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Advisory Committee On Nuclear Waste

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PUBLIC NOTICE BY THE
UNITED STATES NUCLEAR REGULATORY COMMISSION'S
ADVISORY COMMITTEE ON NUCLEAR WASTE

DATE: Thursday, September 20, 1990

The contents of this transcript of the proceedings of the United States Nuclear Regulatory Commission's Advisory Committee on Nuclear Waste, (date) Thursday, September 20, 1990, as reported herein, are a record of the discussions recorded at the meeting held on the above date.

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

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2 UNITED STATES OF AMERICA
3 NUCLEAR REGULATORY COMMISSION

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5 ADVISORY COMMITTEE ON NUCLEAR WASTE

6
7 24TH ACNW MEETING

8
9 Nuclear Regulatory Commission

10 Room P-110

11 7920 Norfolk Avenue

12 Bethesda, Maryland

13
14 Thursday, September 20, 1990

15
16 The above-entitled proceedings commenced at 8:30
17 o'clock a.m., pursuant to notice, Dade W. Moeller, Committee
18 Chairman, presiding.

19
20 PRESENT FOR THE ACNW SUBCOMMITTEE:

21 William J. Hinze, Member

22 Paul W. Pomeroy, Member

23 Charlotte Abrams, Cognizant Staff Member
24
25

1 PARTICIPANTS:

2

3

R. Fraley

R. Major

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J. Holonich

M. Delligatti

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S. Linehan

J. Poole

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D. Brooks

C. Prichard

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P R O C E E D I N G S

[8:30 a.m.]

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3 MR. MOE ER: Good morning. The meeting will now
4 come to order. This is the second day of the 24th meeting
5 of the Advisory Committee on Nuclear Waste. I am Dave
6 Moeller, the Chairman of the Committee. We have with us two
7 other members of the Committee, William Hinze and Paul
8 Pomeroy.

9 During today's meeting we will do several things.
10 The primary effort this morning will be directed to a review
11 of the public comment version of the draft regulatory guide:
12 "Format and Content for the License Application for the High
13 Level Waste Repository." Then we will be discussing
14 anticipated Committee activities. That is our schedule for
15 the next few months. Finally, we will be preparing written
16 comments on several of the subjects that we have covered
17 during the last two days.

18 This meeting is being conducted in accordance with
19 the provisions of the Federal Advisory Committee Act and the
20 Government in the Sunshine Act. Charlotte Abrams is the
21 designated Federal Official for the initial portion of the
22 meeting. The rules for participation in today's meeting
23 were announced as part of the Notice that was published in
24 the Federal Register. We have received no written
25 statements or requests to make oral statements from members

1 of the public regarding today's sessions.

2 A transcript of portions of today's meeting will
3 be kept. For that reason it is requested that each speaker
4 use one of the microphones, identify yourself, and speak
5 with sufficient clarity and volume so that you can be
6 readily heard.

7 In the way of announcements before we launch into
8 the first topic, there were two items in today's Washington
9 Post that were brought to my attention. One was an item
10 that says: "Court approved of Nuclear Dump Site." That in
11 essence they are saying is, the Federal government can
12 continue examining Yucca Mountain as a possible site for the
13 nation's first high level nuclear waste repository, a
14 Federal Appeals Court ruled yesterday.

15 The Court ruled three to nothing that DOE could
16 move in and look at the site, examine the site, and they say
17 that the Nevada's legislative action which was intended to
18 prohibit such exploration; that the action was premature
19 because final selection had not been made.

20 The section item which pertains to radiation
21 protection is a results of a major epidemiological study
22 that the National Cancer Institute of the National
23 Institutes of Health has been conducting over the last
24 several years and which has just been completed, at least
25 this initial phase. It says they examined over 900,000

1 cancer deaths from the period 1950 through 1984 in 107
2 counties around and near all 52 commercial nuclear power
3 plant sites in the United States.

4 It says that the conclusions are: "There was no
5 convincing evidence of any increase risk of death from any
6 of the cancers we surveyed due to living near nuclear
7 facilities." They looked at 16 different types of cancer.
8 Of course, there are caveats that this study only went up
9 through 1984 and, obviously, they will need to continue it
10 and so forth. It is on a preliminary basis, that is the
11 results of their study.

12 We will move on then. We have three members of
13 the NRC Staff with us; Clark Prichard, the Office of Nuclear
14 Regulatory Research, Mark Delligatti, Office of NMSS,
15 Nuclear Material Safety and Safeguards, and Joe Holonich
16 from NMSS. We welcome all of you.

17 I guess Mark, you will be the spokesman?

18 MR. DELLIGATTI: I believe that Clark will be
19 starting.

20 MR. MOELLER: Clark will start, okay. Proceed in
21 any manner.

22 MR. PRICHARD: If you want to turn to the first
23 page, we put out a number of regulatory product
24 publications. They are in different categories. The first
25 and foremost is rulemakings. A rulemaking is unique in the

1 things that we do, in that it has the force of law. Some of
2 the other products we put out are regulatory guides and
3 technical positions, and you will see a whole lot of these
4 being produced and published.

5 These, however, do not have the force of law and
6 they are non-mandatory. What we are doing today is a Reg
7 Guide. The regulatory guide development process on page two
8 is outlined here, and it begins with a preparation of a
9 draft. Then we give it a very thorough staff review. A
10 tremendous number of people, both in NMSS and in the Office
11 of Research were involved in this review.

12 MR. HINZE: These are all NMSS personnel that are
13 involved in the preparation of the draft, or was the Center
14 involved too?

15 MR. PRICHARD: Was the Center involved?

16 MR. DELLIGATTI: No, the Center was not involved.

17 MR. HINZE: Thank you.

18 MR. MOELLER: On this item -- this is a nit, but I
19 had read some recent NRC exchanges of letters with DOE. The
20 NRC letters were talking about the requirements and so
21 forth. The way you are describing a regulatory guide is
22 absolutely correct, but even your 10 CFR 60; does it have
23 any regulatory teeth at the moment as long as DOE is not an
24 applicant; and it's only in anticipation of being an
25 applicant that it has teeth.

1 MR. HOLONICH: That's correct, Dr. Moeller.

2 MR. MOELLER: Thank you. Go ahead.

3 MR. PRICHARD: The draft regulatory guide gets a
4 legal review from the lawyers in our Office of General
5 Counsel. It gets an editorial review, which is a very
6 thorough going review by the RES technical editors. These
7 are special people in Research that do nothing but edit
8 publications. We have the ACNW review occurring.

9 It will be issued by an office, the Office of
10 Research, for public comments. I think the key thing here
11 is that there is no Commission review of a Reg guide
12 normally. The Office of Research will send this out without
13 going to the Commission for approval.

14 We then have public comments. I believe the
15 public comment period is 120 days. We will evaluate the
16 public comments, make any changes we think are necessary,
17 and go into the final guide development. The final guide
18 development parallels very closely the process we have
19 already gone through here for a proposed guide. It will
20 have the same types of review, including I believe another
21 round of ACNW review.

22 MR. MOELLER: Excuse me. Are we to assume then
23 that this Reg guide has had staff review and the legal
24 review, the OGC and it's been edited?

25 MR. PRICHARD: Yes, sir.

1 MR. MOELLER: Even with typographical errors and
2 so forth?

3 MR. HINZE: Not with spell check.

4 MR. MOELLER: It has typographical errors.

5 MR. HINZE: I know. It was not done with spell
6 check.

7 MR. DELLIGATTI: We have caught some of those
8 errors that were missed the first time through, and the
9 research editor is working on correcting those at this time.
10 We hope to have them all caught before we send the document
11 out for public comment.

12 MR. MOELLER: Okay.

13 MR. HINZE: Before you proceed, Clark, if I may.
14 In terms of the process here, we have a cover memo of August
15 9th that speaks about this draft only containing -- and I
16 quote -- "very broad level of detail." I don't really
17 understand those words, a very broad level of detail. I
18 wonder what that means in terms of what your plans are for
19 modifying the document with or without comment from others?

20 MR. DELLIGATTI: The level of detail that we refer
21 to in the cover memo really refers to a couple of things
22 that we anticipate happening in the period after we release
23 the guide for public comment. First of all, we have the
24 Center for Nuclear Waste assisting us through the systematic
25 regulatory analysis. This is an ongoing process that will

1 enable the NRC to determine the kinds of regulatory
2 uncertainties and technical uncertainties that exist in 10
3 CFR 60 and will assist us in determining the best way to
4 resolve those regulatory uncertainties.

5 The resolution of the regulatory uncertainties may
6 require putting additional information into the format and
7 content guide, which will assist DOE in developing their
8 license application. Also, the staff will be developing the
9 license application review plan, which is a document which
10 gets to a much greater level of detail on what information
11 is needed in order for the NRC staff to determine whether or
12 not the regulatory requirements have been met.

13 We anticipate that in the period following public
14 comment when we are revising the guide and when the license
15 application review plan is being developed, we will need to
16 put some additional detail into this format and content
17 guide.

18 MR. HINZE: What you are saying is -- if my
19 interpretation is correct as it stands now, you anticipate
20 putting in more detail than you are sending out in the
21 public draft?

22 MR. DELLIGATTI: Based on public comment and any
23 additional information that comes out of the Center's
24 analysis, yes.

25 MR. HINZE: Okay, but not from your staff. Not

1 from the staff that has worked with you. They have done
2 their level best to fit into 60.21 and so forth; is that
3 correct?

4 MR. DELLIGATTI: Yes, sir, I would say so.

5 MR. HINZE: It is confusing when you say that you
6 are going to have only a very broad level of detail. One of
7 the interpretations that you can take is that you have made
8 a casual pass at this, and I don't think that's fair to the
9 document nor to your colleagues or yourself.

10 While you are on the SRA, could you expand a bit
11 about how you see this interaction with the Center in terms
12 of the systematic regulatory analysis?

13 MR. DELLIGATTI: Certainly. At the time we were
14 developing the guide, there had been very little in the way
15 of results from the SRA because it was just very early in
16 the SRA process. Just as we were finishing the development
17 of the draft document, one of the first products from the
18 SRA came out and was available for staff review. The Center
19 provided it for Staff review.

20 I was able to see a copy of it. The way that the
21 SRA is being developed, it is based on reviewing the
22 regulatory requirements in 10 CFR 60, which is the basis for
23 the format of the format and content guide. The products of
24 the SRA will be developed to respond to specific regulatory
25 requirements, and it looks like at this point for any

1 particular SRA results or any particular SRA study that
2 comes out, if that study required a change to a portion of
3 the format and content guide it would really involve just
4 lifting that portion out and replacing it with a revised
5 portion that spoke to the SRA.

6 MR. HINZE: I was also thinking of it as being a
7 two way street. One of the concerns is the prioritization
8 of the number of items that the Center has come up with for
9 review. I think many of us are concerned about that
10 prioritization list, and I am wondering if you and your
11 colleagues as you have prepared this document, have focused
12 in on any new items that you may direct to the Center as
13 high priority things for them to consider in the SRA.

14 Is that kind of interchange going on?

15 MR. DELLIGATTI: That kind of interchange is going
16 on generally in the staff. It wasn't a specific
17 consideration during the development of the format and
18 content guide.

19 MR. HINZE: While we are discussing the process, I
20 would also like to ask another question. One of my favorite
21 questions is, who is it aimed at. Certainly the license is
22 aimed at the NRC. In terms of that, I am interested in
23 whether you are -- as you and your colleagues have prepared
24 this -- whether you have thought about this as providing the
25 information so that your own technical staff can go back and

1 re-interpret and redo some of the analyses, or is this just
2 a matter of evaluation of the material that they are
3 presenting?

4 This gets to the level of detail, and I gather
5 that's in the LARP. I don't know that. We are working in a
6 bit of --not, not a bit but quite a bit of a vacuum -- in
7 terms of that. Also, in terms of the users, I am wondering
8 as you have prepared the document in what way you have
9 considered the use of the license by lay people that may not
10 be the technical experts on the geochemistry of scapolite or
11 something.

12 How is this license going to be made truly usable
13 to those people, or is that not one of your aims?

14 MR. DELLIGATTI: In designing the format and
15 content guide we were attempting to provide for the
16 licensee, the Department of Energy, a format and structure
17 for the license application. That was our primary concern
18 in terms of who the audience was. The audience, I feel
19 competent in saying, was the technical staff at the
20 Department of Energy who will be responsible for developing
21 the license application to that end very early in the
22 development process once the team that worked on the format
23 and content guide had developed a table of contents.

24 We sent that to the Department of Energy for their
25 review, and the Department of Energy responded to us that

1 they were in support of the approach we were taking --

2 MR. HINZE: Excuse me. I am very sorry, I didn't
3 make myself clear. It is very clear to me that you have
4 written this for DOE.

5 MR. DELLIGATTI: Yes.

6 MR. HINZE: I am worried about the license. If
7 you are specifying the content, then you are really trying
8 to aim at the user of the license application. That is the
9 person that I am getting at.

10 MR. DELLIGATTI: Okay.

11 MR. HINZE: Those are the users. Those are really
12 the end users of it. DOE is just a median for putting
13 together the application. I am thinking about the review of
14 the application by the NRC staff and by others that may be
15 not as technically oriented.

16 MR. DELLIGATTI: The NRC staff, of course,
17 developed the format and content guide and will be working
18 on the license application review plan, which will be the
19 document that really gets to the detail of what types of
20 information are sufficient information for a review of the
21 license to determine whether DOE has provided enough
22 information for us in order to make a determination on the
23 license.

24 I am not quite sure I understand what you are
25 getting at in --

1 MR. HINZE: It seems to me that you can have the
2 reviewer and NRC simply evaluate what is presented in front
3 of them. Another step would be to take some of the original
4 data or second level of data and to massage that data and do
5 things with it that would come up with their own
6 interpretation. That is another type of user, if you will.

7 I think there's a third type of user in terms of
8 the license application, and that would be people that would
9 be on a license application review board, legal lay people
10 that wouldn't have the technical background. When you
11 prepared the content which is what you are aiming at here --
12 one of the critical things is, have you had those people in
13 mind. As you have prepared the content, who is the end user
14 of this in terms of the license application, not
15 preparation of the license.

16 MR. DELLIGATTI: One thing I can tell you about
17 that is, on the team that developed the format and content
18 guide, we had a representative of the Office of General
19 Counsel who worked with us every step of the way and who was
20 very cognizant of the need to make this document that could
21 be used by the people who will be reviewing the license
22 application.

23 That gentleman is not here with us today, but I
24 feel that was one of his major concerns. Maybe Mr. Holonich
25 has something to add to that.

1 MR. HOLONICH: I am still not quite sure that I am
2 getting your point, Dr. Hinze. When we prepared the format
3 and content guide we viewed the end user as being the
4 Department, trying to guide them on how to construct the
5 license application so that it would match our review plan
6 so that we could expedite our review.

7 Obviously, the users of the license application
8 are the staff and interested parties to the proceedings. I
9 am not sure that it isn't more of a question of DOE as to
10 what are they doing to prepare the license application so
11 that not only the staff but the public can understand it.

12 MR. HINZE: I think your first statement helped me
13 in that, in that you really didn't have the lay people. It
14 seems to me that one of the things you do is if you have lay
15 people, that you have synopses or some type of abbreviated
16 technical comments that are put into more layman type terms.
17 That is what I am trying to get at, in terms of what your
18 aim is.

19 I guess the other part -- within the NRC is the
20 level of detail. As I read this document it is certainly
21 very comprehensive, but it doesn't tell me what level of
22 detail that you are requiring of DOE. If you want to go in
23 and do a tweak on a performance assessment with your own
24 models, that you can go back into Appendix A or into tape
25 042 and pick out that data and do your own analysis. That

1 is not in here, but I understand it is not supposed to be in
2 here. I would like to know where it is going to be and how
3 that's going to come about.

4 MR. HOLONICH: At this time there are a couple of
5 things that we are doing that are sister to the format and
6 content regulatory guide. One of them is developing the
7 license application review strategy which will address
8 issues like where we will do our own independent audit
9 calculations to verify what DOE is doing as well as where we
10 will just review information because the technology or
11 methodology is there, or standard things that have been done
12 hundreds of times.

13 We will also construct the license application
14 review plan which will provide the detailed acceptance
15 criteria and the detailed review procedures for the staff.
16 Using the LARP and format content guide then together, it
17 will give you the amount of detail that DOE should provide
18 in the license application to allow us to either to
19 technical review or to do independent audit verification
20 calculations.

21 MR. HENZE: I think that helps me some. As I read
22 many of the statements here, how are the measurements made,
23 et cetera, that can go all the way to saying that refer to
24 study plan x or y or repeating the study plan. It is not
25 made clear, and I guess that's in the document coming up, as

1 to where you go between just making reference to a study
2 plan and repeating the whole study plan. That is a level of
3 detail that is not clear, and I would be surprised if you
4 don't get public comments related to that.

5 The people that are going to be reviewing it
6 aren't going to have much more knowledge than I have. Some
7 caveat on them may be helpful.

8 MR. MOELLER: While you are talking about the
9 review, could you remind me the extent to which DOE has seen
10 the draft up to this point?

11 MR. DELLIGATTI: Up to this point, DOE has seen
12 the table of contents of the format and content guide.
13 However, once we have published the guide for public comment
14 they will see it.

15 MR. MOELLER: At this point they have seen the
16 table of contents. Another agency that is heavily involved
17 in the whole process is EPA in writing the repository
18 standards. Has there been any formal interaction with EPA;
19 have they been sent the table of contents?

20 MR. DELLIGATTI: No, sir, they were not sent the
21 table of contents. The state however, and the local
22 governments were.

23 MR. MOELLER: The State of Nevada and DOE. Would
24 you anticipate or what is EPA's general practice? When you
25 put this out for public comment, do you anticipate that EPA

1 will comment or not?

2 MR. DELLIGATTI: I am not really sure. We do get
3 comments from EPA on technical positions that we issue.

4 MR. MOELLER: Fine. They will have a full
5 opportunity.

6 MR. DELLIGATTI: Yes.

7 MR. HOLONICH: Yes, they look at the Federal
8 Register daily like we do to see what other agencies are
9 doing.

10 MR. MOELLER: Okay, thank you.

11 MR. POMEROY: Can I ask another question about the
12 process though? I was concerned about the time line of the
13 process. It seems to me that you are fairly well along
14 here, and yet I read that the final publication is scheduled
15 for 1994 -- correct me if I'm wrong on that. While that may
16 be in plenty of time in view of the Department of Energy's
17 speed in preparing license applications, I am curious as to
18 why it should take another three or four years to get from
19 the point where you apparently are now with 120 days of
20 public comment to a final development stage.

21 MR. DELLIGATTI: There are a couple of reasons for
22 that. One of the reasons is that after the public comment
23 period is over or concurrent with it, once the Department of
24 Energy has received a copy of the format and content guide,
25 we are going to request that they develop an annotated

1 outline of the license application using the format and
2 content guide to help us determine how useful it will be and
3 whether modifications are needed to it.

4 Also, we are anxiously awaiting more information
5 to come out of the SRA, the Systematic Regulatory Analysis.
6 We felt that we were giving ourselves enough time to benefit
7 from the SRA and from working with DOE on this annotated
8 outline, and then going final with the guide after the
9 benefit of as much additional information is possible.

10 MR. HOLONICH: Including the license application
11 review plan.

12 MR. POMEROY: Approximately, what is the schedule
13 for a license application review plan at this point?

14 MR. LINEHAN: I don't have the exact schedule, but
15 there is going to be a draft out I believe, within the next
16 two years. We are going to issue a draft license
17 application review strategy in fiscal year 1991, and then
18 commence with the preparation of the license application
19 review plan itself.

20 One of the important reasons why it is going to
21 take this long to finalize the guide is that the systematic
22 regulatory analysis is being done at the Center. I don't
23 want to get into all the steps there. A couple of the key
24 things that each one of the regulatory topics in Part 60, we
25 are going to develop working with the center, develop a

1 compliance demonstration strategy and based on that a
2 compliance demonstration methodology.

3 After we go through that, we identify the
4 information needs in order to be able to do that type of
5 calculation that is going to be required. It is really that
6 lower level, when you get to the information needs, that is
7 going to be some of the key feedback into the preparation of
8 the final guide. That is going to take us a couple of years
9 to complete.

10 MR. POMEROY: That answers two questions I had,
11 actually. I was going to ask some questions about
12 compliance methodology, and I take it those are
13 inappropriate at this time.

14 MR. LINEHAN: It's premature. With respect to the
15 SRA, we are scheduled to develop the upper level compliance
16 demonstration strategies for the various parts of the Regs
17 in 1991. In subsequent years we will be developing the
18 CDM's, the compliance methodologies.

19 MR. POMEROY: Thank you.

20 MR. MOELLER: Go ahead.

21 MR. PRICHARD: On the next page, standard form and
22 content, that's what the FCRGS. Standard format and content
23 reg guides are issued for major licensing submittals in all
24 fields; reactors, fuel cycled, nuclear waste. In the high
25 level waste repository program, we only have one existing

1 reg guide out, and that is the standard form and content of
2 the site characterization program which was issued in 1987.

3 The standard form and content on the license
4 application would be the second guide once it's in effect in
5 the high level waste geologic repository program.

6 MR. HINZE: Is this an appropriate time to ask
7 something about the systems-based format, or are you going
8 to be discussing that?

9 MR. DELLIGATTI: I will be discussing that. If we
10 turn to the next slide, that is simply an overview of what I
11 was planning to discuss. If we turn to the next one, you
12 will see the purpose and content guide. Those two slides
13 were reversed in order. Very simply, the purpose of the
14 format and content guide is to assist the Department of
15 Energy by indicating again the structure and types of
16 information to be included in the license application with
17 that additional detail coming later in the license
18 application review plan.

19 Next we attempted to depict NRC's overall
20 regulatory program in the kind of documents that NRC
21 produces to provide assistance to the licensee, in this case
22 the Department of Energy. We have discussed a lot of this
23 10 CFR 60 being our regulations, which can be modified by
24 rulemaking. We anticipate that the systematic regulatory
25 analysis may result in the need for some rulemakings. The

1 others kinds of guidance that we have provided so far are
2 technical positions and a newer form of guidance, staff
3 positions, which clarify questions that arise on the meaning
4 of various parts of the regulation.

5 Then we prepare the guidance documentation
6 directly related to the license application which are the
7 regulatory guides, the format and content guide and the
8 license application review plan. What we are showing in the
9 left-hand corner of this slide is, again, the format and
10 content reg guide as the first of these documents to be
11 prepared, is providing a structure for the license
12 application. It is also providing a structure for a couple
13 of other documents which we are trying to prepare in
14 parallel so that all of these documents are usable together.

15 We anticipate that the license application review
16 plan will look very much in structure like the format and
17 content regulatory guide following the regulatory systems-
18 based format. In addition, we were requested to provide
19 some assistance in the revision of the topical guidelines
20 for information to be placed in the LSS when the LSS is
21 developed.

22 We have currently developed a draft reg guide
23 which the process requires that we brief the LSS Advisory
24 Review panel on before we go any further with it. What we
25 have attempted to do with that reg guide is to also have it

1 paralleled to the format and content guide so that everybody
2 is working from the same set and structure in terms of
3 developing information.

4 We are trying to put everything into the same
5 bucket so that everybody is able to understand what kinds of
6 information go where in the licensing process.

7 MR. HINZE: It's a detail of your guide here, but
8 since you bring up the point of consistency and approach and
9 so forth, one of the things that I found frustrating -- I
10 think other people did as well on the SCP -- were the
11 diagrams. the maps, charts, et cetera. I think you will
12 find that the north arrow goes in 16 different directions.
13 The profiles are not necessarily at the same vertical
14 exaggeration. These are terms that you may not be familiar
15 with, but your staff certainly is.

16 I think that leads to a certain frustration level
17 in dealing with -- which one should be able to sort through
18 but you shouldn't have to. It seems to me that this is the
19 time to make certain that the DOE does their job properly.
20 I think that you would be applauded if you did put into --
21 you have the weight of the paper and all these nauseating
22 details, which I understand you have to have, but it seems
23 to me that you have neglected some of the very critical
24 things that will make the document a lot more usable to
25 people.

1 Such things as always looking at the cross-
2 sections from the same position, there are standard formats
3 for that in the geoscience literature which are not
4 necessarily followed by DOE. Along that line, I think that
5 -- incidentally, projection is another one in terms of maps.
6 Some of them are strictly a square grid and some are Lambert
7 -- and the 182 other projections that we have. I don't
8 think that should be permitted in the license.

9 Also, it seems to me that many of these data --
10 there is no mention of color. I realize the problems of
11 photocopying color. Many of the presentations of the data
12 would be highly enhanced by color. This is a modern day,
13 three and one-half inch -- diskettes are not new as stated
14 in your document. That's not new. We should put these -- I
15 believe that it would be very helpful to the users,
16 including your staff, to have this in the electronic format
17 readily called up with a user friendly procedure. I think
18 the data, where possible, should be registered in terms of
19 the grids, so that your staff can use these data directly
20 without having to massage the data into some type of
21 consistent format and therefore changing it.

22 There are a number of these technical areas which
23 I would urge you to visit with some of the staff that are
24 more computer oriented. We are talking about a license that
25 is down the pike. You are writing a guide in 1990 for a

1 license at least a decade away or so. We have to really
2 consider what the technology is going to be. As we prepare
3 this, that has to be brought into this. You open the door
4 and consistency -- obviously I have a thing about this --
5 there is a lot more that could be done to make this more
6 useful to everyone.

7 MR. DELLIGATTI: Thank you. If we go on to the
8 next chart, it is the schedule. I believe we discussed this
9 a little bit earlier, and we might go on to the next one
10 where we get into the actual development of a document.
11 Some of this we did discuss earlier too, but let me go over
12 that just for the benefit of making sure that we covered all
13 the important points.

14 The format and content guide was developed by a
15 team from NMSS primarily and the Office of General Counsel.
16 We used a team approach to develop the format that we are
17 going to follow and to develop the table of contents. Other
18 staff members in each of the technical sections provided
19 input to the team members in the development of the text
20 that went into the draft guide. As I mentioned, the table
21 of contents for this guide was provided for the Department
22 of Energy and the State of Nevada.

23 After the text had been completed, the team met
24 daily to review the guide and to determine whether all the
25 regulatory requirements in 10 CFR Part 60 had been addressed

1 in the guide. This was done by compiling a cross walk from
2 10 CFR 60 to the format and content guide. This cross walk
3 is now appendix K of the guide. The team reviewed each
4 entry in the cross walk to determine if the entry was
5 appropriate and whether the text of the guide addressed the
6 regulatory requirements cited in the cross walk.

7 In this way, we were able to feel fairly confident
8 that we had included all of the regulatory requirements in
9 the guide. When the team had finished its development of
10 the guide as Dr. Prichard mentioned earlier, it was reviewed
11 at length by the Office of Research.

12 You asked earlier about the repository systems-
13 based format, and we begin a discussion of that on the next
14 page. We decided to go with the repository systems-based
15 format because we feel it reflects the repository system as
16 defined in 10 CFR Part 60 in terms of the natural systems,
17 the geologic repository operations area and the engineered
18 barriers systems. We also felt that this was consistent
19 with DOE's approach to defining the repository block so
20 that, again, we would all be talking the same language in
21 this regard.

22 We also found as we developed the guide and as the
23 center was getting into the development of the SRA, that
24 using this regulatory systems-based approach would be
25 consistent with the work that the Center was doing, and it

1 would allow us to use the results of the Center's work
2 fairly easily in taking the information from the SRA and
3 putting it into the guide at a later date if necessary.

4 One of the things we strove for in developing the
5 format that we used was a format that would be logical and
6 would enable us to prevent the need for repeated data dumps
7 of the same information in more than one place. We have
8 attempted to do that by defining in the guide that if the
9 same analyses are used in more than one location that those
10 analyses don't need to be repeated twice, but rather can be
11 put in their primary application and referenced in other
12 areas.

13 We discussed that in the introductory of the guide
14 and provide an example of how this might be done with regard
15 to information that might be needed both for the performance
16 assessment and similar information that might be needed in
17 one of the geology sections of the guide.

18 MR. HINZE: Could we just visit a bit about that?

19 MR. DELLIGATTI: Sure.

20 MR. HINZE: One of the purposes of the systems-
21 based format is to avoid repetition, and I applaud that and
22 I am sure we all do. Do you have any idea how many pages a
23 document like this will be, what will it be? We want to cut
24 down on that as much as possible. If I understand correctly
25 from the statements here and the cover material, one of the

1 purposes of the systems-based is to really force the DOE
2 into a technically integrated program, something that comes
3 through loud and clear in the SCP comments and so forth.

4 Yet, I am wondering if you and your staff looked
5 at this is any imaginative -- in the preparation of the
6 guide, in any imaginative way that might have the systems-
7 based format lead to a more integrated license, a license
8 that would be more integrated. You are asking DOE to
9 prepare an integrated technical program.

10 I am wondering if that could be carried to a more
11 integrated license without having this disparity of
12 disciplines heard; whether you felt that was a requirement
13 that you have all these individual items without the
14 integration?

15 MR. DELLIGATTI: I think that we tried to address
16 both of those questions. It is difficult, because there was
17 a feeling by the staff that we needed to specify the
18 technical disciplines in the terms that they were specified
19 in Part 60. At the same time, I feel that the format that
20 we used requires a certain amount of integration in several
21 different ways that may not be as obvious as we thought they
22 were.

23 First of all, in each of the repository systems
24 chapters of the guide it will be necessary for DOE to
25 address both the individual regulatory requirements that

1 come from the technical criteria as well as the regulatory
2 requirements that come from the performance objectives. The
3 performance objectives tend to be -- it tends to require a
4 certain amount of integration to respond to the performance
5 objectives where, at the same time, the individual parts
6 don't require as much integration.

7 Then of course, we have the chapter on the overall
8 performance assessment which requires an overall integration
9 of all the information that has come before it in the
10 previous chapters. That was how we were addressing that
11 concern.

12 MR. HINZE: I wonder whether any thought was given
13 to some type of -- there are two parts; the SAR and the
14 general introduction, I think it's called.

15 MR. DELLIGATTI: Right.

16 MR. HINZE: Really in the general introduction
17 coming through with a statement or discussion of how this
18 license meets the performance objectives. I have to go to
19 Chapter 5 before I really get to something approaching
20 bottom line. Did I miss something up in the general
21 information or up in the front about getting to some of the
22 really important items and then document them later with all
23 of the disciplines, performance assessment details and
24 methodology.

25 It seems to me your results are lost in this mass

1 of how many models have you used for your performance
2 assessment of what your inputs are. There have to be some
3 pretty big red flags there, because there are a lot of
4 people that are looking at this that aren't going to be
5 necessarily interested in all of that detail. Maybe you
6 were constrained by 62.1 -- I don't know.

7 MR. DELLIGATTI: That was the base that we started
8 from, the 62.1, but perhaps because such a requirement is
9 not present there we overlooked it. My understanding in
10 other licensing documents that NRC has prepared, such a
11 general statement may accompany the license application but
12 has not been part of it.

13 MR. HINZE: I'm a virgin on this topic. All I am
14 doing is saying if I were a person that was looking at the
15 document what would I want to see and how I would like to be
16 able to get through it, some type of road map. We have
17 talked about that before, because this is going to be a
18 massive --

19 MR. DELLIGATTI: Some sort of executive summary.

20 MR. HINZE: Certainly there needs to be an
21 executive summary, and I assume that was going to be added.
22 I am really looking at something -- an executive summary is
23 seldom more than two pages, and I am looking for something a
24 little bit more than that up front. How well does this work
25 with the CCDF; how well does it work with the subsystem

1 standards. I would like to know that, the EPA would like to
2 know that I think right up front in the general information
3 document.

4 I think that would be preferable.

5 MR. HOLONICH: I think that's a good comment, Dr.
6 Hinze. We will consider that when we go back and look at
7 the comments that the Committee gives us today.

8 MR. DELLIGATTI: The next page of our presentation
9 simply attempts to depict the repository system that we
10 based the format on. You will see that we start with the
11 repository and it is broken down according to the regulation
12 into natural systems, geologic or repository operations area
13 and the engineered barrier systems. We show on this chart
14 the subsystems that we used in the format for each of the
15 three systems.

16 The final square on the right the nonsystem-
17 specific refers to those additional chapters of the guide
18 starting with the performance assessment that did not speak
19 to one single subsystems. If you turn to the next page
20 where you see the content of the format and content guide,
21 we show a breakdown by chapter on that. Again, the 60.21
22 specifies certain information in certain forms, and that is
23 why we start with general information in the license
24 application. Then we got into the safety analysis report
25 which is considered to be part of the license application.

1 Then we have safety analysis general information
2 which differs from the license application general
3 information before we go into the specifics of the guide.
4 That would be the three repository systems chapters that I
5 just mentioned, the natural system, geologic repository and
6 the engineered barrier.

7 The next chapter in the guide would be the overall
8 systems performance. Then, what we refer to as the generic
9 nonsystems-specific, that is the performance confirmation
10 program, the repository operations, the land ownership and
11 control which is right out of Part 60 again and, of course,
12 the quality assurance program which is generic, covering the
13 entire operation.

14 We anticipate that when emergency planning becomes
15 a little better defined, additional information will be
16 provided on that. The guide is completed with the cross
17 walk.

18 MR. MOELLER: In some senses this cross walk is a
19 guide or road map. In other words --

20 MR. DELLIGATTI: Yes.

21 MR. MOELLER: Cross check of Part 60 to the guide.

22 MR. DELLIGATTI: Yes. We found that to be a very
23 helpful exercise in developing the guide going through that
24 process, and we spent an awful lot of time on that, and it
25 was time well spent.

1 If you go to our final chart, our conclusions on
2 this process. As we have been saying, we are quite
3 confident that the format and content guide addresses all
4 the license application information requirements because of
5 the cross walk process that we went through. As we have
6 stated several times earlier, the draft guide can be
7 modified and we anticipate that it may be, based on comments
8 from DOE, the public or information requirements resulting
9 from the CNWRA analysis and development of the license
10 application review plan.

11 As I believe Dr. Prichard stated earlier the
12 notice of availability of the guide will be published in the
13 Federal Register, and we are anticipating doing that in
14 November of 1990.

15 MR. MOELLER: That completes your --

16 MR. DELLIGATTI: That concludes our normal
17 presentation, yes, sir.

18 MR. POMEROY: Mark, can I ask you for
19 clarification, just for my own purposes.

20 MR. DELLIGATTI: Sure.

21 MR. POMEROY: On page 33 you mentioned APES and
22 UPES. Could you clarify -- I know that APES and UPES still
23 exists in the regulation, but it is my understanding that
24 there is no definition of APES and UPES because there is no
25 technical position on that. Is there going to be some way

1 of clarifying that within this context?

2 MR. HOLONICH: A couple of things, Dr. Pomeroy.
3 We were attempting earlier to revise APES and UPES. There
4 is a definition of APES and UPES in Part 60, but the
5 implementation of it is quite difficult. We were attempting
6 to revise it with a rulemaking some time ago, and as a
7 result of the work on that rulemaking decided that it would
8 be better to address the issue of APES and UPES whenever we
9 did the conforming amendment to the EPA and implementing
10 amendment for the EPA standard.

11 This guide is based on the regulations as it
12 stands now. I don't know what will happen as a result of
13 those implementing and conforming amendments. In fact, the
14 guide might change to reflect changes in APES and UPES once
15 we do the EPA rulemakings that we need to do. I don't know
16 if that answered your question.

17 MR. POMEROY: Yes, it does. Thank you.

18 MR. HINZE: It's very difficult to go through a
19 document like this without having your own prejudices and
20 biases come in. I am not going to nit and pick on all these
21 items. Let me try to make a few comments about specific
22 items that might give you a flavor.

23 For example, on page 18 of my document -- I don't
24 know which page it is on others. I have a couple of copies
25 on this. In any event, for example, six.

1 MR. HOLONICH: I'm sorry, Dr. Hinze. Could you go
2 through again where you are?

3 MR. HINZE: Page 18 of your document.

4 MR. HOLONICH: That is what section?

5 MR. HINZE: It's 2.1.1.2 (6). That's a very good
6 statement, well done. Except, I think that it would be very
7 helpful if you put into that something about an integrated
8 interpretation. One of the things that came through in the
9 SCP comments was the need for integration, synthesis, etc
10 cetera, and that's all part of this based format.

11 I think those kinds of arm holds need to be put
12 onto the preparation of the license, whether it's Yucca
13 Mountain or any other place. Wherever possible, if you can
14 insert statements like integration, that I think will serve
15 your purposes very much.

16 The whole problem of variability of the
17 characteristics is discussed considerably in the guide here.
18 That is well done. For example, in hydrology -- let's just
19 turn to page 24 for example, characterization of
20 hydrogeologic units, and that's 2.1.2.3. As I looked at
21 this section and other sections in other disciplines that
22 are in the same nature, it wasn't clear to me that you were
23 sufficiently binding on the variations. That may be simply
24 my interpretation of it.

25 Terms are used like the range of variables. I

1 want to know a lot more than the range of variables and your
2 geoscientists do too. You want to know the short term
3 variability, you want to know the long term variability, the
4 short range, the long range. There are a lot of statistical
5 parameters that relate to these. Those kinds of information
6 are extremely critical, and I would like to make these
7 people know that they are going to have that in the -- they
8 are going to have to face that in the license as they go
9 about carrying out the study plans.

10 I think that whole area could be tightened up --
11 should be tightened up to make certain that
12 representativeness, variability, vertical, spatial
13 variability at different scales is properly taken into
14 account and the whole geoengineering aspect. That would
15 also be useful.

16 There is a comment related to -- I am organized,
17 it's just that my papers aren't -- there is a statement
18 regarding the objections to the SCP. Can you put me on the
19 right page there. I can't seem to find it in my notes.

20 MR. DELLIGATTI: That would be in 1-3 on the most
21 recent version that we sent down to you, status of DOE
22 resolution of NRC objections. It's --

23 MR. HINZE: What is the page number?

24 MR. MOELLER: Page eight.

25 MR. HINZE: Thank you. It's 1.6.2, right?

1 MR. DELLIGATTI: Yes.

2 MR. HINZE: That is what I wanted to get at. The
3 emphasis there is on objections, and we know how many
4 objections -- two or three were there to the SCP -- and how
5 many comments were there, 137 or something like that. There
6 were a large number, and I don't recall the exact number.
7 Yet, nothing is -- the word comment is used once there in
8 that paragraph. I think some of the comments and the
9 resolution of those comments, to me, are almost as important
10 as some of the objections.

11 I think that you are downgrading -- your statement
12 downgrades the concerns the staff has had about the SCP and
13 meeting those. I feel that should be beefed up. If I can
14 get together with some of the geoscientists there are some
15 other little details, but I am not going to nit pick on some
16 of these things. Those are more general comments that I
17 think I have.

18 Thank you.

19 MR. DELLIGATTI: Thank you.

20 MR. LINEHAN: Dr. Hinze, I would like to follow up
21 on your last point regarding the comments versus objections.
22 I want to make sure that first of all I understand. Were
23 you suggesting that DOE ought to be addressing the comments
24 in the license application of how to resolve them?

25 MR. HINZE: No. If I understand John, this will

1 be done before that.

2 MR. LINEHAN: That's what I was going to say.

3 MR. HINZE: That will be resolved. I guess it
4 isn't clear to me and I would like to be informed, if they
5 don't satisfy those comments is that going to prohibit them
6 from submitting the license?

7 MR. LINEHAN: It wouldn't prohibit them from
8 submitting the license.

9 MR. HINZE: It would.

10 MR. LINEHAN: It would not.

11 MR. HINZE: Okay.

12 MR. LINEHAN: They may not agree with us. I think
13 the point that you are raising though is, we do have a
14 process where we don't have it up and running, but we are
15 doing it right now getting the issues from the site
16 characterization analysis into an issue tracking system.
17 What we anticipate happening is, through interactions with
18 DOE and their responses to our SRA, is documented in that
19 tracking system exactly how each one of the comments is
20 resolved. In those that are not resolved, we will carry
21 into the review of the license application.

22 We are not meeting here to downplay the
23 significance of some of those comments. You have a good
24 point. It was very borderline in some cases whether we had
25 an objection or a comment. It wasn't to downplay those, and

1 I think we ought to look at the language to make sure we are
2 not giving that message.

3 MR. HINZE: I would not have brought this up if
4 the statements about objections weren't there. Then when I
5 saw that and my own strong support for some of the comments,
6 that led me to say this ought to be beefed up.

7 MR. HOLONICH: Excuse me, Dr. Hinze. I just want
8 to make sure that I understand the point. You are just
9 saying that in the section we talk about unresolved
10 objections, and you are questioning why don't we also note
11 that any of the unresolved comments should be addressed also
12 by DOE.

13 MR. HINZE: Yes. I didn't know whether you were--

14 MR. HOLONICH: That's a good point.

15 MR. HINZE: I didn't know whether you were using
16 objections in the generic term or in the specific regulatory
17 way that you use them.

18 MR. HOLONICH: We would have to check with the
19 specific staff member who prepared this. I am not sure
20 whether he literally meant objections --

21 MR. HINZE: I didn't either.

22 MR. HOLONICH: Whatever he did, we will make sure
23 we get it clarified in the final.

24 MR. HINZE: At the risk of making this one line
25 longer.

1 MR. HOLONICH: I agree with you. There are
2 specific definitions for objection and comments, and we want
3 to make sure we keep that consistency in the guide here.

4 MR. HINZE: Please.

5 MR. POMEROY: Going back to your slide on
6 development of the FCRG, you indicate that there was a
7 representative from each of the HLWM sections but then they
8 drew on the staff behind them. Were the sections generated
9 in that manner run back through the system so that the
10 person -- perhaps the seismologist or geophysicists or
11 hydrologist or geochemist -- that prepared the input had an
12 opportunity to re-read those sections in their final form so
13 that he could essentially have a review of what he had said
14 in the process?

15 What I am concerned about is that there are some
16 small matters that I think might be useful -- it might have
17 been useful to have some review process. Perhaps they did
18 have, and I am just asking for clarification.

19 MR. DELLIGATTI: This is an assumption that I am
20 making. I would assume that generally yes, the team members
21 worked very closely with the staff in their sections. I
22 would have to check with each of the members of the team to
23 see how they worked because they did come from different
24 branches and have slightly different review cycles. I would
25 say generally, yes.

1 MR. POMEROY: Generally yes, thank you. There was
2 one other point that I had. On page 34 --

3 MR. HOLONICH: Could you give us the section
4 please, Dr. Pomeroy?

5 MR. POMEROY: I will in one moment -- 2.2.1.1.,
6 natural processes and events. I don't expect an answer for
7 this, but I am asking the question. In the last sentence of
8 that section the sentence reads in general categories of
9 such processes and events should have a probability of
10 occurrence greater than one chance in ten to the fourth
11 during the period of intended performance, which I assume is
12 ten to the fourth also.

13 Is that the probability that the level of
14 probability that is desired -- that is, in essence, ten to
15 the minus eighth is a significant number.

16 MR. DELLIGATTI: We can check with the staff that
17 prepared that and get back to you on that.

18 MR. PRICHARD: Sir, I believe that comes directly
19 from the EPA standard or one of the statements in the
20 Federal Register Notice that accompanied the EPA standard.

21 MR. HOLONICH: We will have to confirm the basis
22 for that, Dr. Pomeroy.

23 MR. POMEROY: Thank you. I will also check
24 independently here.

25 MR. HINZE: My turn again?

1 MR. POMEROY: Yes.

2 MR. HINZE: Since we do have a little time, I
3 would like to ask a couple of more questions. On page 1.4,
4 requirements for further technical information, it is
5 obvious that you are expecting the license to be incomplete.
6 I don't understand that. What information do you
7 anticipate them not having available at that juncture?

8 MR. HOLONICH: We would expect them to have as
9 complete a license application as possible, and they should
10 work toward that.

11 MR. HINZE: This is a hole.

12 MR. HOLONICH: Right. There may be some test or
13 some work that they had not yet completed at the time of the
14 license application. For our purposes we are trying to get
15 them to do as complete an application as possible.

16 MR. HINZE: As a first time reader, it looks like
17 a hole. I think that you could well tighten up on that, so
18 that you are conveying what you expect in a more complete
19 way. Let me turn to page 13/14. There's the term geologic
20 seismicity, and I will defer to Dr. Pomeroy. I have heard
21 of lunar seismicity but I have never heard of geologic
22 seismicity.

23 That is a new term to me, and perhaps it would be
24 worthwhile not inventing terms in the document here. It's a
25 minor -- it's a grit, okay. Just for those of my colleagues

1 on page 15, which is geophysics, it is rather clear that
2 there are a number of methods such as listed there, and
3 there are details of a number of such but you have left off
4 the whole realm of electrical methods. According to the SCP
5 and according to many of us, they are going to play a strong
6 role in characterization that that's left off. People that
7 are working diligently on that should not need to be
8 neglected. That's a minor point.

9 I will defer to someone else for a while.

10 MR. MOELLER: Let me take over for a few minutes.

11 I was not sure in reading the document whether it was
12 intended to be generic or specific, and you are not
13 consistent. For example in the introduction you say DOE
14 should strive to do this and that, and at other times you
15 will say the applicant and so forth. I am skipping around,
16 but another example of this is in Section 2.2.1.3. You say
17 the effects of weapons testing. That's obvious that this
18 then is written for Yucca Mountain, at least that's the way
19 I interpret it.

20 I would either make it generic or specific for
21 Yucca Mountain. I guess my gut reaction is that it should
22 be generic, because DOE's name might be changed or Yucca
23 Mountain might fail and so forth.

24 In terms of things that trouble me in general
25 information Section 1.5, you clearly state that salvage --

1 you say: "Since radiation hazards associated with high level
2 waste make them inherently unattractive is a target for
3 theft or diversion. No detailed information need be
4 submitted in protection against theft or diversion." To
5 me, that is sabotage.

6 Yet, later on, you just have all kinds of
7 requirements on sabotage. I don't know that I agree that
8 spent fuel wouldn't be a nice thing for a saboteur to steal
9 and take into Manhattan and threaten to blow it up. I find
10 that, to me, is inconsistent.

11 In Section 1.6.2, this is what I believe Dr.
12 Pomeroy referred to, the status of DOE resolution of NRC
13 objections. You give them five requirements there at the
14 end and they must identify all unresolved objections and
15 explain and describe and so forth. I wasn't sure after
16 reading that what this was for. Item four is I, the
17 applicant, must explain why the resolution of this objection
18 has not been achieved. Well, I could say that DOE is
19 obstinate or NRC is obstinate and won't give in or help me.

20 I am not sure I understood. I guess I can
21 understand it if you mean why have there been delays in
22 doing what you promised to do to help resolve this. That, I
23 understand. You follow? I didn't really understand these
24 five points and what your objective was in requiring me as
25 the applicant to discuss them.

1 Later on -- some of these problems go to 1.5. Some
2 of these problems were later solved. There, you say DOE
3 should provide a description of the kind, amount and
4 specification of the rad material proposed to be received
5 and possessed -- with a typo -- at the geologic repository
6 operations area. Well, I said to myself, is this Cobalt 60
7 sources that they are using or neutron sources they are
8 using to log a well or something, or is this the waste. If
9 it's the waste, later on you are clear and you will tell us
10 what quantities and types of waste you might receive.

11 I wasn't sure at that point whether that was other
12 than waste or waste only. While we are talking about typos
13 -- in Section 1.6 Item 4, the second line, the word
14 controlled has a typo. Section 2.1.1 on the natural
15 systems, I think that was one of the first places where I
16 saw the request for discussion of the variability and
17 uncertainty of data and information and so forth. That was
18 repeated, of course, numerous times later on for each of the
19 different requirements.

20 I guess what I ask myself there -- last month this
21 Committee was asked to review an NRC staff document on how
22 uncertainties were to be resolved and narrowed and all that
23 within the repository. I saw no tie-in of this with that,
24 and maybe there need be no tie-in. I know that people have
25 spent a lot of time on -- other staff spending a lot of time

1 on uncertainties and their resolution. It would have helped
2 me to have known whether there was a tie-in to items.

3 In Section 2.1.1.1 under Item 3, seismology -- and
4 I will defer to my associates here -- for us it's the top of
5 page 14 -- 32 handwritten and 14. It says whenever an
6 earthquake hypa center or concentration of earthquake hypa
7 centers can be reasonably correlated with geologic
8 structures -- if you can correlate it then you must give me
9 the rationale for the association. When earthquake hypa
10 centers cannot be reasonably correlated with geologic
11 centers the hypa should be discussed in relation to the
12 geologic setting.

13 I found that not technically a problem but
14 generically or something -- you are telling me correlate
15 them and then prove that the way you correlated them is
16 justified. Is that reasonable?

17 MR. HINZE: I changed the wording on it. There
18 really needs to be an analysis, and that's not clear in
19 here. I think that if they did that it would be come
20 apparent that's where they should be coming from, an
21 analysis of the correlation between -- should be done rather
22 than a correlation. You are assuming there is a correlation
23 when you make that statement, and most geophysicists would
24 have great trouble with that.

25 An analysis would help, I think, to clarify that

1 point.

2 MR. POMEROY: We do know where that wording came
3 from though. That is wording in essence out of Appendix A.
4 I hate to mention Appendix A.

5 MR. MOELLER: Which we now know --

6 MR. POMEROY: There is no reason for it to occur.

7

8 MR. MOELLER: Right. Even the NRC has withdrawn
9 from that. Section 2.1.1.3 talks about long term estimates.
10 I immediately ask myself what is a long term estimate. I
11 don't know, and I will get back to that because numerous
12 times I found questions calling for long term or short term
13 and I was unable to know which it was. For example, in
14 2.1 2.1.8 it says provide a projection of the quantities of
15 potential areas of surface water use for the region into the
16 future.

17 I am concerned about 10,000 years I guess. How in
18 the world am I going to do that? I might do it for the next
19 decade, I guess. Projections should be based on projected
20 growth rates for the region. Industry is likely to develop
21 in the future. Projections should not be based on
22 extrapolations of historical data alone and so forth.

23 I was just left without knowing what to do if I am
24 the applicant.

25 MR. POOLE: I am Jeff Poole, NMSS. I think the

1 surface water stuff traditionally is oriented toward the
2 operational aspects and for any analysis under Part 20 and
3 stuff like that rather than the 10,000 years. Anything
4 dealing with the future in that would be dealt with either
5 through the scenarios in performance assessment which is
6 another whole category of things. There may be certain
7 aspects -- things happening in the future that are outlined
8 in the siting criteria under 122, but I think primarily
9 intent here would have been for the operational phase and
10 not long term.

11 MR. MOELLER: Okay. In part seven just before
12 part 8, you want me to inventory the surface water users and
13 the source location, the owner, the type of intake, the
14 population served, the maximum daily and average quantities
15 of water pumped. You are correct, the only way that would
16 be of any interest is during the operational phase.

17 MR. POOLE: Right. That's pretty traditional
18 stuff from a lot of reg guides for information for potential
19 accident analysis and the like.

20 MR. MOELLER: Well then, I think you ought to
21 clearly point that out. You should say the requirements in
22 this section are primarily directed to the operational
23 phase. Of course, there are other sections that gave me the
24 same problems. In Section 2.1.2.2 in Part 9 -- again, it's
25 exactly the same problem. Identify the regional groundwater

1 management agencies and their water use plans and so forth.

2 Then you say and project it for the foreseeable
3 future. Well, okay, in its operations then I'm okay.
4 Let's say so. In Section 2.1.2.3 site hydrogeology, and
5 then moving to Subsection 8 on site pathway analysis,
6 describe the fluid pathways liquid or gas to the accessible
7 environment. I wonder if, when you wrote this, you knew
8 that carbon 14 was a potential major limiting problem. If
9 you had gone back to reword it to make sure that you have
10 handled the carbon 14 problem, or do you believe generically
11 you took care of it so there's not much more to be concerned
12 about.

13 MR. POOLE: When I first wrote this I missed it,
14 and it was actually a colleague at the University of Arizona
15 that pointed out to me. I just said fluid and he said
16 liquid, gas, et cetera. Let's be broad I said, for any
17 potential use. Pick a problem area, but he should have
18 sufficient information to cover it. It wasn't exactly
19 carbon 14 in my mind, but somewhere out there we knew there
20 had been discussion on it to handle all contingencies.

21 MR. MOELLER: Again, just flagging a thing,
22 2.1.3.1, Part 1 under that has the variability and
23 uncertainty of data, the propagation of errors. We have
24 already talked about that. Subsection 2 on information and
25 investigations on the geochemistry of the regional

1 groundwater talks about -- describe the regional properties
2 and chemistry of regional saturated/unsaturated zone
3 groundwater. Then it says the information on water
4 chemistry should include a detailed description analyses of
5 the groundwater chemistry, major and minor, organic and
6 inorganic content, trace element content, stable isotopes.

7 I guess you mean stable elements as opposed to
8 naturally occurring radionuclides. You are not going to ask
9 me to identify every stable isotope in the groundwater.
10 That would cost me a fortune. I am confused. I just don't
11 understand.

12 MR. BROOKS: My answer would be you are right, we
13 wouldn't expect that.

14 MR. MOELLER: All right, thank you. This is a nit
15 of mine, which you have undoubtedly heard before.
16 Continuing on with that sentence, you want me to give a
17 description and analysis of the background radioactivity.
18 Radioactivity is a property of certain atoms which makes
19 them emit radiation. You either mean the background
20 radionuclides or something, so please say what you mean.

21 The 2.1.4.1, Sub unit 1 which in on climate, you
22 tell me the general climate should be described in
23 climatological characteristics attributable to the terrain
24 should be identified and then to indicate the impacts. What
25 I found interesting in that section is, you first tell me I

1 must describe the climate and climatological characteristics
2 attributable to the terrain and so forth, and after you have
3 required me to tell you all of that in detail then you tell
4 me to prove that I needed to provide that data by indicating
5 the impacts on the conceptual design and operation of the
6 repository.

7 Now, if you are going to ask me for all of that
8 you must have a prior conclusion that it is important or you
9 wouldn't have asked for it. I am being a little "nasty" in
10 reviewing it -- I hope that I am constructive. You see, you
11 are asking me to provide a lot of information and then you
12 are asking me to prove that I really need to provide it by
13 showing how it impacts the repository. Then, at the end of
14 that Section 1 or in the middle of the paragraph you say all
15 information should be fully documented and should be based
16 on data for the most recent 30 year record period.

17 Again, I bow to my colleagues. What good is 30
18 years for other than operations.

19 MR. HINZE: I think Jeff -- how would Jeff respond
20 to that?

21 MR. MOELLER: If it was in there it should have
22 been put in bold print that all of this is for the
23 operational period. I am reading it in terms of the
24 repository which, to me, is a 10,000 year gizmo.

25 MR. POOLE: I will certainly take a look at this

1 particular paragraph based on your comments. Maybe I can
2 let Mark address this if there are any statements early on
3 in the format and content to make it clear that the
4 information has to be provided more than for just the post-
5 closure performance objectives. There's a lot of
6 operational in Part 20 and all that kind of stuff is dealt
7 with.

8 I guess I have to distinguish on every sentence
9 whether something is for information that I need in a very
10 detailed area, whether it's a very detailed area, whether
11 it's strictly for operations or long term performance -- I
12 hope the cross walk in the appendix would help that
13 somewhat.

14 MR. LINEHAN: If I could just add to that, the
15 Section that you are looking at there is on present climate
16 in meteorology. Then, in the next few sections we do go on
17 to talk about climatology and what the future climatic
18 variation is.

19 MR. MOELLER: Maybe I needed -- I did read the
20 table of contents, but maybe if I had kept referring back to
21 it and realizing where I was. See, in the table of contents
22 I am under Part 2, the natural systems of the geologic
23 setting which sort of makes me think I am looking at long
24 term parameters. You follow. I was confused.

25 Section 2.2.2. the APES and UPES, I found that

1 somewhat overwhelming for me, because under 2.2.2.1 you tell
2 me to describe the models that I am going to use and justify
3 each of those models, that it is appropriate and that I am
4 correct in using it. Then you throw in this sentence, other
5 known and generally recognized models -- and I am
6 paraphrasing -- which you considered but rejected should
7 also be described along with the basis for rejection.

8 So, you are causing me to list and justify every
9 model that I applied and then list and describe every model
10 that I thought about applying but didn't apply because I
11 rejected it because it wasn't useful. I thought you might
12 have said list the models that you are using and justify
13 their use and confirm to me, the NRC, and approve to me that
14 you considered the full range of all potentially applicable
15 models that you should have considered. I would have been
16 happy with that.

17 I don't know what use it would be to me -- it
18 would be like -- I saw an article written the other day that
19 way, and I immediately stopped reading it because the first
20 page said when I set out to write this book I was thinking
21 of writing a book on something or other, and the further I
22 got along I finally ditched all that and ended up writing a
23 book on this other thing. I don't want to know that. To,
24 me, that is a rather significant comment.

25 Continuing in this same section under 2.3.1.2, sub

1 unit 8 you want me to consider as potentially adverse
2 conditions, the presence of naturally occurring materials
3 whether identified or undiscovered within the site. How do
4 I handle the potential impact of a mineral that I didn't
5 discover? Is that from 10 CFR Part 60?

6 MR. DELLIGATTI: Yes.

7 MR. MOELLER: We are going to be looking at it
8 more carefully. You follow my cause for concern.

9 MI DELLIGATTI: Right.

10 MR. HINZE: It certainly could be expressed
11 better. I like the idea and I guess it makes people stretch
12 on that.

13 MR. MOELLER: In Section 3.1.1.4 you tell me there
14 --and I have already commented on sabotage, but you now tell
15 me I must consider sabotage and I must consider war. I
16 could write a whole document on future wars and how they
17 will be fought and what the technology will be. I am just
18 baffled as to how to assess the impact of war.

19 MR. DELLIGATTI: I will bring that question up to
20 the author. He was not able to be here today.

21 MR. MOELLER: Right below that, 3.1.1.6, you are
22 talking about heating, ventilation, air conditioning,
23 chilled water systems and so forth. I presume -- and I have
24 forgotten -- emergency power and electric power is required
25 so that if the regular power goes off they can keep the air

1 flowing through and everything.

2 MR. DELLIGATTI: Yes.

3 MR. MOELLER: Your ventilation system evaluation,
4 3.1.1.9, you talk about heap of filters but I never saw a
5 word about any types of adsorption systems. Again, if I am
6 concerned about Carbon 14, it may be that I would have put
7 in something like that. I was pleased that you talked about
8 the qualifications of personnel -- and in my own area you
9 told the qualifications of the health physicist and rad
10 protection people and, even as I recall the numbers and so
11 forth -- that's very good.

12 Back here you never told me one thing about
13 testing any of these systems. As I say that, I am sure I'm
14 wrong. Certainly it didn't knock me down that you told me
15 that these systems had to be tested, and the testing of a
16 HVAC system and particularly charcoal adsorption or a filter
17 system, takes very well qualified persons. Undoubtedly,
18 now that I say it, you have it somewhere.

19 MR. DELLIGATTI: I believe so. I can't put my
20 finger on it immediately, but we can check on that and give
21 you a citation.

22 MR. MOELLER: Okay. While I am talking, and so
23 that I won't miss it, you also are faced with a task that 10
24 CFR Part 20 is being revised. Chairman Carr keeps saying it
25 and the staff -- I gather it is eminent, certainly in the

1 next six months positively it will be out. When that comes
2 out, you have to go back through here and do a lot of work
3 which is not of your own choosing or it is not your fault,
4 but you will have to do it.

5 MR. DELLIGATTI: Yes.

6 MR. MOELLER: I did notice, apparently you talked
7 about neutron sources somewhere -- let's see if I can find
8 it. I wanted to recall it. I thought it was in Section
9 3.1.4.3, yes. You say similar information should be
10 included, and for neutron sources you used for shielding
11 calculations. I guess I was a little confused. I didn't
12 know whether you took neutron sources down into the
13 repository and used them to design your shields, and if you
14 did, I didn't understand why.

15 MR. DELLIGATTI: Dr. Neal who prepared that
16 section, also could not be here today. I will bring that
17 comment to his attention.

18 MR. MOELLER: I am almost sure that he is correct.
19 Tell him that I was a little confused. Did you look into or
20 is it even your role -- of course as I say that, you say
21 that you are going to make sure that the operational phase
22 meets OSHA requirements, Mine Safety and Health Act, EPA's
23 requirements and so forth. Are there hospital facilities
24 nearby, and would they take a radioactively contaminated
25 injured worker?

1 Does the applicant have to do anything like that?
2 What about emergencies needing rapid medical care and so
3 forth for the injured?

4 MR. DELLIGATTI: I think that would probably fall
5 under emergency planning, and that section is to be
6 developed.

7 MR. MOELLER: Okay. You are also still using Rem,
8 and by the time this thing is out you ought to be saying
9 sievert.

10 MR. DELLIGATTI: Yes, okay.

11 MR. MOELLER: You do consider in terms of
12 emergencies nuclear criticality safety, and you certainly
13 should do that. In Section 3.2.2 on the shaft and ramps,
14 you say provide analysis demonstrating compliance with 10
15 CFR 60, and I am sure that's fine. I just need to go back
16 and look at what 60 says. That's fine.

17 Back on the filter testing and the HVAC testing, I
18 saw nothing about measuring flow rates. Why I say that,
19 recently in the flap that developed with the waste tank at
20 Hanford it might be releasing hydrogen. I talked to some of
21 the people on that, and they said that some of the basic
22 questions that were raised were techniques used for
23 measuring the flow rate and dilution of the hydrogen and so
24 forth.

25 We have to be sure that solid requirements apply

1 here for filter testing, and I am sure they are in there.
2 You quote Reg Guide 8.8 of course, but that's rad
3 protection. There are reg guides for HVAC systems and
4 adsorption testing and so forth. Just be sure that you
5 correlate and that you cite those, and perhaps you have.

6 Again, as I notice here as I go along, I saw
7 nothing about hospital care for the wounded or injured but I
8 am sure that it will be taken care of.

9 In Section 3.2.4.1 you imply there that there's
10 going to be environmental surveillance.

11 MR. HOLONICH: Dr. Moeller, can you give us a
12 second to find the section here?

13 MR. MOELLER: Yes, 3.2.4.1, surely.

14 MR. DELLIGATTI: Was there a subheading with that,
15 sir?

16 MR. MOELLER: Protection against radiation
17 exposures and releases of Rad material to unrestricted
18 areas. Again on that, when you come to the revised -- you
19 are quoting 10 CFR 20. When you come to the revised 10 CFR
20 20, you have really got some challenges there. Of course,
21 if you go by EPA's .25 milli sievert per year, that's
22 controlling. If you are looking at Part 20, the new Part 20
23 says one milli sievert per year. It further says -- at
24 least the last draft that I saw -- said that in order to
25 protect children and pregnant women, et cetera, they put in

1 a factor of two conservatism. So, you really cut down to
2 one-half a milli sievert per year.

3 It could influence some of this, and I know there
4 will be people working on that. Furthermore, it means
5 somewhere in there I would assume -- or in a supplementary
6 document -- there would have to be guides for the
7 environmental monitoring program that is required,
8 specifics. Of course, DOE will be proposing something. But
9 you know, around all your nuclear power plants now you have
10 the TLD circles monitoring. Maybe DOE will propose
11 something similar here.

12 Furthermore, you do call upon them -- we have
13 talked about models before -- when we are talking about
14 models there are dose assessment models also that will have
15 to be very carefully reviewed and evaluated in terms of
16 their application.

17 In that regard too, in the revised EPA standards,
18 originally -- which always was confusing to me -- originally
19 the NRC staff would always say we require monitoring up
20 until closure of the repository. The revised EPA standards,
21 the latest working draft that I have seen and if I am
22 reading them correctly -- says that monitoring will continue
23 post-closure. Keep that in mind if there is anything in
24 here that says you stop at closure.

25 It's a thought, and I don't know the implications

1 but the new EPA standards have another change, in that they
2 encourage the placement of waste in the repository on a
3 trial experimental basis to gather data and so forth. Maybe
4 the same conditions would apply to trial basis as applies to
5 the operating repository, I presume. You may want to look at
6 that. I gather the NRC staff would also encourage or be
7 happy if DOE would come in with a place for a trial
8 placement of waste for a decade or two and gather data and
9 so forth. Be sure that this says it applies not only to the
10 operating repository but to one that is being used as an
11 experimental interim set up.

12 You cover training, you cover site markers, Q/A
13 and you also cover rad protection performance confirmation.
14 Let me look at that for a moment. That is in 7.4. I guess
15 maybe why I cited it, and the comment is not necessary to
16 7.4. Again, the revised 10 CFR Part 20 requires the
17 summation of internal and external exposures. Here, you
18 know, if you ever had a situation where that could be
19 applicable it will be in the repository operation. You must
20 sum internal and external, and you also will need to move
21 over when you are talking about dose limits and always say
22 effective dose equivalent.

23 Your rad people have some work to do. It's not
24 impossible but it will take some careful rewriting of this.
25 I am sure you will get comments from the public that it

1 needs to be brought up-to-date.

2 Why don't I stop for a few minutes.

3 MR. HINZE: I have a couple of other items. On
4 page 19 -- it's 2.1.1.3, future variation in geologic
5 process. I would suggest that your people look at the word
6 potential there and consider another word that probably
7 would be more appropriate. Perhaps probability. Potential
8 is not a very well defined term.

9 I also have another question that reflects my
10 ignorance about license and so forth. That is, have you
11 given any consideration to asking the applicant to state who
12 has prepared this document, the technical background of the
13 people that have written the various sections; have you
14 considered that as a useful item? I know that as I looked
15 at the SCP that it was much more intelligible to me when I
16 knew the background of the people that were writing the
17 various elements of that.

18 MR. HOLONICH: Based on my experience in reactor
19 licensing, historically we viewed the document as the
20 applicant's document. Through Q/A audits we would look at
21 people's qualifications and what not, but we have never
22 asked for them to identify the people or discuss their
23 background.

24 MR. HINZE: Or the contractors?

25 MR. HOLONICH: We do ask them to identify the

1 contractors involved in the program.

2 MR. HINZE: That is helpful. Is that in here?

3 MR. HOLONICH: It's in the general information.

4 MR. HINZE: Thank you. I missed that, I am sure.

5 MR. MOELLER: To follow up on that comment, I had
6 a previously life with the ACRS. During that time I was
7 always concerned when applicants came in and appeared.
8 Frequently if it was a BWR that they were planning -- so
9 that I only have to name one company -- General Electric.
10 This is hypothetical. I am not citing GE as an example.
11 They would bring the PDQ utility -- would come in and appear
12 before the ACRS to show that they were qualified to operate
13 this BWR.

14 The people who would answer all the Committee's
15 questions were General Electric experts, you know. I
16 frequently had the uncomfortable feeling that the team that
17 was licensing and gaining approval was totally separate from
18 the real world people who were going to operate this --
19 build, construct, design and operate this facility.

20 Let's be sure that does not happen here; that some
21 real skillful group doesn't come in and prove that they have
22 a good applicant but the poor people at Yucca Mountain never
23 read it and never heard of it.

24 MR. HINZE: Tightening up of that would be very
25 useful.

1 MR. MOELLER: Right.

2 MR. HINZE: Would it be worthwhile if our marked
3 up copies might be made available? I don't know whether
4 that is appropriate at this stage or not.

5 MR. MOELLER: Sure, okay.

6 MR. LINEHAN: It would be helpful to us.

7 MR. MOELLER: All right. Paul, do you have
8 anything more?

9 MR. POMEROY: No.

10 MR. HINZE: I guess I would like to say that you
11 guys have done a tremendous -- you people have done a
12 tremendous job. I really think that it is a task that must
13 be difficult to keep on track and keep the post-closure and
14 pre-closure separate from each other and so forth and all
15 the disciplines. Our comments should be taken in a very
16 positive attitude, and I am sure that's the way they are
17 taken.

18 MR. MOELLER: Right. I am glad Bill said that,
19 because when you read this and you hear this -- read the
20 transcript you will think the Committee was just appalled at
21 what was here. It is not that at all. It's a tremendous
22 amount of work. You are 90 percent there or more, and we
23 are trying to help you make that last ten percent.

24 With that, let's thank our people for their time
25 and for the interactions. We will declare a 15 minute

1 recess.

2 [Whereupon, at 10:18 a.m., the transcribed portion
3 of the Commission meeting concluded.]

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REPORTER'S CERTIFICATE

This is to certify that the attached proceedings before the United States Nuclear Regulatory Commission

in the matter of:

NAME OF PROCEEDING: 24Th ACNW Meeting

DOCKET NUMBER:

PLACE OF PROCEEDING: Bethesda, Maryland

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

Mary C. Larkin

Official Reporter
Ann Riley & Associates, Ltd.

**PRESENTATION TO
THE ADVISORY COMMITTEE ON NUCLEAR WASTE**

**THE PUBLIC COMMENT DRAFT
FORMAT AND CONTENT FOR THE LICENSE APPLICATION FOR
THE HIGH-LEVEL WASTE REPOSITORY (FCRG)**

SEPTEMBER 20, 1990

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REGULATORY PRODUCTS

RULEMAKINGS:

- HAVE THE FORCE OF LAW

REGULATORY GUIDES AND TECHNICAL POSITIONS:

- NON MANDATORY

REGULATORY GUIDE DEVELOPMENT PROCESS

- PREPARATION OF DRAFT
- STAFF REVIEW
- LEGAL REVIEW BY OGC
- EDITORIAL REVIEW BY RES EDITORS
- ACNW REVIEW
- ISSUANCE BY OFFICE FOR PUBLIC COMMENTS
(NORMALLY, NO COMMISSION-LEVEL REVIEW)
- PUBLIC COMMENTS
- FINAL GUIDE DEVELOPMENT

**STANDARD FCRGS ARE ISSUED FOR MAJOR LICENSING
SUBMITTALS**

HLW GEOLOGIC REPOSITORY EXISTING REGULATORY GUIDES:

- STANDARD FCRG OF SITE CHARACTERIZATION PROGRAM**
- ISSUED 1987**

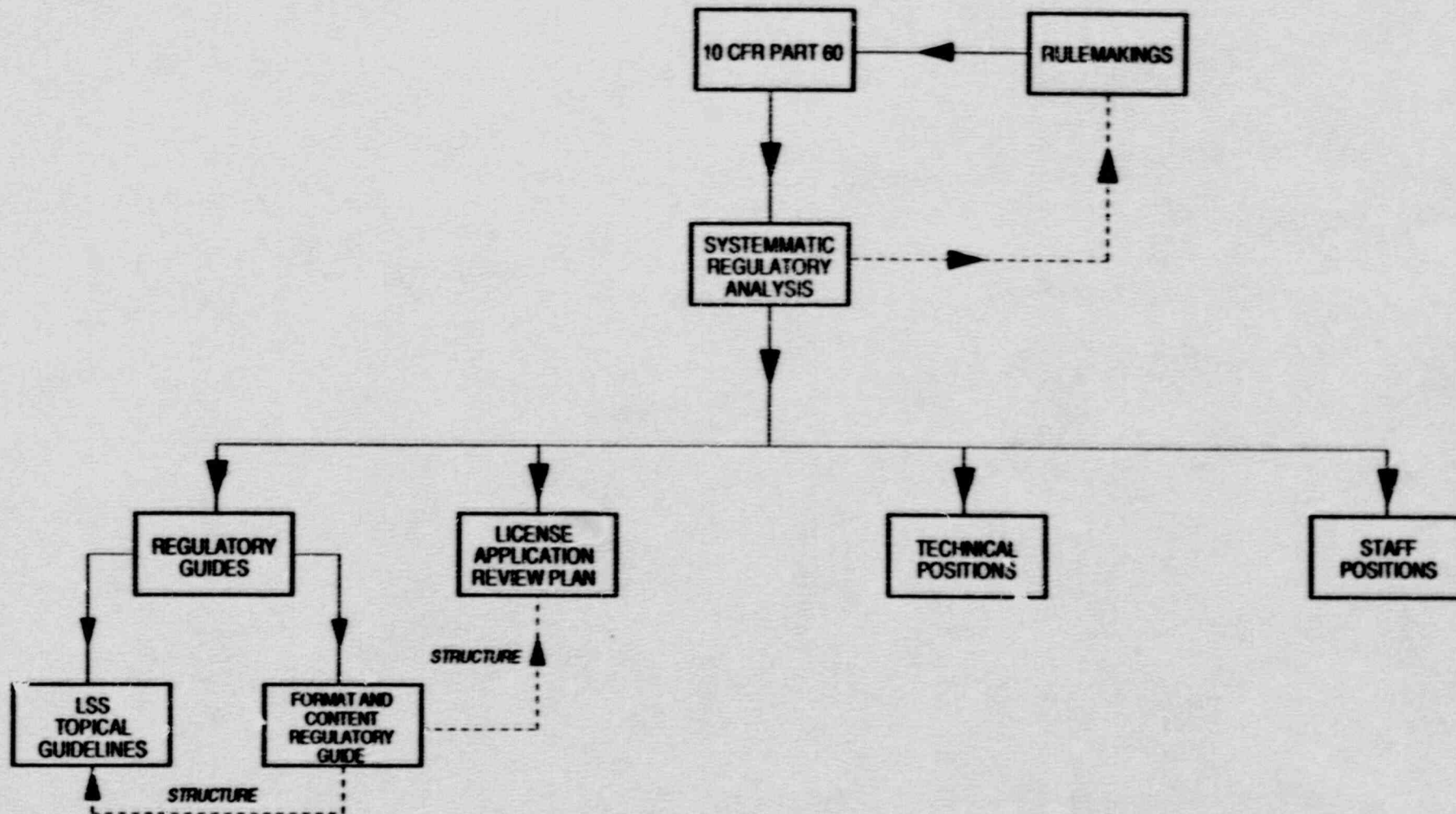
OVERVIEW

- I. NRC'S OVERALL REGULATORY PROGRAM
- II. PURPOSE OF THE FCRG
- III. FCRG DEVELOPMENT SCHEDULE
- IV. FCRG DEVELOPMENT PROCESS
- V. THE REPOSITORY SYSTEMS-BASED FORMAT
- VI. CONTENT OF THE FCRG
- VII. CONCLUSIONS

PURPOSE OF THE FCRG:

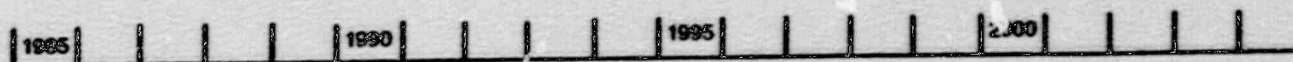
**TO ASSIST THE U.S. DEPARTMENT OF ENERGY (DOE) BY
INDICATING THE STRUCTURE AND TYPE OF INFORMATION
TO BE INCLUDED IN THE LICENSE APPLICATION**

NRC'S OVERALL REGULATORY PROGRAM



SCHEDULES FOR DOE'S LICENSE APPLICATION AND NRC'S FCRG DEVELOPMENT

CALENDAR
YEAR



DOE

BEGIN LICENSE
APPLICATION DESIGN

SUBMIT LICENSE
APPLICATION



ISSUE DRAFT FCRG

ISSUE FINAL FCRG

NRC

DEVELOPMENT OF THE FCRG

DIVISION OF HIGH-LEVEL WASTE MANAGEMENT (HLWM)

- FCRG

- **REPRESENTATIVE FROM EACH HLWM SECTION**
- **OFFICE OF GENERAL COUNSEL**
- **INTERACTIVE DEVELOPMENT**

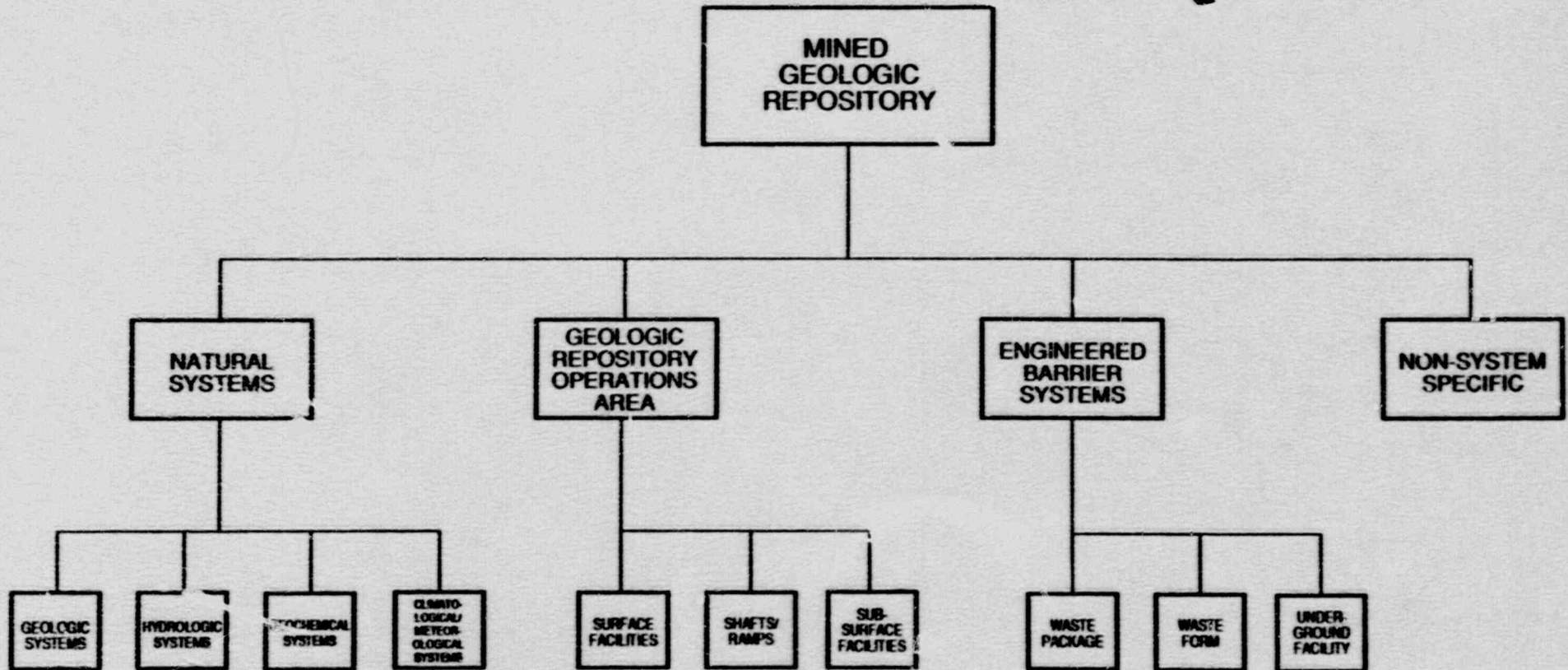
OFFICE OF NUCLEAR REGULATORY RESEARCH

- REVIEW OF COMPLETED GUIDE

THE REPOSITORY SYSTEMS-BASED FORMAT

- REFLECTS THE REPOSITORY SYSTEM AS DEFINED IN 10 CFR PART 60
- CONSISTENT WITH DOE'S APPROACH TO DEFINING THE REPOSITORY BLOCK
- CONSISTENT WITH THE ANALYSIS OF 10 CFR PART 60 BEING DONE BY THE CENTER FOR NUCLEAR WASTE REGULATORY ANALYSES
- LOGICAL, WITH LITTLE NEED FOR REPETITION
- VIEWS THE REPOSITORY FROM A TOTAL SYSTEM PERSPECTIVE

THE REPOSITORY SYSTEMS-BASED APPROACH



CONTENT OF THE FCRG

- INTRODUCTION
- INFORMATION REQUIREMENTS FOR THE LICENSE APPLICATION (LA)
 - GENERAL INFORMATION (CHAPTER 1)
 - SAFETY ANALYSIS REPORT (CHAPTERS 2-11)
 - SAFETY ANALYSIS REPORT GENERAL INFORMATION (CHAPTER 2)
 - REPOSITORY SYSTEMS (CHAPTERS 3-5)
 - OVERALL SYSTEM PERFORMANCE (CHAPTER 6)
 - GENERIC/NONSYSTEM-SPECIFIC INFORMATION (CHAPTERS 7-11)
 - APPENDIX A (CROSS WALK FROM 10 CFR PART 60 TO THE FCRG)

CONCLUSIONS

THE STAFF IS CONFIDENT THAT THE FCRG ADDRESSES ALL LA INFORMATION REQUIREMENTS IN 10 CFR PART 60. THIS IS DOCUMENTED IN THE CROSSWALK IN APPENDIX A OF THE FCRG.

THE DRAFT GUIDE CAN BE MODIFIED BASED ON COMMENTS FROM DOE/PUBLIC OR INFORMATION REQUIREMENTS RESULTING FROM THE CNWRA ANALYSIS AND THE DEVELOPMENT OF THE LA REVIEW PLAN.

NOTICE OF AVAILABILITY TO BE PUBLISHED IN THE FEDERAL REGISTER DURING NOVEMBER 1990.