meeting of the U.S. Nuclear Regulatory Commission  
entitled:

TITLE OF MEETING: INITIAL BRIEFING BY THE ADVISORY COMMITTEE  
ON NUCLEAR WASTE

PLACE OF MEETING: Washington, D.C.

DATE OF MEETING: WEDNESDAY, JUNE 29, 1988

were transcribed by me. I further certify that said  
transcription is accurate and complete, to the best  
of my ability, and that the transcript is a true and  
accurate record of the foregoing events.

Ann Riley

Ann Riley & Associates, Ltd.



PRELIMINARY

June 23, 1988

COMMISSION MEETING WITH ADVISORY COMMITTEE ON NUCLEAR WASTE

Wednesday, June 29, 1988 - White Flint North  
10:00 A.M. - 11:30 A.M.

1. GENERAL COMMENTS BY RESPECTIVE CHAIRMEN, COMMISSIONERS, AND MEMBERS
2. ACNW'S UNDERSTANDING OF THE COMMISSION'S GUIDANCE AND REQUIREMENTS

A. HLW Repository

B. HLW Handling

- 1) At reactor
- 2) Transportation
- 3) Storage

C. LLW Disposal Activities

- 1) At reactor
- 2) Transportation
- 3) Disposal criteria
- 4) Waste forms and containers

D. Related Matters

- 1) Below regulatory concern
- 2) Mixed wastes
- 3) NARM
- 4) Decommissioning of licensed facilities
- 5) Other

3. ACNW NEAR-TERM ACTIVITIES - DISCUSSION OF PRIORITIES

A. Review of Yucca Mountain HLW Repository

- 1) Development of ACNW priorities on topics to be reviewed
- 2) Review of NRC Staff approach to HLW repository review
- 3) Performance allocation and assessment
- 4) Hydrology
- 5) DOE/NRC quality assurance programs
- 6) Geologic model and stability of the repository site (faulting and thermal instabilities)
- 7) Long-term performance of HLW package materials
- 8) Licensing support system for the HLW repository hearing process

B. LLW solidification and polyethylene HICs and review of the status of vendor topical reports

- C. Licensing procedures for reactor LLW/spent fuel handling processes
  - D. Center for Nuclear Waste Regulatory Analysis (establishment and operation)
  - E. Setting of priorities for research on LLW and HLW
  - F. Below regulatory concern and de minimis concepts and regulatory activities associated with the licensing of mixed waste disposal facilities and decontamination and decommissioning wastes
4. ADMINISTRATIVE TOPICS
- A. Commission/ACNW Interaction
  - B. ACNW/DOE Interaction
  - C. ACNW/NRC Staff Interaction
  - D. New members -- possibly an earth scientist
  - E. Statutory Status of ACNW
5. DISCUSSION OF ACRS WASTE MANAGEMENT SUBCOMMITTEE REPORTS OF MAY 11, 1988:
- A. "Below Regulatory Concern" and "De Minimis" Concepts (Attachment A)
  - B. NRC Staff Comments on Consultation Draft Site Characterization Plan (Attachment B)

ATTACHMENTS:

- A - 5/11/88 Ltr., R. F. Fraley, ACRS, to V. Stello, EDO, Subject: "Below Regulatory Concern" and "De Minimis" Concepts
- B - 5/11/88 Ltr., R.F. Fraley, ACRS, to V. Stello, EDO, Subject: NRC Staff Comments on Consultation Draft Site Characterization Plan
- C - 5/9/88 Ltr., D. W. Moeller, ACRS, to L.W. Zech, NRC, Subject: Activities of the Advisory Committee on Nuclear Waste
- D - Charter for ACNW dtd. 5/18/88
- E - ACRS Notice of Establishment dtd. 4/20/88



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
ADVISORY COMMITTEE ON REACTOR SAFEGUARDS  
WASHINGTON, D. C. 20555

May 11, 1988

Mr. Victor Stello, Jr.  
Executive Director for Operations  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555

Dear Mr. Stello:

SUBJECT: "BELOW REGULATORY CONCERN" AND "DE MINIMIS" CONCEPTS

Enclosed is a report of the ACRS Subcommittee on Waste Management relative to the NRC Staff's position paper on the applicability of "below regulatory concern" and "de minimis" concepts to Commission policies. This report was provided to the ACRS during its 337th meeting, May 5-7, 1988.

These comments are based on a review of your memorandum (SECY-88-69) of March 8, 1988, as well as a meeting held by the Subcommittee with the NRC Staff on May 4, 1988. Since the information it contains may be of interest, we are also enclosing a memorandum from M. Steindler to D. Moeller dated May 6, 1988.

The ACRS Members hope you will find this material useful.

Sincerely,

Raymond F. Fraley  
Executive Director

Enclosures:

1. Report dated May 5, 1988 of the Meeting of the ACRS Subcommittee on Waste Management on May 4, 1988
2. Memorandum from M. Steindler to D. Moeller dated May 6, 1988

cc, w/ encls.  
S. Chilk, SECY  
H. L. Thompson, NMSS  
R. Bernero, NMSS  
G. Lear, NMSS  
E. S. Beckjord, RES  
J. Larkins, OCM  
M. Lopez-Otin, OCM  
J. Scarborough, OCM  
J. Kotra, OCM  
M. Federline, OCM

ATTACHMENT A

Dated: May 5, 1988

REPORT OF MEETING OF THE THE ACPS SUBCOMMITTEE  
ON WASTE MANAGEMENT  
MAY 4, 1988

I. Introduction

During a meeting on May 4, 1988, the Waste Management Subcommittee of the Advisory Committee on Reactor Safeguards met with the NRC Staff to discuss the applicability of de minimis and Below Regulatory Concern (BRC) concepts to Commission policies. Members of the Subcommittee participating in this meeting were Dade W. Moeller, Chairman, Forrest J. Remick and Martin J. Steindler, members. Serving as consultants and expert advisors to the Subcommittee were Melvin W. Carter, Richard F. Foster, and Frank L. Parker. Summarized below are the observations and suggestions made on this subject by the Subcommittee as a result of discussions that took place during this meeting.

II. Responses to Questions in SECY-88-69

As part of its deliberations, the Subcommittee addressed each of the six issues enumerated in the memorandum of March 8, 1988, from the EDO to the Commissioners. These issues and the comments of the Subcommittee on each are given below.

Issue #1: "What benefit would be realized in establishing a generic BRC level as opposed to source specific levels (e.g., low-level waste streams, decommissioned lands and structures, recycled materials and equipment, consumer products, etc.)?"

Response: The Subcommittee strongly recommends addressing this matter on a generic basis. Advantages of this approach include:

- (a) It would enable the NRC to set down relevant basic criteria and approaches.
- (b) It has the potential for providing a mechanism for bringing consistency to the establishment of a BRC level for each of the multitude of sources and practices being addressed, i.e., it would enable the BRC level for each source or practice to be part of a systematic pattern.
- (c) It would avoid the necessity of holding rulemaking hearings on the establishment of a BRC level for each source or practice.

Issue #2: "Of the possible ways to express BRC levels (e.g., cancer risk, individual dose, collective dose, exempted quantities or concentrations), which are appropriate for the various sources or practices licensed by NRC?"

Response: The Subcommittee believes that the BRC level should be expressed in terms of the health risks to an individual. Such an approach would have several advantages:

- (a) It would permit all sources and practices to be treated on a comparable basis.
- (b) It would permit comparisons to be made between the BRC level for radioactive and other toxic (nonradioactive) substances.
- (c) It would avoid the necessity of changing the BRC level as new data are developed on the quantitative relationship between radiation doses and their associated health effects.

To implement this approach, it would be necessary for the NRC Staff to develop a hierarchical system of supplementary guidance, similar to that recommended by the ACRS in the development and implementation of the Safety Goals for nuclear power plants. This hierarchical system would include secondary or tertiary guidance in the form of dose limits, radionuclide concentration limits, limits for surface contamination, etc. In this regard, we applaud the adoption by the NRC Staff of the effective dose equivalent as a means for expressing both single organ and whole body exposures.

Issue #3: "Given the complexity of some licensed activities, some of which may involve multiple contribution to public dose, what are the most useful definitions of 'sources' and 'practices' for which BRC dose limits would be developed?"

Response: We believe that the draft report of the Nuclear Energy Agency/International Atomic Energy Agency (NEA/IAEA) Expert Group on "Exemption of Radiation Sources and Practices from Regulatory Control" offers a useful beginning for the development of definitions of "sources" and "practices." The Expert Group defined a "practice" as:

"a set of co-ordinated and continuing activities involving radiation exposure which are aimed at a given purpose, or the combination of a number of similar such sets."

And the Expert Group stated that a "source":

"is simply the radioactive material, the equipment emitting radiation or containing radioactive material or the installation (or group of installations) producing or using radioactive material..."

Following this approach, the Subcommittee believes that a "source" might be defined as:

"a physical entity that can be separately regulated or controlled."

Issue #4: "If cost vs. risk reduction analyses are to be performed to establish BRC levels, what cost-averted/risk ratio (or ratios) should be used for the various licensed sources or practices?"

Response: Although we foresee the need to apply optimization evaluations (cost vs. risk reduction analyses) in the initial efforts to establish an appropriate BRC level for a range of classes of sources and practices that involve radioactive materials, once this effort is completed on a generic basis there should be no need to repeat it for the subsequent evaluations of individual sources and practices. In particular, we see no need to apply optimization techniques to sources or practices whose associated risks fall at or below the applicable BRC level. To establish the cost-averted/risk ratio (or ratios) that should be used in such analyses, we recommend the use of rulemaking hearings. The documents supporting the establishment of Title 10, CFR Part 50, Appendix I indicated that such hearings were to be held. So far as we know, this has never been done.

Issue #5: "What approach should be taken to translate operational BRC levels (such as individual or collective dose or exempt quantities and concentrations) into fatality or cancer risks given the absence of data correlating such levels with risk (i.e., do we use the linear non-threshold dose-response relationship at very low doses)?"

Response: Although we realize that the assumption and application of a linear relationship has limitations, at the present time we know of no approach that is demonstrably superior. To assure that the risk coefficient applied in the associated calculations is acceptable, the Commission might consider requesting the support and assistance of an independent group such as the National Council on Radiation Protection and Measurements, or the Committee on Interagency Radiation Research and Policy Coordination (CIRRPC).

Issue #6: "Can a dose or risk be set at which radioactivity can be ignored (i.e., can a definition of radioactivity be usefully established)?"

Response: The Subcommittee strongly recommends that the NRC concentrate its efforts on the establishment of a BRC level, leaving the matter of the establishment of a de minimis level to other groups such as the U.S. Environmental Protection Agency or an interagency committee (such as CIRRPC). So far as we know, the NRC does not need to define at this time the conditions under which a material or substance needs to be considered "radioactive." Should special circumstances show that such a definition would be useful, we would recommend that the concentration (2 nCi/g) specified by the Department of Transportation (and cited in 10 CFR Part 71) be used.

### III. Additional Comments

In the way of additional comments, the Subcommittee offers the following:

1. Although the Subcommittee fully endorses the undertaking by the NRC of an effort to establish a BRC level, we believe it is important to recognize the complexity of this task. In essence, this effort is designed to answer the question, "How Safe is Safe Enough?" Whereas the establishment of Safety Goals for nuclear power plants answered this question for that portion of NRC's licensing responsibilities, the current effort is designed to answer the same question for a host of other sources and practices, some of which will apply to individual sources and practices at nuclear power plants. Since the Safety Goals for nuclear power plants appear to have gained wide acceptance, we would urge that the BRC level, under consideration here, reflect a health risk comparable to these Goals. Such an approach would constitute a first step for bringing consistency to the regulation of a multitude of sources and practices currently being addressed on an individual (and sometimes uncoordinated) basis. Further, we believe that attaining general consistency among the various public risk goals being established by the NRC would represent a major contribution towards improved national regulation and towards increased respect for the regulatory process.
2. We recommend that the Commission concentrate on the establishment of a BRC level that places a limit on the health risks to individual members of the public. Such an approach, in our opinion, will assure that the associated collective doses are acceptable.
3. In the draft NEA/IAEA report, the suggestion was made that variations in the doses from natural background radiation could be used as a basis for the establishment of a BRC level. As stated above, we believe that consideration of the associated health risks to individuals can serve as a better basis for the establishment of such a level.

Should the NRC decide, however, to use variations in natural background as one of several bases for setting a BRC level, we believe it is important to restrict these considerations to variations in the ambient (outdoor) natural background radiation. In our opinion, the consideration of variations in radiation dose rates inside buildings, which include "technologically enhanced" sources such as radon, would be inappropriate.

4. Regardless of the level ultimately considered to be BRC, it should be recognized from the onset that it will be impossible (with current technology) to measure the associated doses. Major reliance will have to be placed on mathematical models for estimating impacts individually and collectively on members of the public that arise as a result of the movement of radionuclides through a variety of environmental pathways under a range of scenarios. For this reason, it is important that such models, and the associated computer codes, be evaluated and validated. Included in such evaluations should be a determination of the uncertainties associated with the final dose estimates.

5. One characteristic of sources or practices that we believe should be included among the considerations taken into account in the establishment of secondary or tertiary guidance, is the matter of the half-lives of the radionuclides involved. Whereas radionuclides, such as  $^{60}\text{Co}$ , once released into the environment can be expected to decay and thus be "removed" from the environment within a matter of decades, and radionuclides such as  $^{90}\text{Sr}$  and  $^{137}\text{Cs}$  will decay within a matter of several centuries, long-lived materials, such as  $^{239}\text{Pu}$ , represent what must be considered as "permanent" contamination. Although evaluating the associated risk of extremely long-lived radionuclides on the basis of their lifetime dose commitment tends to compensate for this concern, it may well be that guidance for the control of these radionuclides should be more restrictive than that for sources and practices involving shorter-lived materials. Once released, long-lived materials represent a dose commitment to existing as well as to future generations.
6. It should also be recognized that the establishment of a BRC level, and the declaration that a given source or practice falls into this category, is not an action that is to be taken once and for all. The NRC Staff should be asked periodically during subsequent years to reexamine given sources and practices to assure that the anticipated characteristics and behavior of these sources and practices continue to be as originally assumed. Where changes and/or deficiencies are found, suitable adjustments should be made.
7. On the basis of our review, it would appear that, depending on the source or practice, health (fatal cancer) risks that would be representative of an acceptable BRC level would be less than  $10^{-6}$  per year. Corresponding acceptable lifetime health risks would thus be less than  $10^{-4}$ .





UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
ADVISORY COMMITTEE ON REACTOR SAFEGUARDS  
WASHINGTON, D. C. 20555

May 6, 1988

MEMORANDUM FOR: D. W. Moeller  
FROM: M. J. Steindler *ms*  
SUBJECT: DECISION MAKING FOR "BELOW REGULATORY CONCERN"

The meeting of the Waste Management Subcommittee on May 4, 1988 on the subject topic uncovered, somewhat as expected, a tangle of issues, existing numerical values, past practices, and uncertain basic data about Below Regulatory Concern (BRC). It may well be that the individual Commissioners have not had the time to study in-depth this convoluted topic. It might be noted, however, that the question posed by them and reflected in SECY 88-69, the transcript of the briefings by the staff, and the questions posed by Commissioner Bernthal are all pointedly directed at important aspects of the BRC controversy. Further, the basic decision identifying a policy base for the NRC may well be made on non-technical considerations, but the need to identify consequences of such decisions falls on the technical community.

If the Commission desires to participate in the October international meeting on BRC and there put forth a thoughtfully developed U.S. position, we as advisors should aim to provide them with a communication that, together with the transcript of the subcommittee meeting, could clarify the issue. In that connection, it may be that the following could be of use:

I. Some basic principles for evaluating BRC levels.

I believe that there were a number of basic principles enunciated in masked fashion during our meeting. Some appear mutually contradictory and very likely no two or more could be applied simultaneously. These include:

- A. If an analysis shows that, for a given level (concentration) of radioactive material, regulation of that material will not reduce the risk from it, then that level is BRC;
- B. If regulation requires expenditure of more than \$1000 per man-rem avoided, that level is BRC;
- C. If the risk from a source is comparable to that from natural background (or some fraction thereof), that source level is BRC;

ENCLOSURE 2

- D. If the risk from a source cannot be experimentally measured, then that source is BRC;
- E. If the risk from a source is less than that from known sources now not regulated, then the source is BRC;
- F. If the risk from a source is equivalent to the reactor safety goal, currently believed to be in the range of 12 - 20 mrem/y, then that source is BRC;
- G. If the risk from a source is 0.1% of other risks accepted in society, then the source is BRC;
- H. If the risk from a source is calculated to be less than the risk used by other agencies to define their BRC, then the source is BRC for the Nuclear Regulatory Commission;
- I. If a source is arbitrarily determined to represent a low risk, declare this to be BRC but agree to examine the evidence periodically to evaluate the need for modification of the BRC level;
- J. If ALARA practices no longer yield a reduction in risk, that level is BRC.

Clearly, each one of these "principles" can be applied to scenarios that will yield a number, generally a source strength, that can be translated into an absorbed whole body equivalent dose and a risk level. This listing contains "principles" that would likely not be acceptable by a society that does not treat relative risks on a rational basis, i.e. risks from some sources are more acceptable than the same risk from other sources.

## II. Average value of the BRC risk

It seems likely that some of the items I.A-J are unsuited for further consideration based on the likely magnitude of the contained risk. Eliminating these (e.g., I.G., I.D.) reduces the list of potentially applicable bases for setting the BRC to those whose calculated values may fall into a relatively narrow range. I believe this range could be defined and may well be close to the 1-10 mrem/y that was mentioned as seeming reasonable on the basis of what we heard. While the process of "expert opinion" is acceptable in some quarters, the Commission may require something different. It may be useful, therefore, to urge the staff to provide numerical values for the estimated risk based on the selected "principles" noted in Section I.

## III. Conclusion

I believe we can conclude and transmit to the Commission two comments pertinent to the BRC matter before it.

- A. The levels of BRC in terms of curies or curies per unit mass, i.e., a measurable value, no matter how derived, should use individual health risk (cancer deaths) as its basis.
- B. While it is difficult to rationalize a narrow (single) basis for determination of the risk that is derived from sources that are BRC, it appears that there is a good chance that an acceptable risk will result from a BRC source that yields an annual effective dose equivalent in the neighborhood of 10 mrem. Therefore, if many pertinent "principles" result in this value, this would point to the rationalization of such a risk.



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
ADVISORY COMMITTEE ON REACTOR SAFEGUARDS  
WASHINGTON, D. C. 20555

May 11, 1988

Mr. Victor Stello, Jr.  
Executive Director for Operations  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555

Dear Mr. Stello:

SUBJECT: NRC STAFF COMMENTS ON CONSULTATION DRAFT SITE CHARACTERIZATION  
PLAN

Enclosed is a report of the ACRS Subcommittee on Waste Management relative to the NRC Staff comments on the Department of Energy's Consultation Draft Site Characterization Plan for the Wucca Mountain, Nevada site. This report was provided to the ACRS during its 337th meeting, May 5-7, 1988.

The ACRS members hope you will find it useful.

Sincerely,

A handwritten signature in cursive script, reading "Ray Fraley", is written over the typed name.

Raymond F. Fraley  
Executive Director

Enclosure:

Report dated May 5, 1988 of the Meeting of the ACRS Subcommittee  
on Waste Management on April 28, 1988

cc, w/encl.  
S. Chilk, SECY  
H. Thompson, NMSS  
R. Bernero, NMSS  
G. Lear, NMSS  
J. Larkins, OCM  
M. Lopez-Otin, OCM  
J. Scarborough, OCM  
J. Kotra, OCM  
M. Federline, OCM

Dated: May 5, 1988

REPORT OF MEETING OF ACRS SUBCOMMITTEE  
ON WASTE MANAGEMENT  
April 28, 1988

I. INTRODUCTION

During a meeting on April 28, 1988, the Waste Management Subcommittee of the Advisory Committee on Reactor Safeguards reviewed the comments prepared by the NRC Staff based on their technical review of the Consultation Draft Site Characterization Plan (CDSCP) for the Yucca Mountain, Nevada Site as issued by the U. S. Department of Energy (DOE). Members of the Subcommittee participating in this meeting were Dade W. Moeller, Paul G. Shewmon, and Martin J. Steindler. Attending the meeting as consultants to the Subcommittee were J. Carson Mark and John C. Maxwell. Listed below are the comments and/or suggestions made on this matter by the Waste Management Subcommittee as a result of this meeting.

II. COMMENTS AND/OR SUGGESTIONS

A. General

In general, the comments prepared by the NRC Staff are comprehensive and thorough, and they appear to cover all key points. The comments also reflect considerable time, effort, and diligence on the part of the NRC Staff. In the opinion of the Subcommittee, the NRC Staff is to be complimented, not only on the technical quality of their review, but also on the fact that, through the approach they have chosen, the iterative process of their interactions with the DOE Staff is being made a part of the public record and is thus readily available for access by all interested parties.

The Waste Management Subcommittee generally agrees with the comments submitted by the NRC Staff and believes that they should be transmitted to DOE for resolution, including, particularly, the list of the five "Objections" to the CDSCP. As noted below, however, the Waste Management Subcommittee believes that the NRC Staff might give consideration to highlighting in their report other concerns worthy of being considered as important as the "Objections."

B. Specific

In terms of specific comments, the Waste Management Subcommittee offers the following:

1. The system currently being used to designate concerns of greatest importance, the "Objections," is that they "be of such immediate seriousness to the site characterization program that NRC would recommend that DOE not start work until they are satisfactorily resolved."

We believe that it would be useful for the NRC Staff to modify

their report so as to emphasize additional concerns that are of importance to the longer range development of the repository. Examples, some of which we believe represent fundamental flaws in the approach being taken by DOE, include:

- a. A basic "theme" projected by the five "Objections" raised by the NRC Staff is a lack of conservatism on the part of the U.S. Department of Energy (DOE) in the development of its plans for characterizing the proposed repository site. Whereas the NRC Staff favors adopting a conservative approach, which could then be relaxed if further analyses justified it, the DOE appears to prefer to begin with a nonconservative approach and then to tighten up the requirements at a later time, if necessary. While the Waste Management Subcommittee understands that the DOE approach reflects to some degree the urgency seen by that Agency in moving ahead with plans for the repository (and their emphasis that the project be conducted in a cost-effective manner), it is quite possible that the development and implementation of a more conservative approach at this stage in the process will save time and money in the long run. To assist in this effort, the NRC Staff might consider providing specific guidance to the DOE Staff relative to the degree of conservatism that they would consider acceptable for those items where this difference is in question.
- b. In its efforts to meet the requirements regarding waste releases, the DOE Staff has proposed three design objectives for the waste package. On examination, the NRC Staff has discovered that the requirements for the pre-closure phase for the repository are less stringent than those for the post-closure phase.

This has led to design objectives that are both internally inconsistent and nonconservative. This is a serious deficiency in the CDSCP, and it should be emphasized in the NRC Staff review. To the extent that these deficiencies represent differences of opinion on the part of the NRC and DOE staffs, such differences should be clarified and clearly enunciated.

- c. A third important area of concern is illustrated by the positions or approaches taken by DOE that appear not to comply either with the Standards for a high-level waste repository, as promulgated by the U. S. Environmental Protection Agency, or with the regulations promulgated by the NRC to assure compliance with the EPA Standards. Again, we believe that these examples of apparent noncompliance may represent a fundamental weakness in the DOE approach.

- d. A fourth area of importance relates to premature acceptance of a geologic model for the Yucca Mountain site, a complex area characterized by geologically recent volcanic activity and faulting. Based on our interpretation of the NRC Staff review, we believe that certain portions of the data on geology, as presented in the CDSCP, are technically inadequate. This, again, appears to reveal a deficiency. The NRC Staff has noted DOE's inability or unwillingness to consider alternative explanations or mechanisms for selected phenomena, when such alternatives remain clearly within the scope of the data. This inflexibility could seriously hamper application of demonstrably sound technical judgment.
- e. Discussions with the NRC Staff and Waste Subcommittee consultants revealed that movement along some of the faults near the proposed repository, and the weight of the rock overhead, could result in shifts (lateral, vertical or rotational) that might cause the host rock to shear and thereby place stresses on the waste canisters. This, in turn, could lead to the loss of their integrity. This is a matter that should be given attention.
- f. Another concern may include the matter of volcanism. The presence of a nearby volcanic cone, apparently active within geologically recent time, as well as hot springs, may signal the need to evaluate the potential for thermal instabilities at the repository site. This concern should be addressed and resolved by DOE, to the satisfaction of the NRC Staff.

### III. SUGGESTED IMPROVEMENTS REGARDING NRC COMMENTS

One way that the NRC Staff might modify their review of the CDSCP to emphasize the additional concerns cited above would be to group the current list of "Comments" into several categories, depending on their importance and the type of problems they reflect. One possible approach, for example, would be to group the "Comments" into those that reflect a nonconservative approach on the part of the DOE Staff, those that reflect apparent nonconformance with EPA standards or NRC regulations, and those that reflect approaches to geological matters that are technically inadequate.

### IV. ADDITIONAL COMMENTS

1. It should be noted that the comments given above are preliminary and are based on an incomplete review by the Subcommittee of the CDSCP as well as the areas of concern expressed by the NRC Staff. As time permits, we plan to conduct more in-depth reviews of selected portions of the CDSCP. Specific areas that have been selected for more detailed analysis include "Performance Allocation" and "Performance Assessment."

2. In our review of the work of the NRC Staff in evaluating several DOE repository related programs, we were impressed by several aspects of the Staff's approach that we believe are worthy of special mention. One is their concerted effort to examine the CDSCP at this time in sufficient detail to try to assure that all questions of importance are raised at this early stage in the review process.

Another is their effort to require DOE both to implement an acceptable QA program and to develop an inhouse means for its review and audit. With this program in place, the primary function of the NRC Staff in the QA area will be to review and critique the DOE auditing procedures. If the DOE QA program and auditing procedures pass NRC scrutiny, this should provide reasonable assurance that the DOE QA program is adequate. The burden for assuring that the procedures are followed will then rest with the DOE Staff, not with the NRC.





UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
ADVISORY COMMITTEE ON REACTOR SAFEGUARDS  
WASHINGTON, D. C. 20555

May 9, 1988

The Honorable Lando W. Zech, Jr.  
Chairman  
U. S. Nuclear Regulatory Commission  
Washington, D.C. 20555

Dear Chairman Zech:

SUBJECT: ACTIVITIES OF THE ADVISORY COMMITTEE ON NUCLEAR WASTE

This letter relates to several matters which came up during our meeting on April 29, 1988. With regard to the formal initiation of the activities of the Advisory Committee on Nuclear Waste (ACNW), Dr. Steindler and I believe that we can be ready to begin meeting as members of that Committee during the latter part of June, provided that all the papers necessary to make the Committee operational will have been processed by that time. We tentatively propose to hold our initial meeting during the period June 27-29 and hope that a meeting with you and your fellow Commissioners will be possible during that period, as well. We have also agreed on a set of possible dates (attached) for meetings of the ACNW through the end of this calendar year. We are hopeful that future meetings between ACNW and the Commissioners could be keyed to these dates.

As you requested, I contacted Dr. Clifford Smith to determine his interest in, and availability for, membership on the ACNW. Dr. Smith indicated that he would be enthusiastically responsive to such an appointment if it were offered to him. Dr. Smith has also been invited to attend the June 27-29 ACNW meeting as an observer and has agreed.

I have discussed your interest in our intended activities for the coming year with Dr. Steindler and we have agreed on the attached list as the primary focus of the ACNW for the near future. We are submitting it in draft format for your comments. Once your comments have been received and evaluated, we will submit the list in "final" form.

Finally, we intend to pursue the matter of an additional member of the ACNW and hope soon to have several nominees ready for your consideration.

ATTACHMENT C

The Honorable Lando W. Zech, Jr. - 2 -

May 9, 1988

We hope these comments and actions are responsive to your requests. Should questions develop or you have need for additional information, do not hesitate to let me know.

Sincerely,

A handwritten signature in cursive script that reads "Dade W. Moeller". The signature is written in dark ink and is positioned below the word "Sincerely,".

Dade W. Moeller

Attachments:

1. List of Meeting Dates
2. List of Activities

cc: Commissioner Roberts  
Commissioner Bernthal  
Commissioner Carr  
Commissioner Rogers

PROPOSED MEETING DATES  
ADVISORY COMMITTEE ON NUCLEAR WASTE - 1988

JUNE 27-29, 1988

JULY 21-22, 1988

SEPTEMBER 15-16, 1988

NOVEMBER 3-4, 1988

DRAFT  
MAY 6, 1988

PROPOSED NEAR-TERM SUBJECTS FOR CONSIDERATION BY THE  
ADVISORY COMMITTEE ON NUCLEAR WASTE

I. TECHNICAL POLICY AND ADMINISTRATIVE ISSUES

- A. LLW Regulatory Activities Within NRC
- B. Interactions Among NRC, DOE, and EPA on HLW
- C. Setting of Priorities for Research on LLW and HLW (Including Review of Programs of the Center for Nuclear Waste Regulatory Analyses)

II. TECHNICAL ISSUES

- A. Review of SCP for Yucca Mountain
- B. Review of Status of Topical Reports on LLW Containers and Forms
- C. Performance Assessment and Allocation in HLW Disposal
- D. Qualification of HLW Performance Models
- E. Regulatory Activities with Associated Decontamination and Decommissioning Wastes
- F. Planning for Licensing of Mixed Waste Disposal Facilities

**U.S. NUCLEAR REGULATORY COMMISSION**

**CHARTER**

**ADVISORY COMMITTEE ON NUCLEAR WASTE**

1. The committee's official designation: Advisory Committee on Nuclear Waste (ACNW)

2. The committee's objectives and the scope of its activity:

The committee shall report to and advise the Nuclear Regulatory Commission (NRC) on all aspects of nuclear waste management, as appropriate, within the purview of NRC's regulatory responsibilities. The primary emphasis will be on disposal but will also include other aspects such as handling, processing, transportation, storage, and safeguarding of nuclear wastes including spent fuel, nuclear wastes mixed with other hazardous substances, and uranium mill tailings. In performing its work, the committee will examine and report on specific areas of concern referred to it by the Commission or designated representatives of the Commission, and it is authorized to undertake other studies and activities on its own initiative, as appropriate to carry out its responsibilities.

3. The period of time necessary for the committee to carry out its purposes:

The Advisory Committee on Nuclear Waste is expected to be a continuing committee.

4. The agency or official to whom the committee reports:

The committee will report to the Nuclear Regulatory Commission through the Chairman, NRC, and will provide advice to designated officials of the NRC, as appropriate.

5. The agency responsible for providing the necessary support for the committee:

The U.S. Nuclear Regulatory Commission. Designated offices of the NRC will provide technical, administrative, and operational support as needed.

6. A description of the duties for which the committee is responsible:

The committee will report to and advise the Nuclear Regulatory Commission on all aspects of nuclear waste management and disposal within the purview of NRC responsibilities, including 10 CFR Parts 60, 61, and 72 and other applicable regulations and legislative mandates such as the Nuclear Waste Policy Act, the Low-Level Radioactive Waste Policy Act, and the Uranium Mill Tailings Radiation Control Act, as

amended. The Committee will examine and report on specific areas of concern referred to it by the Commission or its designated representatives, including the issuance of construction permits and licenses, and will undertake other studies and activities on its own initiative as appropriate to carry out its responsibilities. The committee will interact, with representatives of NRC, other federal agencies, state and local agencies, Indian Tribes, private organizations, etc., as appropriate to fulfill its responsibilities.

7. The estimated annual operating costs in dollars and FTE staff years:

Estimates are that the committee will cost about \$560,000 and require about 7 FTE per year to operate.

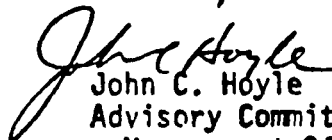
8. The estimated number and frequency of committee meetings:

It is estimated that there will be 6 meetings annually of the full committee and 3 meetings annually of subcommittees or subgroups.

9. The committee's termination date, if less than two years from the date of the committee's establishment:

Not applicable [The ACNW is expected to be a continuing committee with renewal of its charter biannually for as long as necessary to fulfill its functions].

10. The date this charter is filed: May 18, 1988.  
date

  
John C. Hoyle

Advisory Committee  
Management Officer  
U.S. Nuclear Regulatory Commission

ACRS

RECEIVED  
ADVISORY COMMITTEE ON  
REACTOR SAFEGUARDS, U.S.N.R.C.

1988

ADVISORY COMMITTEE ON NUCLEAR WASTE  
NOTICE OF ESTABLISHMENT

25 1988

PM

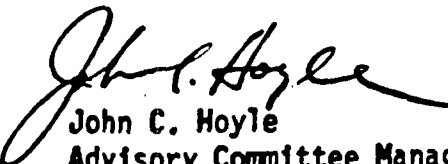
Pursuant to the Federal Advisory Committee Act of October 6, 1972 (Pub. L. 94-463, 86 Stat. 770-776) the U.S. Nuclear Regulatory Commission (NRC) announces the establishment of the Advisory Committee on Nuclear Waste. The Commission has determined that establishment of this committee is necessary and in the public interest in order to obtain expert advice and recommendations on all aspects of the management of radioactive wastes within the purview of NRC's regulatory responsibilities.

The purpose of the Committee is to provide advice and recommendations on topics, issues and activities related to the regulation of nuclear wastes. Such activities encompass:

- ° regulation of high-level waste, including the licensing of high-level waste repositories;
- ° licensing and regulation of low-level waste disposal repositories; and
- ° handling, processing, transporting, storing and safeguarding wastes, including but not limited to spent fuel, nuclear wastes mixed with other hazardous substances, and uranium mill tailings.

This establishment will be effective upon filing the charter with the Commission and with the standing committees of Congress having legislative jurisdiction of the NRC pursuant to Sec. 9.(c) of the Federal Advisory Committee Act.

April 20, 1988  
Date

  
John C. Hoyle  
Advisory Committee Management  
Officer

ATTACHMENT E

# UNITED STATES OF AMERICA NUCLEAR REGULATORY COMMISSION

Title: AFFIRMATION/DISCUSSION AND VOTE

Location: ONE WHITE FLINT NORTH, ROCKVILLE, MARYLAND

Date: WEDNESDAY, JUNE 29, 1988

Pages: 1-3

**RETURN TO SECRETARIAT RECORDS**

**Ann Riley & Associates**

*Court Reporters*

1625 I Street, N.W., Suite 921

Washington, D.C. 20006

(202) 293-3950



DISCLAIMER

This is an unofficial transcript of a meeting of the United States Nuclear Regulatory Commission held on 6-29-88 in the Commission's office at One White Flint North, Rockville, Maryland. The meeting was open to public attendance and observation. This transcript has not been reviewed, corrected or edited, and it may contain inaccuracies.

The transcript is intended solely for general informational purposes. As provided by 10 CFR 9.103, it is not part of the formal or informal record of decision of the matters discussed. Expressions of opinion in this transcript do not necessarily reflect final determination or beliefs. No pleading or other paper may be filed with the Commission in any proceeding as the result of, or addressed to, any statement or argument contained herein, except as the Commission may authorize.

1 UNITED STATES OF AMERICA  
2 NUCLEAR REGULATORY COMMISSION

3 - - - - -

4 AFFIRMATION/DISCUSSION AND VOTE

5 - - - - -

6 One White Flint North  
7 Rockville, Maryland  
8 Wednesday, June 29, 1988

9 The Commission met, pursuant to notice, at 11:30  
10 a.m., the Honorable Lando W. Zech [Chairman of the Commission],  
11 presiding.

12 COMMISSIONERS PRESENT:

13 Lando W. Zech, Chairman  
14 Kenneth M. Carr, Commissioner  
15 Thomas M. Roberts, Commissioner

16 STAFF SEATED AT TABLE:

17 S. Chilk, SECY  
18 W. Parler, OGC  
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## P R O C E E D I N G S

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CHAIRMAN ZECH: Good morning, ladies and gentlemen.

This an affirmation session. I understand that we have one item to come before us this morning. Before I ask the Secretary to walk us through this item, do any of my fellow Commissioners have any comments to make?

COMMISSIONER CARR: No.

COMMISSIONER ROBERTS: No.

CHAIRMAN ZECH: If not, Mr. Secretary, I believe we have to vote on the less-than-one-week's notice; is that correct?

MR. CHILK: We need to have a vote to hold it on short notice.

CHAIRMAN ZECH: Would you make such a proposal. Please make the proposal, would you, please?

MR. CHILK: Will the Commission vote to hold this matter on less than one week's notice?

[Chorus of ayes.]

MR. CHILK: The item before the Commission, Mr. Chairman, is SECY 88-163, dealing with ALAB 8091, remanding coaxial cable issue. The Commission in this paper is being asked to act on an order addressing ALAB 8091, which remanded the Seabrook coaxial cable issue to the licensing board.

All the Commissioners have approved an order which directs the licensing board to decide whether the Seabrook

1 coaxial cable issues need to be resolved before low power  
2 operations. Would you please affirm your votes.

3 [Chorus of ayes.]

4 CHAIRMAN ZECH: Anything else to come before us this  
5 morning? If not, we can adjourn.

6 [Whereupon, at 11:32 a.m., the meeting was  
7 adjourned.]

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CERTIFICATE OF TRANSCRIBER

This is to certify that the attached events of a meeting of the U.S. Nuclear Regulatory Commission entitled:

TITLE OF MEETING: AFFIRMATION/DISCUSSION AND VOTE

PLACE OF MEETING: Washington, D.C.

DATE OF MEETING: WEDNESDAY, JUNE 29, 1988

were transcribed by me. I further certify that said transcription is accurate and complete, to the best of my ability, and that the transcript is a true and accurate record of the foregoing events.

Ann Riley

Ann Riley & Associates, Ltd.