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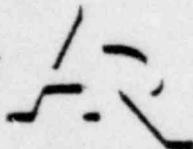
COMMISSION MEETING

In the Matter of: PUBLIC MEETING

DISCUSSION ON SECY-81-20 POLICY ON
PROCEEDING WITH PENDING CONSTRUCTION
PERMIT AND MANUFACTURING LICENSE
APPLICATIONS

DATE: February 12, 1981 PAGES: 1 - 115
AT: Washington, D. C.



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1 UNITED STATES OF AMERICA
2 NUCLEAR REGULATORY COMMISSION
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3 Public Meeting
4 DISCUSSION OF SECY-81-20
5 POLICY ON PROCEEDING WITH PENDING CONSTRUCTION
6 PERMIT & MANUFACTURING LICENSE APPLICATIONS
- - -

6 Nuclear Regulatory Commission,
7 Commissioners' Conference Room,
8 1717 H Street, Northwest,
9 Washington, D.C.

8 Thursday, 12 February 1981

9 The meeting of the Commissioners was convened,
10 pursuant to notice, at 2:05 p.m.

11 BEFORE:

- 12 JOHN F. AHEARNE, Chairman
- 13 VICTOR GILINSKY, Commissioner
- 14 PETER A. BRADFORD, Commissioner
- 15 JOSEPH M. HENDRIE, Commissioner

16 ALSO PRESENT:

- 17 Samuel J. Chilk, Leonard Bickwit, Marty Malsch,
- 18 Edward Hanrahan, William Dircks, Harold Denton, Robert
- 19 Purple, Joe Scinto, Robert Bernero, Darrell G. Eisenhut,
- 20 Denny Ross, and Ed Case.

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DISCLAIMER

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P R O C E E D I N G S

(2:05 p.m.)

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2
3 CHAIRMAN AHEARNE: This afternoon the Commission
4 meets to continue a discussion which we have had at several
5 previous meetings, the last one being on January 27th, I
6 guess -- no, we also had one on January 13th.

7 The question is: What are the requirements that,
8 as a result of the Three Mile Island accident, the
9 Commission will impose on those plants for which we already
10 have construction permits pending, or a manufacturing
11 license?

12 Amongst the other actions that the Commission had
13 to put aside as the Staff and ourselves attempted to
14 understand and then assimilate the results of the Three Mile
15 Island accident were actions on these construction permits
16 and manufacturing license.

17 There are a number of items that were taken --
18 actions that were taken in the meantime on operating
19 plants. There were many actions taken to put in place
20 rules, proposed rules, or policy statements with regard to
21 plants in the operating license process, and we now have
22 turned both the Staff and the Boards back on with respect to
23 plants that had applied for operating licenses.

24 We have not yet taken that type action with
25 respect to the plants or the Boards who are awaiting

1 Commission position with respect to Three Mile Island for
2 plants that were in this construction permit application
3 stage.

4 The Staff back in January came to us and presented
5 a proposal which was imbedded in one of the appendices to
6 the SECY paper. Namely, it was a NUREG document 0718, or a
7 draft NUREG document.

8 At that time, the Staff proposed that we not
9 address approval of the proposal, but rather they wished an
10 endorsement of the basic concept; but pointed out that they
11 had been requested by both one of the licensees as well as
12 the ACRS to allow further discussion, and then they were
13 going to go back to the ACRS at the beginning of this month.

14 The Staff has now done that and has come back to
15 us with a SECY-81-20A and requested a proposal that they
16 would like to have us approve for final publication, the
17 proposed final rule for these pending construction
18 permit/manufacturing license applications.

19 There has been a lot of interest both inside and
20 outside the Commission on what and when we would take this--
21 what action we would take, and when we would take it, and
22 perhaps this afternoon we can see a resolution of that.

23 William?

24 MR. DIRCKS: Bob Purple will present the briefing
25 of the proposal. I might just like to emphasize that it's

1 our recommendation that the Commission accept the proposal
2 and move to a final rule on the document. I think it
3 beneficial to all parties' standpoint.

4 Bob -- unless you, Harold, want to say anything?

5 MR. DENTON: No.

6 MR. DIRCKS: Okay, Bob, why don't you --

7 MR. PURPLE: Okay, would you put on the first
8 slide, please?

9 (Slide.)

10 This just shows the topics that I'll cover in my
11 presentation. I will talk first about the form, shape, and
12 present status of the Final Rule as we propose it; design
13 changes; industry studies; degraded core requirements; and
14 the fifth item is one you requested following a meeting last
15 week, I guess --

16 CHAIRMAN AHEARNE: Right.

17 MR. PURPLE: -- to get a status report on the
18 interim rulemaking for degraded core, or hydrogen control.
19 Jim Norberg of Standards Development will speak to that one
20 as the last item.

21 Slide number one, please?

22 (Slide.)

23 The final rule as it is in SECY-80-20A is, first
24 of all, characterized as being an added paragraph -- in
25 fact, just one sentence -- to Section 50.34.

1 CHAIRMAN AHEARNE: That is really distilling it
2 out.

3 (Laughter.)

4 MR. PURPLE: And in trying to decide what form and
5 shape of what this Rule should look like, we consulted with
6 ELD, we consulted with Rules and Records' people, and
7 consulted with the Federal Register people, and considered a
8 number of options:

9 We would have taken the NUREG-0718 and, verbatim,
10 documented it right into the Regulations. That's one option.

11 Another option is one of a formal --

12 CHAIRMAN AHEARNE: That's the "Malsch option."

13 (Laughter.)

14 MR. PURPLE: Another one is a formal
15 incorporation-by-reference, which has certain legal
16 connotations that I won't try to describe, but if we need to
17 we have people here who can.

18 Another one is, simply by reference

19 A fourth option we considered is putting the
20 entire NUREG in as an appendix to Part 50.

21 It turns out that because of the way in which the
22 language of 0718 is written, being directive and
23 proscriptive in nature, the Federal Register people had
24 difficulties with accepting the idea of either a formal
25 incorporation by reference, or as an appendix to any part in

1 the Regulations.

2 The method we chose -- which is what is in the
3 SECY paper -- is one that simply refers to the document and
4 requires that its requirements be met. The principal issue,
5 the legal issue -- and I probably should defer this, but
6 I'll give you my understanding of it -- is one that deals
7 with the Federal Register people being concerned that due
8 notice has been given to the parties that are affected by
9 the Rule.

10 CHAIRMAN AHEARNE: Why don't we defer to the
11 lawyer, Bob.

12 MR. PURPLE: Okay. Fine. I was just going to
13 summarize --

14 CHAIRMAN AHEARNE: Whichever lawyer is most
15 familiar with the issue.

16 MR. SCINTO: All of us are familiar with the
17 problem of assuring that whatever regulated party has
18 appropriate notice of whatever the regulatory requirements
19 are. That's --

20 CHAIRMAN AHEARNE: And what is the issue with the
21 wording of "incorporation by reference"?

22 MR. SCINTO: Well, "incorporation by reference" is
23 always something somewhat difficult to do. This is a draft
24 of a rule -- it was one way of doing it. We have not had an
25 opportunity to explore what the ramifications are, and

1 whether indeed this is the correct way to do it and the way
2 we would recommend. This is "a draft" right now for
3 discussion, but we have not had an opportunity to complete
4 our work of assuring that the regulation we propose is
5 correct and legally soundly based. We haven't finished our
6 work.

7 CHAIRMAN AHEARNE: So ELD has not yet reached a
8 conclusion that this statement as written is an appropriate
9 or adequate vehicle?

10 MR. SCINTO: This is not ELD's recommendation for
11 a final rule.

12 CHAIRMAN AHEARNE: How would you characterize it?

13 MR. SCINTO: I would characterize it as a draft of
14 one of a rule that looks like --

15 CHAIRMAN AHEARNE: I see.

16 MR. SCINTO: One of the options that may be an
17 acceptable option. It certainly has a lot of advantages if
18 it is legally acceptable for being crisp, concise, saving a
19 lot of space in the Federal Register and the regulations.

20 (Laughter.)

21 CHAIRMAN AHEARNE: I see.

22 MR. SCINTO: But we do have to look --

23 CHAIRMAN AHEARNE: And your principal concern is
24 the question of "due notice"?

25 MR. SCINTO: It is the correct description of the

1 regulation and the question of "incorporation by
2 reference." Effectively, the question of "incorporation by
3 reference" distills to a notice, a due -- Is it correctly
4 described for a mandatory requirement?

5 CHAIRMAN AHEARNE: But that, Joe, if I could go
6 one step further: Are you saying that ELD is not sure
7 whether 0718 is written in such a way that it could be
8 incorporated by reference? Or are you saying that you also
9 are not even sure whether "incorporation by reference" is an
10 adequate way of handling it?

11 MR. SCINTO: There are very few of our regulations
12 which incorporate by reference a different document. We do
13 have some. We do incorporate by reference the ASME Code,
14 for example.

15 So the recommendation for an incorporation by
16 reference of a NUREG would take -- is unusual, and would
17 take a little extra care in assuring that it is the legally
18 appropriate course of action.

19 MR. PURPLE: I would just point out that in the
20 draft rule, on page 2 of that draft, the section on "Service
21 of the Rule on Affected Parties," was a part of this package
22 in this approach that we believe would allow you to just
23 reference NUREG-0718.

24 MR. DENTON: I don't think I could recommend this
25 approach as the "normal approach" to rulemaking, but this is

1 an unusual effort to attach the Action Plan requirements to
2 some narrow class of applications before the Commission, and
3 I would just like to make two points about it:

4 One is, the NUREG that you have would not be the
5 document that would be referenced. We would make changes in
6 that document based on today's discussion in the final rule
7 that you adopt, so that whatever the NUREG that we reference
8 is has in it exactly what the Commission's intent is.

9 So that had what our intent was as of a month ago,
10 and it will require revision. So whatever we reference
11 would be fully up-to-date with what the Commission adopts,
12 and certainly there must be means whereby we could serve
13 this rule and its attachments on all the parties in this
14 narrow proceeding of the six, seven applications before us.

15 So I didn't see that serving on the parties was an
16 insuperable affair. It does require that we word it
17 carefully and make all the proper references, it seems to
18 me.

19 COMMISSIONER BRADFORD: Now, let's see. Does this
20 save time above and beyond an approach that permitted these
21 issues to be litigated up and down, conceivably granted LWAs
22 in those cases in which the continuing construction wouldn't
23 prejudice the issues still being litigated?

24 CHAIRMAN AHEARNE: I'm not sure I understand. Are
25 you saying that we not put out a rule?

1 COMMISSIONER BRADFORD: Well, whether we put it
2 out as a rule or not, the declaration of -- the finding of
3 necessity and sufficiency in here, I take it, would have the
4 effect of saying that these issues can't be litigated except
5 in terms of compliance with the rule; and what I'm asking is
6 whether there really is any savings in time associated with
7 going that route?

8 I can see why, though, I disagreed with it in the
9 OL cases. One was up against this proposition that if the
10 hearing goes on and the plant isn't turned on, the plant is
11 going to stand idle. The construction situation is a little
12 different, in that we can always permit construction to
13 commence or continue under an LWA as long as the issues
14 being discussed are not issues that are prejudiced by the
15 continuing construction. And that, instinctively, is my
16 preference over adopting a rule that would bar the raising
17 of issues.

18 CHAIRMAN AHEARNE: I guess, just for my
19 clarification, it sounds like you're saying you're raising
20 an issue that would be: Why have any specific rule in
21 place, because any specific rule --

22 COMMISSIONER BRADFORD: Yes --

23 CHAIRMAN AHEARNE: -- will bar, I mean, that is
24 the end result of having a rule.

25 COMMISSIONER BRADFORD: That's probably right. If

1 the only purpose in having the rule is to foreclose the
2 hearing of the issues, then I'm at least curious as to
3 whether this other approach doesn't permit the hearing of
4 the issues, while at the same time saving just about as much
5 time as circumscribing hearings would.

6 CHAIRMAN AHEARNE: But that is the general
7 question, isn't it, of whether time is saved by having a
8 rule in place -- not just this rule, --

9 COMMISSIONER BRADFORD: Right.

10 CHAIRMAN AHEARNE: -- but having in general a rule
11 in place that ends discussion on a set of issues?

12 COMMISSIONER BRADFORD: That's right. Well,
13 that's a somewhat different question. That is, there's
14 always some savings in resources by simply deciding the
15 issue through a rule rather than permitting it to be
16 litigated -- save staff resources, save witnesses' time--

17 CHAIRMAN AHEARNE: Yes, that's what I'm talking
18 about. That's why I wasn't sure --

19 COMMISSIONER BRADFORD: Yes, that's a different
20 question from whether the ability of these plants to go
21 ahead in the construction process is expedited any more
22 through a rule than it would be through an LWA procedure.

23 CHAIRMAN AHEARNE: I see. Well, I guess that's a
24 question for either Harold or Joe.

25 MR. SCINTO: Would you like me to answer that?

1 What you're really talking about is predicting whether any
2 particular issues will in fact be raised; whether they'll be
3 raised in a fashion which is -- which makes it -- which
4 needs a lot of resources to respond to, and that's hard to
5 say. You know, looking at the six plants that are involved,
6 a couple of them have had, in their past issues, the issues
7 that have gone on in the past.

8 Judging from that experience, a number of
9 contentions have been raised. They have been raised in a
10 fashion which does in fact take resources and some time to
11 deal with. They have been actively dealt with. So you have
12 active -- if they continue to be that kind of a proceeding,
13 having a rule which identifies a set of actions that ought
14 to be -- that are identified must be carried out, and having
15 a fairly defined, precise question involved: Do they, or do
16 they not correspond to these sets of requirements?

17 With an opportunity -- this is an opportunity to
18 raise the question of whether these are sufficient through
19 the 2.75(a) challenge technique, but it limits that
20 question. So indeed, if you have those kind of hearings, to
21 have a rule to have what you want identified as a rule, you
22 do limit the question. You do limit the way in which the
23 question phrases. Does it take less time? It's hard to say
24 whether on a time question it does. It changes the nature
25 of the hearing. The hearing becomes much more precise. The

1 question is much more focused. The question is much more
2 capable of a fairly clear, identified response to the
3 question.

4 COMMISSIONER BRADFORD: Joe --

5 MR. SCINTO: Leaving it with the "necessity and
6 sufficiency" question available for litigation is somewhat
7 less -- it's substantially less focused.

8 COMMISSIONER BRADFORD: Let me ask the question
9 another way. If the Commission didn't implement these
10 conditions as a rule and said instead that these, we
11 thought, were the conditions, that they should be the basis
12 for the Staff position in these cases, and that Boards could
13 with our concurrence resume issuing LWAs in situations in
14 which LWAs were justified, can you offhand frame a
15 contention based on these conditions that you think would
16 preclude the issuance of an LWA?

17 (Pause.)

18 MR. SCINTO: The LWA-1s or 2s? The LWA-1s are the
19 sites.

20 (Laughter.)

21 MR. SCINTO: And the foundation mat probably
22 doesn't raise. But any LWA-2 issue, sure. As soon as you
23 touch "foundation mat," any contention that connects it to
24 the foundation mat, for example, has to be determined before
25 you deal with an LWA-2. It allows you to go into some

1 subsoil work.

2 COMMISSIONER BRADFORD: Now only one of these
3 plants currently has an LWA-1, right?

4 MR. DENTON: That's correct.

5 MR. SCINTO: I believe that's true.

6 COMMISSIONER BRADFORD: So that if you couldn't
7 frame one that precluded LWA-1s, is it --

8 MR. SCINTO: I hadn't thought about --

9 COMMISSIONER BRADFORD: You haven't done it yet,
10 anyway.

11 MR. SCINTO: I could clearly think of ones that
12 would preclude LWA-2s.

13 COMMISSIONER BRADFORD: Okay.

14 MR. PURPLE: There is a practical consideration, I
15 think, aside from the hearing process that might be an
16 impact if what our requirements are is less certain than
17 they would be in a rule: Recognizing that many of these
18 pending CPs are far along in design, the sooner they know
19 what our requirements are, the soon they're able to finally
20 complete 100 percent of their design. If they face great
21 uncertainty as to what our requirements are going to be,
22 that could be a further delay in getting the plants on the
23 line, irrespective of the hearing process.

24 CHAIRMAN AHEARNE: And I'll make the kind of
25 statement I made before, and have lost: That is, that I

1 think it is our responsibility to try to make a decision as
2 to what we think is required.

3 COMMISSIONER GILINSKY: What was that? You made a
4 statement and lost?

5 CHAIRMAN AHEARNE: Sure. It was a policy
6 statement on hearing license requirements.

7 COMMISSIONER GILINSKY: We indicated what is
8 required.

9 CHAIRMAN AHEARNE: Len, you also wanted to address
10 this question of incorporation by reference, I thought?

11 MR. BICKWIT: Yes. Apart from whether the
12 Commission ought to go by rule or by some other legal
13 mechanism, if it goes by rule I would have problems with the
14 way it is done in this particular paper.

15 The kinds of incorporation, one, are confusing in
16 my view; and secondly, in some areas may be illegal. I
17 think the second consideration turns on whether you are
18 incorporating documents which exist; or, if you incorporate
19 documents -- if you are incorporating documents that don't
20 yet exist, you've got a legal problem.

21 MR. PURPLE: That wouldn't be the case here.

22 MR. BICKWIT: If you're incorporating documents
23 that exist, if it's understood --

24 CHAIRMAN AHEARNE: It's a single document, isn't
25 it?

1 MR. BICKWIT: What?

2 CHAIRMAN AHEARNE: Isn't it a single document?

3 MR. PURPLE: It will be a single document that
4 itself has references in it. I mean, in other words, if you
5 look back at 0718 you'll find that --

6 MR. BICKWIT: To other documents.

7 (Laughter.)

8 MR. PURPLE: That's why in the draft rule you find
9 the reference to the availability of those documents.

10 MR. DENTON: Well, it seems to me, though, that
11 maybe we should get to the substance of it; and if there is
12 agreement on that, surely we can find a way to make it
13 effective.

14 (Laughter.)

15 MR. SCINTO: That I'm certain of. That, yes. The
16 rule that will be proposed will be a legally acceptable rule.

17 CHAIRMAN AHEARNE: We'll get to that.

18 Len, go ahead.

19 MR. BICKWIT: To finish my thought: If you're
20 incorporating documents which do exist and it is understood
21 that those documents themselves can only be changed by a
22 rulemaking, then I've got no legal problems.

23 MR. PURPLE: That's exactly the way we were
24 approaching it.

25 MR. BICKWIT: All right, that --

1 CHAIRMAN AHEARNE: That would take care of the
2 legal problem.

3 MR. BICKWIT: That would take care of the legal
4 problems. Unless I'm missing something, it would not take
5 care of the confusion that I have in trying to trace my way
6 through what is in fact required by the rule.

7 CHAIRMAN AHEARNE: All right, that may -- it might
8 be appropriate, then, to move on to the substance. Go
9 ahead.

10 MR. PURPLE: One diversion before substance --
11 well, this is "substance", I don't mean to demean it --
12 another item that we were requested to further discuss with
13 the Commission, and I have included it in the paper as well
14 as on the agenda are: How do we modify the CP process such
15 that the NRC can have some degree of control over design
16 changes once the CP has been issued?

17 In our Staff paper, we suggest that -- remind the
18 Commission that there is an ongoing rulemaking effort for
19 which there is an advance notice out on the street.
20 Comments were due in on the 9th of February. I guess you
21 had asked, in that case, that the Staff come down, if
22 possible, within 60 days with a proposed rule.

23 It looks like that rulemaking process can come to
24 grips with that question in a time frame that might well
25 have it in place before we're actually ready to do the next

1 CP. That's one argument.

2 The other one would be: If it's not in place by
3 that time, we believe it would be not a difficult matter to
4 articulate what these requirements are as CP conditions at
5 the time we're about to issue the CP. So our recommendation
6 is that we defer further discussion of that, now.

7 COMMISSIONER BRADFORD: Well, that last point I
8 guess is the important one. You contemplate, if for some
9 reason that other proceeding had not been wrapped up, you
10 would contemplate achieving the same effect in licenses
11 issued between now and the time we finalized the other
12 proceeding?

13 MR. PURPLE: We would certainly be back here to
14 discuss it with you. And our thought is that it is a thing
15 that can be --

16 CHAIRMAN AHEARNE: It would be up to the
17 Commission as to whether it would be done.

18 MR. PURPLE: It seems to us it's the kind of thing
19 that can be put in the CP conditions.

20 MR. DENTON: In fact, I think what we contemplate
21 is that even if -- once this rule were, or some other form
22 of it were made effective and an individual case were
23 reviewed against it and we had the ACRS comments and the
24 Hearing Board had ruled, we would come back to the
25 Commission for the final approval, issue this as we do OLS,

1 and at that time the Commission would have an opportunity to
2 suggest what other limitations there should be in the
3 license.

4 MR. PURPLE: Okay. Now between our January
5 meeting and this meeting, we have had a number of sessions
6 with the industry and the ACRS. I thought it might be
7 useful for the Commission to hear a very, very abbreviated
8 version of the many-houred sessions we've had with these
9 people, focusing primarily on the vu-graphs I'm going to
10 show following, primarily on issues dealing with containment
11 capability in terms of strength. And I'll focus a little
12 bit more in a few more minutes on the Houston Lighting and
13 Power Company studies since that is the specific one that
14 the ACRS has recommended we wait until we hear, and I
15 thought it might be useful if you heard at least the bottom
16 line of these various studies.

17 The next vu-graph, please?

18 (Slide.)

19 Not unexpectedly, the large dry containments
20 turned out not to be an item that has any serious concern
21 with respect to hydrogen control -- just noting on the
22 vu-graph there that the stresses are below yield with the 75
23 percent metal/water reaction; and if they put in hydrogen
24 igniters, they stay well below 80 psig and of course below
25 yield.

1 You're see later on that we're proposing that even
2 the large lies be required to install hydrogen igniters. So
3 there appears to be a very wide margin here for any concern
4 over hydrogen. That slide, by the way --

5 MR. DENTON: Just let me amplify, Bob: The intent
6 being that if the concentration in the containment was
7 within a factor of two of the detonable range, some control
8 measure should be taken.

9 I think in this particular containment it was
10 about 16 percent or so, wasn't it, with 100 percent
11 metal/water reaction?

12 MR. PURPLE: Yes. It was above --

13 MR. DENTON: It was within a -- It wasn't in the
14 detonable range, but it was closer than 50 percent there.

15 MR. PURPLE: That slide, by the way, and the one
16 that follows, are the actual ones used by the utility
17 involved. The Staff is really not endorsing or
18 non-endorsing all these figures, other than they appear to
19 be reasonable.

20 The next slide, please.

21 (Slide.)

22 The only point I would focus your attention on, on
23 the right-hand side under the "Potential" column -- and by
24 "potential," it means "with strengthening of the
25 containment-- you'll see in parentheses opposite "ASME

1 Service Level C" "55 psig" --

2 CHAIRMAN AHEARNE: Outputs we now all know.

3 MR. PURPLE: Beg your pardon? I'm sorry. Okay.

4 CHAIRMAN AHEARNE: It had to do with this
5 morning's discussion.

6 MR. PURPLE: The main point here being: Note that
7 there is a potential with what appeared to be reasonable
8 modifications to the present design of the OPS facility to
9 get up in the range that's above the 45 psig, which you have
10 either read or I'll tell you shortly, is the level which we
11 picked as a minimum floor level.

12 COMMISSIONER HENDRIE: By the way, the numbers in
13 parentheses are what?

14 MR. PURPLE: Those are the levels at which they
15 could achieve, without exceeding ASME Service Level C
16 stresses, with modifications to their facility -- increasing
17 the thickness of the walls, and changing the shape of the
18 head.

19 COMMISSIONER GILINSKY: And without parentheses is
20 what? They wouldn't change --

21 MR. PURPLE: Is without changing the shape of the
22 head, I believe.

23 COMMISSIONER GILINSKY: And what does "functional
24 capability" mean?

25 MR. PURPLE: That's the point well beyond yield at

1 which you actually have gone beyond plastic strain and
2 you've lost integrity of the containment.

3 COMMISSIONER GILINSKY: That's where you think the
4 containment will fail?

5 MR. PURPLE: That's right. Well, that's the
6 definition of "functional capability." That's an OPS
7 figure. It appeared reasonable to our structural folks, but
8 that by definition is the one that says you've lost
9 functional capability at pressures that high.

10 COMMISSIONER GILINSKY: It's a limit of functional
11 capability.

12 COMMISSIONER HENDRIE: I hesitate to even discuss
13 Level C, if you've discussed it indepth this morning, but
14 that carries with it a whole set of assumptions, including
15 that materials are just to design limits, and so forth. So
16 our structural engineers assure us that if something can
17 withstand a certain pressure with all the calculations being
18 done at ASME Level C type way, it has margin above that, and
19 that 80 psi is a number the Staff would agree is roughly the
20 functional capability of a plant that has the otherwise
21 Level C design capability.

22 CHAIRMAN AHEARNE: But does the "80" track with,
23 let's say for example, the right-hand column? Does the 80
24 track with the 30? Or the 80 with the 55?

25 MR. PURPLE: It's my understanding it tracks with

1 the 30.

2 MR. DENTON: Well, let's see if anyone would like
3 to amplify that?

4 (Pause.)

5 COMMISSIONER HENDRIE: Well, that's about right.
6 It's a factor of three up from the design level, a little
7 more.

8 MR. VOLMER: I think the 55 includes certain
9 design changes, thickening up the walls of the containment,
10 and --

11 COMMISSIONER HENDRIE: But mainly the head.

12 MR. DENTON: But mainly the head.

13 MR. VOLMER: And head, which --

14 COMMISSIONER HENDRIE: Going to a hemispherical
15 head.

16 MR. VOLMER: Yes. So I think the 80 -- the
17 Service Level C would be in the 55 for Service Level C, and
18 the 80 for the functional capability would go together;
19 because Service Level C would be a point at which yielding
20 you would be on the point of yielding in a local sense, and
21 you would be using the minimum specified Code allowables for
22 the strength of the materials. So --

23 COMMISSIONER GILINSKY: Now "80" should therefore
24 be in parentheses? Is that right?

25 MR. VOLMER: Yes.

1 (Slide.)

2 MR. PURPLE: The next vu-graph would show some
3 results of a GE study on their BWR6/MARK III standard
4 plant. They caution that the results they achieve here are
5 only for their standard plant and should not necessarily be
6 related to the existing -- the other three pending CPs.

7 CHAIRMAN AHEARNE: I guess before you -- I'm still
8 trying to absorb that last point. Let me make sure I have
9 understood correctly. You don't have to go back to the
10 slide.

11 MR. PURPLE: Okay.

12 CHAIRMAN AHEARNE: But the functional capability
13 numbers that you're showing are, then, if you were to accept
14 these numbers -- I recognize they're not your numbers to
15 start with -- but if you were to accept them, the functional
16 capability numbers are not for the unmodified plant. Is
17 that correct?

18 MR. DENTON: That's right, they --

19 COMMISSIONER GILINSKY: They are for the modified
20 plant.

21 MR. VOLMER: Well, they are for the modified
22 plant, and they would include: local yielding --

23 CHAIRMAN AHEARNE: I understand what that would
24 include, I'm just --

25 MR. DENTON: They are for the modified.

1 MR. VOLMER: Actual material strengths, and so on.

2 COMMISSIONER GILINSKY: Then they should be in
3 parentheses.

4 MR. VOLMER: Yes.

5 MR. DENTON: Yes.

6 CHAIRMAN AHEARNE: Okay.

7 MR. PURPLE: GE's results are similar to the OPS.
8 Their present design being 15, and they say "with
9 modifications," which includes thickening the steel on the
10 shell, and going to a hemispherical head, they can get up to
11 a design level of 45 psig.

12 Service Level C, without doing anything they would
13 be at 41 psig; and with the same kind of modifications,
14 could get up to 80.

15 They did caution in their presentation to us that
16 the kind of modifications they spoke of they believe are
17 practical only for a plant that's in its initial design
18 stage when you're first thinking of how to build one.

19 We heard at some length from GE

20 CHAIRMAN AHEARNE: Wait. Let's see if I
21 understand that.

22 COMMISSIONER GILINSKY: I don't see it. Does that
23 mean that it does not apply to the plants we're talking
24 about here?

25 MR. PURPLE: It may not necessarily apply -- You

1 know, they didn't want to say these numbers would apply to
2 Allens Creek. They are only speaking of their reference,
3 their standard design, and made no effort -- We'll look at
4 what Allens Creek, for example, feels it can achieve in just
5 a few minutes.

6 COMMISSIONER GILINSKY: Well, if you're going to
7 start from scratch, you can do better than that.

8 CHAIRMAN AHEARNE: But in a large dry containment.

9 MR. PURPLE: Right.

10 GE gave a rather lengthy presentation on risk
11 reduction relative to WASH-1400. These are their numbers.
12 Their argument being that the BWR6, as is, compared to the
13 similar plant in WASH-1400 is a factor of 30 lower risk
14 potential; that by the time they put in post-TMI
15 requirements in the BWR plant they would be 200 times less
16 risky than the WASH-1400 plant.

17 Then you'll notice it says that they argue that
18 even with stronger containment, if you strengthen the
19 containment they're still at 200. There was no gain. And
20 their argument for this was that most of the scenarios that
21 they think of for hydrogen release and detonation would
22 create pressures that are up in the hundreds of psi's, well
23 beyond what they think is a practicable design level of
24 their containment.

25 In other words, they say that because of that you

1 don't really gain much by just moderate strengthening of the
2 containment. In their argument, therefore, they would say
3 it adds nothing to your --

4 COMMISSIONER GILINSKY: Strengthening of the kind
5 indicated there.

6 MR. PURPLE: Yes. I mean, short of going to -- I
7 think their number was like 400 psi was what pressures would
8 be if 100 percent metal/water reaction was released into the
9 containment, and it detonated. So they're saying that
10 that's a huge quantum jump, and it's not the kind of changes
11 we were talking about here.

12 MR. DENTON: I don't accept those arguments, and
13 offered that if they were willing to wait for a rule and to
14 allow us time to go through a risk assessment and see how
15 important it was to the manner in which you took risk into
16 account and which factors you took into account, first, we'd
17 go down that road.

18 I think they preferred that we not attempt to
19 formulate the rule based on a thorough review of these
20 assumptions, but they just wanted us to be aware of their
21 views. So I in no way want to indicate that we endorse
22 these, but it is one way of looking at the benefits, their
23 way.

24 MR. PURPLE: And then the bottom line on the chart
25 is GE's view to us that they see no basis to justify further

1 design changes to reduce risk in their standard-design plant.

2 CHAIRMAN AHEARNE: The hydrogen-control item that
3 you've got there, is that -- that's added on to this
4 post-TMI?

5 MR. PURPLE: That's correct. That's correct.
6 They would not have hydrogen control in their definition in
7 the post-TMI.

8 (Slide.)

9 We thought it might be useful, just briefly --
10 turn to the chart 4-A, please -- to perhaps explain some of
11 the thinking of GE on their safety of their plant, if you've
12 not been exposed to the MARK III/BWR6.

13 The thing to note here, as they have pointed out
14 to us, is the very hefty construction of the dry well, which
15 is the inner portion inside the concrete -- "wet well" being
16 called everything that's outside of that and inside of the
17 steel containment.

18 Their argument for why risk is so low at these
19 plants is that, given a release of hydrogen and fission
20 products from the reactor vessel itself and the reactor
21 coolant system, most scenarios, they argue, would release
22 them inside of that dry well, and before they can get
23 outside of that dry well they have to pass through that
24 suppression pool -- the water you see on the right and left
25 angular region at the bottom. Their argument is that

1 there's a considerable scrubbing of fission products out of
2 that. The hydrogen and noble gases would come through, but
3 the risk when of failure of the steel containment is much
4 reduced because everything is kept inside of the stronger
5 interior containment.

6 Given that you had hydrogen and some kind of
7 explosion or burning that created high pressures in the
8 large outer region, by a pretty wide margin it's the steel
9 containment that would fail first and not the inner
10 containment because of the relative strengths.

11 Let's go on to the next slide.

12 (Slide.)

13 Now we're at the Houston Power and Lighting --
14 Lighting and Power studies. They undertook these studies in
15 direct response to the draft NUREG 0718 that went out last
16 fall wherein for this item we're here today talking about on
17 degraded core rulemaking, we said "go through something like
18 this."

19 So they went ahead and proceeded to do just that:
20 evaluating feasibility effectiveness, and relative risk
21 reduction of prospective additional plant features.

22 The approach that they generally used was to take a
23 look at the three dominant risk contributors to BWRs. One
24 of those three is failure to scram the reactor when called
25 upon. They didn't look at any other options in this area

1 for that study, for this study under the argument that the
2 ATWS rulemaking will bring that down to whatever it is going
3 to bring it down to, and they made an assumption of what
4 that relative risk was: 1×10^{-6} .

5 So for purposes of looking for features to fix
6 things, in this study they ignored that one and focused
7 instead on the other two dominant contributors: failure to
8 remove decay heat; and failure to provide water makeup.

9 In addition to looking specifically at those,
10 given that they may have failed, they also studied options
11 for mitigation. They so far characterized their study as
12 being only in draft form; it's not complete.

13 They looked at 15 different possible features to
14 either prevent a damaged core or a breach of containment, or
15 preventive or mitigative -- assuming that it had happened,
16 or at least that damaged core had happened. The study
17 itself -- well, first of all, they screened the 15 features
18 down to 8 for further study. Of those 8, 4 were preventive,
19 4 were mitigative.

20 Their relative risk reduction factors for each of
21 those items range in the values that I show on the
22 vu-graph. The study itself, done by Saul Levy,
23 Incorporated, and assisted by Abasco Services, the
24 architect-engineer, doesn't draw conclusions or
25 recommendations -- well, it draws conclusions in terms of

1 relative risk reduction, but it doesn't make any
2 recommendations to the utility.

3 Now the utility did make some conclusions from the
4 study, and I'll get to that in just a few minutes.

5 The next vu-graph, please?

6 (Slide.)

7 Just very briefly, this displays for you the types
8 of things that made it through to the 8 screened items that
9 they considered in more detail. The numbers in parentheses
10 represent the risk reduction factor -- and I should be
11 careful here, because Saul Levy was so careful, to make
12 clear that this is not consequence risk; it's the risk
13 reduction factor of the probability of either having a
14 damaged core, or breaching a containment. He didn't carry
15 it on out into any kind of consequence model to come up with
16 true population or people risk.

17 So these numbers, when you see a "2," it says: If
18 you do the thing under containment pressure relief, your
19 chance of having either a damaged core or of a loss of
20 containment integrity, your chance is reduced by a factor of
21 2 is the argument in his study.

22 CHAIRMAN AHEARNE: Did GE endorse that?

23 MR. PURPLE: GE, I don't believe, was asked to,
24 nor am I aware that they did endorse that.

25 CHAIRMAN AHEARNE: So you're not -- This is really

1 the utility --

2 MR. PURPLE: This is really the utility directly
3 with Saul Levy, Incorporated.

4 Now there are some things up there that make their
5 way through the screen and in fact show up in the proposed
6 technical position of the Staff on this issue. None of the
7 ones for "prevention," but under "mitigation" items number
8 one and two are the two options that we identify and speak
9 to in our paper and in the Staff position as possible
10 hydrogen control measures. Of course item three is the
11 thing we focused on most in the last month. Item four is
12 the one we called for all along: Let's at least keep that
13 potential open by putting a penetration in the containment.

14 CHAIRMAN AHEARNE: Do you agree with his -- I
15 guess their estimated reduction factors?

16 MR. PURPLE: We have not looked at it enough to be
17 able to say we agree or not agree. We heard it last Friday
18 for the -- Thursday, I guess, for the first time, and it's
19 not been analyzed.

20 MR. DENTON: This would be done through one of our
21 requirements where we require that they do a
22 site-plant-specific probabilistic study and submit it, use
23 that in the design, and in any case have it to us within two
24 years. And I would expect during that time we might well
25 agree that some of these prevention items, some set of them,

1 would be significant. And the aim would be to provide
2 whatever substantial -- to obtain whatever substantial
3 reduction in core-melt risk can be accomplished.

4 CHAIRMAN AHEARNE: Because it obviously --

5 MR. DENTON: But it wouldn't be done pre-CP
6 issuance, because these options wouldn't be foreclosed
7 during that time frame.

8 MR. PURPLE: Other than containment strengthening.

9 MR. DENTON: Yes. I was talking about the
10 prevention.

11 MR. PURPLE: Oh, I'm sorry. The prevention.

12 MR. DENTON: The prevention list.

13 CHAIRMAN AHEARNE: Could you take a minute for
14 those of us like myself who are not reactor engineers to
15 talk a moment about this internal isolation condenser that
16 gets a factor of five in their calculation?

17 MR. PURPLE: Yes. What it is is a system that
18 uses an existing pool inside of containment -- which is the
19 fuel-transfer pool; it's a body of water that's there. They
20 put coils in that pool, call that a "condenser," and connect
21 it to the reactor coolant system.

22 So what you've done is provide one more decay-heat
23 removal system. Their argument is -- and of course it
24 returns then to the reactor coolant system; the steam goes
25 up when needed, gets condensed and cooled in this big pool

1 of water, and then returns to the coolant system.

2 It's a backup for the RCI -- well, the other two
3 decay-heat removal systems. They argue that it has a lot of
4 attractive features in that it can withstand station
5 blackout. It doesn't require AC power to operate. You just
6 would need a DC power to open a valve once, and it then
7 operates with natural circulation.

8 It would buy you, their argument goes, a fair
9 amount of time, like 24 hours, before you would begin
10 boiling off that pool that it's sitting in to be able to
11 cope with the situation you're in at the time.

12 MR. DENTON: That is an attractive feature, and I
13 would speculate that that sort of thing would be one that
14 would ultimately be in the plant -- it being entirely
15 passive-- and if you could go to this vu-graph --

16 MR. PURPLE: That's the backup.

17 MR. DENTON: -- the backup, if you have the
18 number, that would illustrate why this particular one has
19 merit.

20 MR. PURPLE: Would you put up backup number one,
21 please?

22 (Slide.)

23 MR. DENTON: Do you want to just summarize as you
24 were doing before?

25 MR. PURPLE: These are the three principal risk

1 contributors to the BWRs as proposed by Saul Levy. The one
2 in the middle is the one that deals with ATWS. They say
3 they assume that the rule will fix that and bring it down to
4 1×10^{-6} . So the other two outliers are the ones that
5 these various features try to reduce.

6 And when you come to factors of 5, and factors of
7 2, and factors of 1.3, he gets those numbers simply by
8 saying: If, for example, on the column on the right I take
9 that shaded area and drop it down to zero, or to equal to 1
10 $\times 10^{16}$, and compare that reduction with the total of all
11 grey areas, that gives me how much I've reduced.

12 Just very briefly, their argument is -- and this
13 is where I guess they are somewhat consistent, although not
14 in total numbers -- the white bars are what would be the
15 relative probability of core damage or containment failure
16 per year as WASH-1400 would show it. The shaded areas there
17 would be GE's position with respect to their standard plant,
18 the MARK III plant, in those three areas.

19 Now we did find that that particular feature of an
20 added decay-heat removal system was so attractive that, you
21 may notice that in our statement of requirements for
22 probability risk assessment, we highlight that out and say
23 that specifically your study must include this. It doesn't
24 call it an "isolation condenser," but we're looking for the
25 function, because it would be a different beast in a PWR,

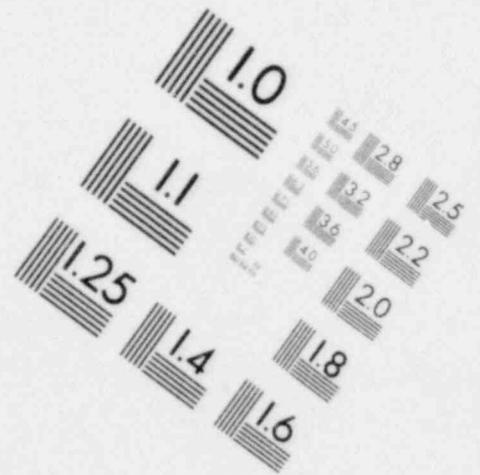
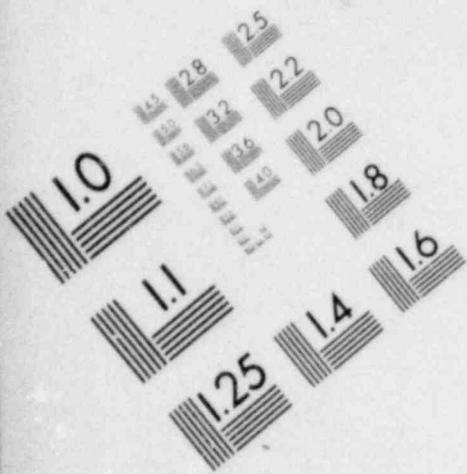
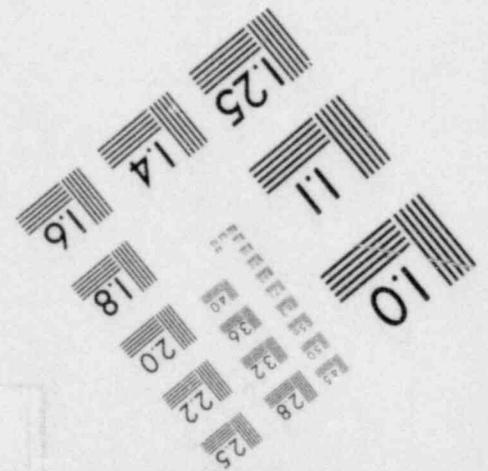
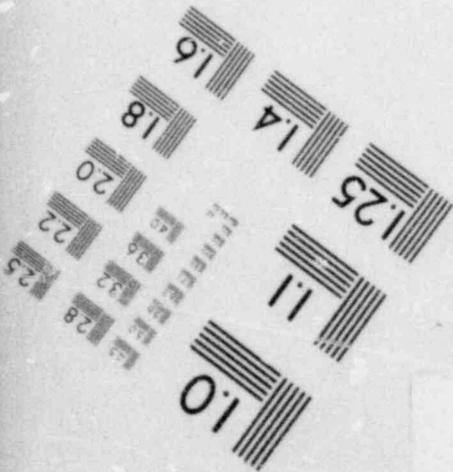
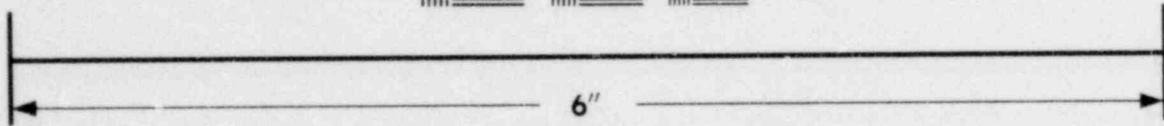
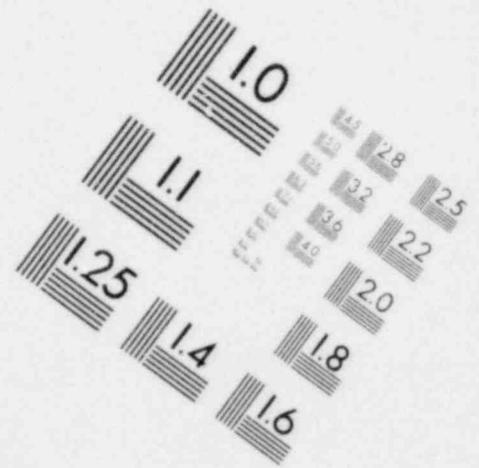
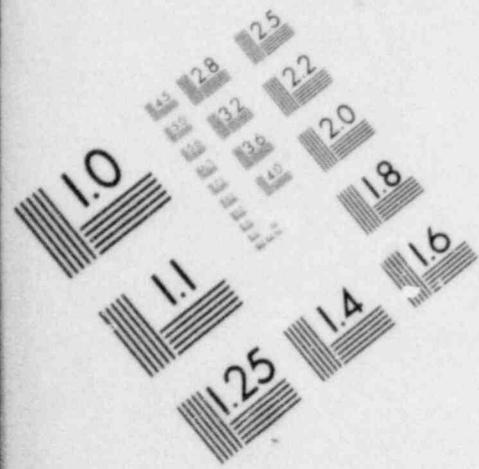
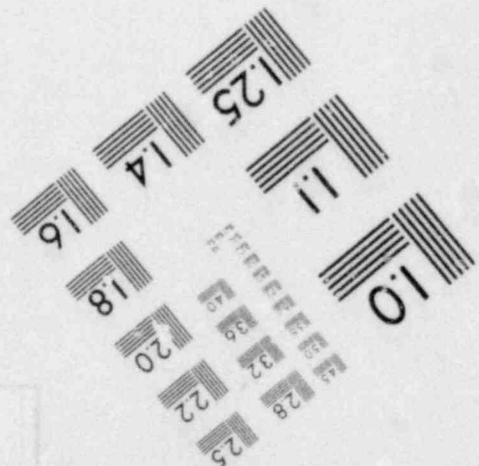
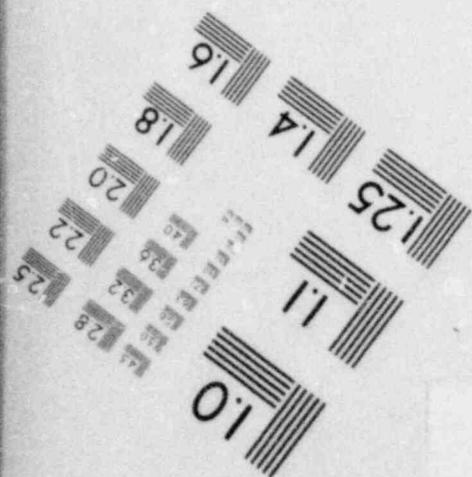
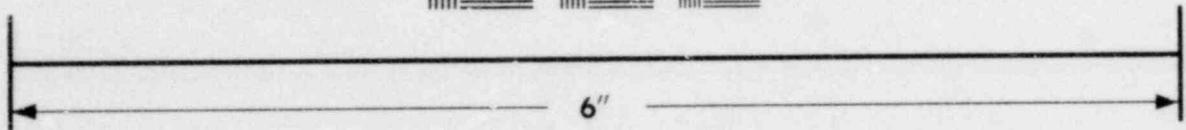
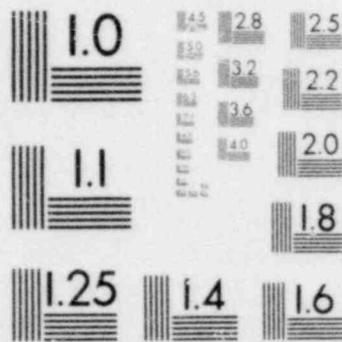


IMAGE EVALUATION
TEST TARGET (MT-3)





**IMAGE EVALUATION
TEST TARGET (MT-3)**



1 for example.

2 We go now to --

3 COMMISSIONER HENDRIE: System pressure rated, or
4 after blowdown?

5 MR. PURPLE: Well --

6 MR. DENTON: I don't know that they had that far--
7 they only had a conceptual design, but maybe someone can--

8 MR. ROSS: This works for a fully impact system,
9 so it's a full 1000 pounds. If you have something like a
10 LOCA, this system does not work. It's only for an
11 isolation. So it is full pressure.

12 COMMISSIONER HENDRIE: Unless you can isolate the
13 break.

14 MR. ROSS: True; right, right.

15 COMMISSIONER HENDRIE: There were isolation
16 condensers -- let's see, I don't know quite when they went
17 in, maybe about BWR-2s or 3s, and then the 4s got them, and
18 then they disappeared on 5s -- the 4s don't? Just 3s?

19 MR. ROSS: Millstone's got it. Humboldt Bay.

20 COMMISSIONER HENDRIE: Dresden's got it.

21 MR. PURPLE: I understood Dresden had some.

22 COMMISSIONER HENDRIE: Come on, Dresden-2/3 have
23 isolation -- What?

24 MR. ROSS: The substitute was the RCIC, the little
25 700 GPM steam-driven turbine, and that came in at the tail

1 end of the Commonwealth review between Dresden 3 and Quad
2 Cities 1 and 2.

3 COMMISSIONER HENDRIE: Well, 2 has one; you say 3
4 hasn't?

5 MR. ROSS: It may be that the first BWP-3, there
6 may be a difference between Dresden 2 and 3, but 1970 is the
7 time they turned off. That's when they introduced the RCIC.

8 MR. PURPLE: Would you go to slide seven, please?

9 (Slide.)

10 My final remarks on the Houston Lighting and Power
11 studies is that the Applicant, from the study that he had in
12 front of him, made the following preliminary conclusions:
13 That they could make provision for the future installation
14 of an in-containment isolation condenser if it were
15 eventually required; they can increase their containment
16 integrity by about 20 percent without major design -- and we
17 believe this is consistent with this 45 psig yield criteria
18 that we have now put into the proposed rule --

19 COMMISSIONER HENDRIE: Is that because Allens --
20 This is Allens Creek?

21 MR. PURPLE: Allens Creek.

22 COMMISSIONER HENDRIE: They must then have a
23 containment --

24 MR. PURPLE: Now remember --

25 COMMISSIONER HENDRIE: -- design pressure which is

1 well above the GE standards.

2 MR. PURPLE: No, 15.

3 COMMISSIONER GILINSKY: I think you're talking
4 about going from 15 to 18?

5 MR. PURPLE: Not really. We're talking -- Really,
6 what they're saying here is being able to go from where GE
7 said, 41, Service Level C --

8 CHAIRMAN AHEARNE: They say they can go to 45.

9 MR. PURPLE: -- they say they can go -- I mean,
10 this is roughly -- they'll do some improvements. That was
11 41 without doing anything in GE's case. Again, there are
12 differences between the two, and I don't have that in
13 detail, but they aren't major differences.

14 COMMISSIONER GILINSKY: Where's the 20 percent?

15 COMMISSIONER HENDRIE: Why is it consistent with
16 the 45 psig yield criteria?

17 MR. PURPLE: Why "is" it consistent?

18 COMMISSIONER HENDRIE: You mean, consistent with
19 the Level C kind of --

20 MR. PURPLE: Yes. Yes. That's what I --

21 COMMISSIONER HENDRIE: Okay. I misread it to be
22 something else.

23 MR. PURPLE: They did conclude, for their reactor,
24 that some hydrogen-control measure is necessary, and they're
25 leaning at the moment -- "prefer" is too strong a word --

1 they're leaning at the moment toward post-accident inerting,
2 but they're looking at both of the apparently viable options
3 today of hydrogen burn or post-accident inerting.

4 Now I need to point out a couple of things. What
5 you have seen here is what we've been able to hear from a
6 limited subset of these six CPs. We haven't talked to every
7 BWR owner or had a presentation from each of them.

8 We have taken a preliminary look at the
9 differences in design -- very preliminary -- and we believe
10 that the results that we've seen here, we haven't found
11 anything in the other designs that would make them radically
12 different. So we think the conclusions that we draw from
13 what we heard from this set of four --

14 CHAIRMAN AHEARNE: Black Fox is a PWR?

15 MR. PURPLE: Beg your pardon?

16 CHAIRMAN AHEARNE: Is Black Fox a PWR?

17 MR. DENTON: It's a BWR.

18 MR. PURPLE: It's a BWR.

19 So -- but we think that the results are generally
20 applicable to all, but we really haven't had a chance to
21 look at that in great detail. We have just -- our judgment
22 from looking at the, very quickly at the other designs are
23 that we don't see anything that would make it totally
24 inapplicable.

25 COMMISSIONER BRADFORD: What was the proposed

1 standard in the rule that originally went out for comment?

2 MR. PURPLE: In this area?

3 COMMISSIONER BRADFORD: Yes.

4 MR. PURPLE: Was to --

5 COMMISSIONER HENDRIE: Study it.

6 MR. PURPLE: -- study things, to do all that was
7 practicably -- to strengthen containment -- to do all those
8 things that you can practicably do, keeping in mind the
9 state of the art and not foreclose whatever may come out of
10 the degraded core rulemaking. And then on top of that, to
11 propose and study mitigative and preventive features. It's
12 that last feature that is the key that they took on in the
13 Houston Lighting and Power.

14 COMMISSIONER BRADFORD: Where does the figure "60
15 psi" stick in my mind from?

16 MR. DENTON: That was --

17 MR. PURPLE: It was in the Commission paper that
18 we sent down at the January meeting.

19 COMMISSIONER HENDRIE: It has subsequently become
20 "45."

21 COMMISSIONER BRADFORD: I see.

22 MR. DENTON: It was our -- I had asked two
23 different components of the Staff originally for what they
24 thought, and I decided to go for the higher number and say
25 maybe we can get 60, and to propose that at one time. And

1 that is what led to some of the discussion over the last 60
2 days as to what really was achievable, while maintaining the
3 general geometric shape of the containment the way it had
4 been proposed.

5 And once you get into the details of design and
6 what would be required, I have concluded that 45 is as far
7 as we can push either of these things without rather
8 extensive time required for changes to be made, and for us
9 to review it, and that sort of thing.

10 COMMISSIONER BRADFORD: Okay, let's see. Can you
11 make more concrete for me what it is that's involved in our
12 reviewing it, if you just stuck at 60, then they would have
13 to change the geometry of a containment that we've already
14 reviewed?

15 MR. DENTON: Well, to start with, I think we
16 wanted to make sure that hydrogen was controlled. So
17 whatever the -- even if we hadn't put on a floor on
18 capability, you would want them to be able to cope with the
19 pressures resulting from either igniters, or from
20 post-inerting. So take that as a given.

21 Then, since strong containments have an advantages
22 for scenarios other than just the hydrogen one, we wanted to
23 push that as far as we could, and I'll ask Dick Volmer to
24 talk about the details, then, to answer your specific
25 question of changes. But generally, to keep the MARK III as

1 a viable concept, and the ice condenser as a viable concept,
2 how far could they be pushed before the shell thickness
3 would exceed that -- would require post-well heat treatment,
4 for example -- bearing in mind that these plants are already
5 designed, 80 percent of the engineering work is done, all
6 the drawings are stacked up, and we've reviewed all the
7 details in that, what would be the -- if it had weak links,
8 they'd be obviously the things to fix.

9 And Dick, if you'd like to just describe some of
10 the areas in which changes will be necessary to get to 45,
11 and the types of changes that we didn't require?

12 COMMISSIONER BRADFORD: Well, no, I'm sorry, I was
13 going to say -- I don't think I asked the question very
14 clearly. What I am looking for is just a quick statement of
15 how much effort, how much cost, how much delay would be
16 involved if you had stayed at 60?

17 MR. DENTON: I don't know. I guess I got -- there
18 was a lot of resistance to 45.

19 CHAIRMAN AHEARNE: And I think the rest of that
20 question would have to be: What would be the justification
21 for going to a given number -- whether it's 90, 30, 45, 60?
22 And I would assume our rules constantly focus on: What can
23 we justify?

24 MR. VOLMER: To briefly answer it, Commissioner
25 Bradford, to go to 60, even though there are steel

1 containments at that level, to go to 60 with the design
2 already essentially complete, say for Allens Creek, would we
3 feel require a complete redesign, a reordering of material,
4 and a complete seismic reanalysis because you have changed
5 the dynamics and the statics of the containment and its
6 interaction with the soil. You would probably need thicker
7 base mats, and the whole thing.

8 So we agree that it would require rather extensive
9 redesign and reanalysis of the containment structure.

10 COMMISSIONER GILINSKY: Isn't it a lot easier to
11 go to the higher pressures, design pressures, with a small
12 containment than with a larger containment? I would think
13 it would be.

14 MR. DENTON: These aren't small, in either case.

15 COMMISSIONER GILINSKY: Well, they're half the
16 size of the others.

17 MR. DENTON: They're over a million cubic feet.

18 COMMISSIONER GILINSKY: But they are --

19 MR. DENTON: I don't know how the pressure --
20 whether it's easier, or not.

21 COMMISSIONER GILINSKY: Well, it's like one over
22 the radius.

23 COMMISSIONER HENDRIE: What these -- I guess most
24 all of these MARK IIIs are a steel shell inside a shield
25 building. Now once you go past whatever pressure rating you

1 can achieve by taking the plate thicknesses up to a 1-3/4
2 limit, and going to a hemispherical head if that's really
3 practicable without major redesign of these things, once you
4 go past that pressure which is presently assessed in the
5 range of 45 pounds guage, you go beyond that and then the
6 designer has got a problem.

7 If he keeps a steel containment, he is going to go
8 above the plate thickness at which he can simply weld it up
9 and not have to do a post-weld heat treatment of the whole
10 vessel. Now it isn't physically impossible to do a
11 post-weld heat treatment of the whole vessel, but it is
12 helpful if you start out knowing in the beginning you're
13 going to do that, because what you have to do is finish that
14 steel bottle, and go in and load it up with gas heaters --
15 you can't have anything inside -- and it just changes the
16 whole construction sequence in major ways.

17 So what would probably be required here would be a
18 change to a reinforced or reinforced and post-tensioned
19 concrete containment to replace the steel containment plus
20 shield building. Okay?

21 So now you would have to redesign for a concrete
22 containment, and then you could do it at 60 pounds and it
23 would turn out to be so thick and have so much steel in it,
24 and so on. But that would then be a different-looking
25 building, and you would have to redo the seismic analyses as

1 well as the complete containment design. It will have some
2 effect on the base mat, I suspect, and the judgment was that
3 that was getting on beyond the place that it was necessary
4 to go.

5 But I even have a question back at an earlier
6 stage than that, as you go from simply moving up the plate
7 thickness with a dished-head steel containment to a
8 hemispheric head steel containment -- which is where you get
9 the principal increase in pressure rating -- you've already
10 got some interesting changes.

11 It seems to me that you've now -- How do they
12 accomplish that? Drop the spring line so they keep the
13 shield building the same? Or do they have to shove the
14 shield building up? It sounds to me like there are all
15 kinds of things --

16 MR. VOLMER: In the case of Allens Creek, the only
17 change that is being proposed is one of where -- is the
18 tie-in between the containment shell itself and the base
19 mat. The proposal does not get into the 45-or-so level --
20 Service Level C, does not require change in the head, or the
21 wall thickness.

22 COMMISSIONER HENDRIE: Yes, I understand that for
23 the Allens Creek -- for the Houston Lighting and Power
24 proposal, but that just gets you 45 pounds guage at a Level
25 C --

1 MR. VOLMER: That's right, to get the higher
2 design pressure.

3 COMMISSIONER HENDRIE: Now, you know, what you
4 folk are talking about are Level A 45 pound guage.

5 MR. PURPLE: No, no, 45 Level C.

6 MR. VOLMER: We're talking about Level C in the
7 proposal that's before you for --

8 COMMISSIONER GILINSKY: That's not very much of a
9 change.

10 MR. VOLMER: Level C to contain the results of
11 accident hydrogen burn and post-accident inerting, or
12 whatever.

13 COMMISSIONER HENDRIE: So I can go back and treat
14 it again.

15 MR. PURPLE: The comparable Level A value in our
16 regulation, proposed regulation, or proposed position, would
17 be that corresponding with what the pressure rise would be
18 when they inert, if they go that route, and that would be--

19 COMMISSIONER HENDRIE: Oh, I see.

20 MR. PURPLE: Okay? That would be like 22 psi.

21 COMMISSIONER HENDRIE: I did misread this thing.
22 I did misread this thing.

23 MR. EISENHUT: Bob, one other point. The number
24 is not "18"; it's between 20 and 25 is the capability by
25 putting the anchorage in on Allens Creek, and the

1 requirement would be then that the Level A would be -- you'd
2 just have an inadvertent injection of whatever the inerted
3 gas is, and that would be, they estimate, about 22. So it's
4 a close call as to whether the Allens Creek design, with
5 fixing the anchorage, would make it.

6 COMMISSIONER HENDRIE: I've got you.

7 MR. EISENHUT: But it comes out to mean the real
8 design is on the order of probably 22 psi. Then that gives
9 you a Level C on the order of 45 psi.

10 COMMISSIONER HENDRIE: I've got you. Okay.

11 MR. DENTON: So the controlling design is the
12 hydrogen control system at Design Level A.

13 COMMISSIONER HENDRIE: Yes.

14 MR. DENTON: And then the capability in trying to
15 be somewhat uniform for all the plants, rather than
16 hand-tailor one, 42, 49, 50, we've picked the 45 as being an
17 across-the-board ice condenser and MARK III capability.

18 COMMISSIONER HENDRIE: I see.

19 COMMISSIONER GILINSKY: Now does this assume steel
20 of a minimum strength required by the Code?

21 MR. DENTON: Well, yes, because when you say
22 "Level C," that whole calculational assumption assumes
23 minimum-strength steel. Therefore, when you put in the
24 as-built values, then you can show it can tolerate more,
25 presumably. So something is good that has 45 psi

1 capability, using all the Level C factors, would turn out to
2 be like the 80 that we mentioned before as the real failure
3 point of a typical as-built containment.

4 COMMISSIONER GILINSKY: Can you tell me again what
5 the number is that corresponds to 45, if you don't make any
6 of these changes?

7 MR. VOLMER: 38.

8 COMMISSIONER GILINSKY: 38? That's not a
9 fantastic difference. I guess the point really is to
10 accommodate the CO to be sure that that's below design
11 pressure --
2

12 MR. DENTON: To make that a design requirement.

13 COMMISSIONER GILINSKY: -- because that could
14 happen a number of times through an inadvertent actuation.

15 MR. PURPLE: Yes.

16 MR. DENTON: And in fact, I think the three MARK
17 IIIs are slightly different because they are designed by the
18 architect-engineers; they're not necessarily designed by GE,
19 so the details of those containments differ.

20 COMMISSIONER HENDRIE: They're bound to have some
21 difference.

22 MR. PURPLE: They're all three different. Allens
23 Creek has the hemispherical head already, so they wouldn't
24 face that kind of a change.

25 COMMISSIONER HENDRIE: Oh, it does?

1 MR. PURPLE: The Black Fox has what is called the
2 "toruspherical," and that's one that would, if they had to,
3 have to change.

4 The Skagit, which is the third one, is a
5 reinforced concrete with a hemispherical head. So they all
6 three are different.

7 COMMISSIONER BRADFORD: For Skagit, it'll be
8 reanalyzing for seismology anyway.

9 MR. PURPLE: Go to vu-graph number nine, please?
10 (Slide.)

11 In the interest of time, I think I'll skip number
12 eight.

13 CHAIRMAN AHEARNE: Well, let's see. We've got
14 time.

15 MR. PURPLE: Would you like me to go through
16 what's on that number eight? I would be happy to.

17 CHAIRMAN AHEARNE: It all depends if it is
18 essential to your presentation.

19 MR. PURPLE: I don't think it is.

20 CHAIRMAN AHEARNE: Okay, then move on.

21 MR. PURPLE: It's been said I think already in
22 other ways.

23 CHAIRMAN AHEARNE: All right.

24 MR. PURPLE: This vu-graph shows the various
25 elements of the position that now is in the SECY-80-20A, or

1 -81-20A --

2 CHAIRMAN AHEARNE: By reference.

3 MR. PURPLE: Not by reference, it's really --

4 Well, it is. It's an enclosure.

5 As before and consistent with at least the last
6 two or three versions of our position, it still has a
7 probabilistic risk assessment. We have gotten a little more
8 specific in that writeup in that we now require that the
9 risk assessment be done -- not only that they demonstrate at
10 the CP stage a plan for how they're going to use this tool
11 to influence their design; but a specific requirement that
12 they submit it to the NRC within two years after getting
13 their CP.

14 We have included, at the suggestion of the ACRS, a
15 proposed statement of what the aim of this program is -- the
16 Commission's aim in doing the problem. And as I mentioned
17 earlier, it specifies consideration of an additional
18 decay-heat removal system as part of the study. That ties
19 back to that in-containment isolation condenser.

20 We continue to have a statement that requires a
21 dedicated three-foot diameter penetration. This slide says
22 "three-foot diameter penetration," recognizing the words
23 really say "one or more that would be equivalent to a
24 three-foot hole."

25 In the earlier versions of our position, we had

1 only by implication required hydrogen control measures; and
2 upon realizing that, and now knowing that we are serious
3 about it, we now have a statement in the proposed position
4 that simply says: Hydrogen control measures are required.

5 Of the two options that appear to be viable
6 candidates for hydrogen control measures: post-inerting and
7 distributed ignition systems. Since the Commission may not
8 have heard too much about what post-inerting is and how it
9 might work, I would like to go to the next vu-graph and
10 we'll come back to this one.

11 (Slide.)

12 The idea of post-accident inerting is that you
13 inject the inerting gas from a storage. In the case of the
14 work that Saul Levy did, he suggested that it be outside
15 storage, a tank farm of liquid gas. You inject that into
16 the containment prior to hydrogen evolution.

17 Two gases appear to be the best candidates people
18 are thinking about: CO and Halon. CO has the
19 disadvantage that it adds a significant pressure to the
20 containment when you introduce it. The 22 psig is the
21 result of the estimates made for Allens Creek. That would
22 vary from containment to containment.

23 The advantage of CO is, as people are looking
24 at it now, is that it's relatively inexpensive -- the gas
25 itself; not the system. I've forgotten the number, but it

1 was at least an order of magnitude difference in cost for
2 charging your tanks with halon compared to charging it with
3 CO . My recollection is it was close to a million
4 dollars, \$800,000 just to fill up the halon tanks, compared
5 to something like \$80,000 for CO .

6 The halon attraction is, just from the weight of
7 the -- the amount you have to put in to inert the
8 containment, you only add 6 psig, which is much easier to
9 handle. But it has with it apparently a corrosion problem
10 that would tend to react with electrical equipment,
11 instruments and so forth, that is not well thought-out yet.
12 It's just listed as a disadvantage and, as I've already
13 said, very expensive.

14 Any post-accident inerting system would have to
15 have built into it a delay in order to permit personnel who
16 are frequently in containment to get out before the gas is
17 inerted. The proposal -- not "proposals," but conceptual
18 studies and early thinking of both GE and Houston Lighting
19 and Power talked about something on the order of a 15-minute
20 delay being built in.

21 Generally the system as they are thinking of it
22 now would be triggered by a phenomenon in the reactor. For
23 example, they're thinking a low water level would be the
24 triggering signal to turn on the 15-minute delay, to ring
25 the alarms and let people get out of the reactor.

1 They're generally thinking of an injection-period
2 time of 15 minutes. So that from the first indication of
3 low water level to the time you have it totally inerted, by
4 that scenario, would be a sum of 30 minutes. It's my
5 understanding that's not inconsistent with the kinds of
6 rates at which we would expect hydrogen to be evolved once
7 you were at that condition of a low water level.

8 That low water level, by the way, is above the
9 core. We believe -- and you will see that it's written into
10 our proposed position -- that you've got to be able to
11 accommodate, if you choose post-accident inerting, you must
12 be able to accommodate an inadvertent injection. And I'll
13 talk about that a little more in a few minutes.

14 One advantage, I suppose, of the post-accident
15 inerting is that you avoid worrying about the equipment
16 qualification issue of a burning hydrogen environment, with
17 its temperatures and conditions, and you have less chance--
18 since you're inerting with a gas that can go everywhere--
19 less chance that you're collecting dangerous detonable
20 pockets of hydrogen, compared to a burning scenario or a
21 burning system.

22 Go back to slide nine, please.

23 (Slide.)

24 COMMISSIONER BRADFORD: Bob, when you talk about
25 an inadvertent injection, are you talking about a situation

1 in which you get the injection without the 15-minute warning?

2 MR. PURPLE: Not --

3 MR. DENTON: Without the core damage.

4 MR. PURPLE: Without the core damage is the
5 "inadvertent." You're just humming along at normal power,
6 and something somehow opens that valve, a person or a
7 pipeline opens, or whatever.

8 COMMISSIONER BRADFORD: So then do people in the
9 containment then get the 15-minute warning? And if so, why
10 can't they prevent the injections?

11 MR. PURPLE: I would imagine that such a system
12 would be designed with an extremely low probability of
13 inadvertent injection.

14 CHAIRMAN AHEARNE: But the inadvertent injection
15 would be one in which the people inside do not get the
16 warning.

17 MR. PURPLE: It could be, yes.

18 MR. DENTON: No.

19 COMMISSIONER HENDRIE: Well, the answer is "yes"
20 and "no." It depends on where the failure is. If the
21 nature of the failure has been a spurious -- for instance, a
22 spurious low-water level signal, then it rings alarms and
23 starts the 15-minute timer and people have a chance to look
24 around and say: Wait a minute. That was not a low water
25 level. And then turn it off. I assume that ...

1 On the other hand, if the inadvertent injection is
2 downstream, you get a spurious open signal on the valves, or
3 whatever, never mind any of that other time-delay stuff, why
4 then you're going to get some CO₂ in the containment.

5 COMMISSIONER GILINSKY: Or, they may not be sure
6 whether there's a low water level. They may get out and not
7 stop the injection.

8 COMMISSIONER HENDRIE: Yes, that's right. From
9 the standpoint of people getting out, whether it's a real or
10 a spurious water-level signal, at least you get the alarms
11 in time to go before the valves open. But if it's some kind
12 of funny business on the valves and they get told to open
13 willy nilly, why then you're going to start injecting. I
14 don't know whether people would get out in that circumstance
15 or not. Possibly. Because, you know, it isn't
16 instantaneous; it's going to take 15 minutes to pump up a
17 good deal. I don't know, depending on where you were and
18 what you were carrying, you might be able to take a deep
19 breath and get out.

20 MR. PURPLE: The proposed position does have in
21 it, as we've already said, containment strengthening
22 features. We have specified them in two ways:

23 One, that it should be -- the containment strength
24 needs to be sufficient to accommodate the pressures
25 resulting from the release of the hydrogen from the 100

1 percent metal/water reaction.

2 And as we've already mentioned -- well, no, I
3 haven't mentioned this fact, or this idea. We found in
4 trying to specify containment strengthening and containment
5 pressures that if you attempted to be very specific in
6 spelling out the scenarios, the conceivable scenarios of how
7 hydrogen could be evolved and how the pressure could either
8 be raised by burning or by inerting, you get a wide range of
9 answers depending on who is working the problem. A lot of
10 different assumptions go into such calculations.

11 Our general approach in determining what
12 containment strength is needed to accommodate this 100
13 percent was one that would take realistic assumption of
14 hydrogen release and so forth. We haven't tried -- We've
15 found it impossible to specify those in any clear and
16 coherent set of such criteria.

17 It was for that reason that we recognized we
18 needed to have a floor level built in. That's why we chose
19 the 45 psig as a specific requirement in the position
20 statement.

21 CHAIRMAN AHEARNE: When you say a "factor of 2
22 margin from detonation of large amounts," what are the
23 "large amounts"?

24 MR. PURPLE: "Large amounts" are those that, if
25 they detonated, they would either make you lose containment

1 integrity, or make you lose one of the mitigating features
2 you're depending on to keep containment integrity when
3 you're in that condition.

4 CHAIRMAN AHEARNE: And you want --

5 MR. PURPLE: We would have no --

6 CHAIRMAN AHEARNE: How can you get a "factor of 2
7 margin from" something that's happening that if it happens
8 you lose the containment?

9 MR. DENTON: Well, no. Let's mix all the hydrogen
10 in a big dry containment thoroughly, and that's where we
11 would calculate the factor of 2.

12 Now you also have to worry about can you show that
13 there's not pocketing or something. So in order to assure
14 detonations, you want a uniform mixture not to be detonable,
15 and you want to have good mixing systems and igniters and so
16 forth.

17 CHAIRMAN AHEARNE: I was just trying to focus on
18 the phrase that he's got up there, "a factor of 2 margin
19 from detonation of large amounts of hydrogen." I'm trying
20 to translate into that what exactly he's requiring.

21 MR. DENTON: What I meant -- I'll let Bob be more
22 specific here -- was mixing that amount of hydrogen in that
23 entire volume is where you would start with a factor of 2.
24 Now it gets --

25 CHAIRMAN AHEARNE: And the detonation --

1 MR. DENTON: Yes.

2 CHAIRMAN AHEARNE: So you would fill the volume
3 uniformly with that detonable mixture?

4 MR. DENTON: That's the first place I would look
5 for a factor of 2.

6 CHAIRMAN AHEARNE: And you want a factor of 2 from
7 detonation of that?

8 MR. DENTON: That's right.

9 MR. PURPLE: That's correct. And the way it's
10 specified in the rule is to say: Don't let the
11 concentrations exceed 10 percent for the uniformly mixed
12 concentration --

13 MR. DENTON: If there were a containment so big
14 and had such a good running pass of circulation systems
15 somehow that the concentration wouldn't exceed 4 or 5
16 percent, then I wouldn't move toward igniters. But finding
17 that they --

18 CHAIRMAN AHEARNE: I'm sorry I'm having difficulty
19 with this one --

20 COMMISSIONER GILINSKY: I am, too.

21 (Laughter.)

22 CHAIRMAN AHEARNE: Good. Let's take it --

23 MR. DENTON: Well, the factor of 2 --

24 CHAIRMAN AHEARNE: Well, sit. Please. Please.
25 Whatever. I'm assuming that when you say "the rule," you

1 are referring to this enclosure?

2 MR. PURPLE: Right.

3 CHAIRMAN AHEARNE: Now the enclosure says: "The
4 systems will provide reasonable assurance that uniformly
5 distributed hydrogen concentrations do not exceed 10
6 percent." Then you get 100 percent.

7 Okay, now is that what you're saying translates
8 into a factor of 2 margin from detonation of large amounts
9 of hydrogen?

10 MR. PURPLE: Yes, sir.

11 COMMISSIONER GILINSKY: Because the 10 percent
12 mixture gives you what sort of a pressure rise?

13 MR. PURPLE: Well, no, it's because in general the
14 detonable concentration, the one that will go off with a
15 bang, is on the order of 20 percent hydrogen
16 concentration--

17 COMMISSIONER GILINSKY: Oh, you want to be a
18 factor of 2 down --

19 MR. DENTON: So a 2 down from --

20 MR. PURPLE: Yes. Yes.

21 CHAIRMAN AHEARNE: A percentage?

22 COMMISSIONER GILINSKY: Well, but I thought that's
23 the number that's in some doubt?

24 MR. DENTON: Well, but that's why we picked a
25 factor of 2, to get way down from that.

1 COMMISSIONER GILINSKY: I see. Okay. So you want
2 to be well away from the detonable range.

3 CHAIRMAN AHEARNE: From the detonable amount? Oh,
4 I see. Okay. That wasn't --

5 MR. PURPLE: You were one step ahead of me. I
6 hadn't come to that line, yet, when you asked the question.

7 CHAIRMAN AHEARNE: All right. Okay, and the 10
8 percent is based upon your assumption that 20 percent is
9 approximately the detonable --

10 MR. PURPLE: Yes, it's 18 to 20 percent.

11 COMMISSIONER GILINSKY: I thought some estimates
12 were less than 18, depending on geometries.

13 CHAIRMAN AHEARNE: But anyway, at least now I
14 understand where you came from.

15 MR. PURPLE: But it's a wide margin. We
16 approached it thinking: Well, let's stay at least a factor
17 of 2, or let's stay roughly a factor of 2 away. But specify
18 that by avoiding many of the arguments and just simply say
19 "10 percent."

20 CHAIRMAN AHEARNE: Okay. And then in the phrase
21 that you have here, it really has nothing to -- with an
22 accident that release hydrogen generated from 100 percent is
23 really not the key part at all; it's that the concentration
24 does not exceed 10 percent.

25 MR. PURPLE: Yes, sir; that's correct.

1 CHAIRMAN AHEARNE: Okay. Now could you give me
2 the rationale supporting the 100 percent criterion?

3 MR. DENTON: I think 100 percent is excessive, but
4 it's hard to pin down any number less than that as 75, 80,
5 90. And I guess my own view was that since, with this kind
6 of beginning approach to maintain it below 10 percent, if
7 you're going to install a system that would burn 75 percent
8 of a hydrogen release of a metal/water reaction is just as
9 good at burning 100 percent of that hydrogen once you get
10 the system. So I really did not try to pin down further:
11 Is there some break point below 100 at which we should stop?

12 COMMISSIONER GILINSKY: Let me ask you the same
13 question from the other side. There's a lot more zirconium
14 in there other than the fuel clad. How do you separate that
15 out from the fuel clad in your thinking?

16 MR. DENTON: Well, the question can go both ways.
17 To answer the first one is that it seemed to me that any
18 system would handle the metal/water reaction from 50 percent
19 would handle that from 100 percent metal/water reaction with
20 just slight effect on pressures; or it said burn a little
21 more would raise the temperature, and so forth, but having
22 to have the system was the main tripping.

23 Then we thought about going to other zirconium in
24 the core, especially in the case of boilers, but that other
25 zirconium is not like the clad which is surrounded by the

1 heat-producing fuel pellets. They are in the grid structure
2 of the vessel and would not likely heat up and get to those
3 kinds of temperatures absent a full-scale melt-down
4 occurring. And I think Denny could discuss that a bit more.

5 COMMISSIONER GILINSKY: Could you describe where
6 all that other material is?

7 COMMISSIONER HENDRIE: Above and below the fuel
8 rods in the extensions in the plenum regions, and an awful
9 lot of it in the channel boxes --

10 MR. PURPLE: Channel boxes.

11 COMMISSIONER GILINSKY: Well, but those are --

12 COMMISSIONER HENDRIE: -- which in the PWRs are
13 heavy.

14 COMMISSIONER GILINSKY: Well, that's what I was
15 wondering, how it's distributed in terms of amount.

16 MR. DENTON: And I think the total amount in there
17 is about equal to the amount in the cladding.

18 COMMISSIONER GILINSKY: Well, how much of it is,
19 say, in the channel boxes?

20 MR. PURPLE: Maybe two-thirds, one-third.

21 MR. ROSS: If I got your question, the zirc mass
22 in the channel box for the PWR is comparable to the cladding
23 in mass, if that was your question.

24 COMMISSIONER GILINSKY: Yes.

25 MR. ROSS: The rationale, we discussed

1 differences. All of this is presumed on the core
2 degradation being turned around.

3 COMMISSIONER GILINSKY: Within some period of time?

4 MR. ROSS: Before the core geometry becomes
5 uncoolable. See, if the core geometry becomes uncoolable,
6 these features don't apply, because we're into the long-term
7 molten core scenario, which is not covered by these features.

8 CHAIRMAN AHEARNE: Would you get 100 percent with
9 the core geometry still being cooled?

10 MR. ROSS: There is some speculation around 65
11 percent cladding reaction might be the upper limit of what
12 you could turn around. Now in the BWR, the heat transfer
13 mechanism is from the cladding by radiation to the channel
14 box, and thence to whatever steam you might have.

15 We guessed that a split of say 65 or 70 percent of
16 the cladding, and on the order of 30 percent of the channel
17 box which is tracking the cladding within 100 degrees or so,
18 is as arbitrary -- well, it's arbitrary, but it's as close
19 as anything else to -- the science as we know it today, the
20 100 percent is as good a number as we're going to get.

21 COMMISSIONER GILINSKY: Well, what you're saying
22 that an amount equivalent to 100 percent of the fuel clad
23 is the one to use --

24 MR. ROSS: And the attribution is -- That's
25 correct. The attribution is difficult to ascribe. We know

1 that if you react 65 percent of the cladding, some of the
2 channel box will react because it's not that far behind --

3 COMMISSIONER GILINSKY: Why not say "50 percent of
4 the total material in there"? It seems to me that's a
5 more--

6 MR. ROSS: The distinction didn't seem all that
7 important for where we were headed. I think like Harold was
8 saying, if you control 80, you can control 90, 100, 110; for
9 design purposes, the 100 percent is a useful number in
10 saying whether it's clad zirconium or channel box zirconium,
11 it doesn't seem all that important. The molds of hydrogen
12 would be the same.

13 COMMISSIONER GILINSKY: Well, at least I'm clear
14 on what you're saying.

15 MR. ROSS: That's as close as we can calculate it
16 at this time. We don't have the ability to calculate how to
17 cool a core that's had 83 percent of the zirc reacted, for
18 example.

19 COMMISSIONER GILINSKY: Okay. I guess I'd say "an
20 amount equivalent to 100 percent."

21 MR. ROSS: "Equivalent" would not be a bad word to
22 put in.

23 CHAIRMAN AHEARNE: Let me ask a further question,
24 then, Harold. Can you just expound on the rationale,
25 whether it's equivalent or the fuel, why you've chosen that

1 as the design criteria? You said your rationale is that if
2 it can do this percent -- if it could do 50 percent, it
3 could do 70; if it could do 50 or 70, it can do 100; why not
4 100? Why "50"?

5 MR. DENTON: Well, principally this is to not
6 foreclose your options or our options in the degraded core
7 rulemaking. Not knowing where that will all come out as to
8 what's required, at least with regard to hydrogen control we
9 thought this wouldn't be foreclosing our choices in these
10 plants in that area.

11 COMMISSIONER GILINSKY: I think you're asking:
12 Why stop there? Or were you as far as that?

13 CHAIRMAN AHEARNE: Well, it's sort of on both
14 sides. I'm trying to probe for -- trying to understand the
15 basis for, you've sort of got an intermediate number. You
16 can either go farther in one direction and pick up, for
17 example, all that's required; or you can go farther in the
18 other direction and say "25 percent of the mass."

19 You've chosen a number.

20 COMMISSIONER GILINSKY: As I understood what Denny
21 was saying, and Harold, that it isn't an awful lot harder to
22 do -- deal with an amount equivalent to 100 percent of the
23 clad than with 50 percent of the clad; but beyond that,
24 there's really not much you can do, and that the thing is
25 going to get away from you.

1 MR. DENTON: Yes.

2 COMMISSIONER GILINSKY: So there's no point in
3 going beyond that.

4 CHAIRMAN AHEARNE: So this is about the maximum
5 that would make sense to actually be trying these kinds of
6 mitigation?

7 MR. DENTON: That's correct.

8 MR. ROSS: There's one more ingredient. I forget
9 the exact number, but for the small containments -- by
10 "small," I mean the MARK III and the ice condenser -- if you
11 go the burning option, after about 75 or 80 percent of core
12 metal/water reaction equivalent, you're out of oxygen
13 anyway. And I suspect that after 100 percent or close to it
14 there for in a large dry, again your oxygen is limited if
15 you burn. And the molds of a noncondensable thereafter
16 wouldn't make that much difference anyway.

17 We haven't done these calculations, but it's
18 pretty close to that.

19 COMMISSIONER GILINSKY: Even if you couldn't turn
20 the accident around, isn't there some value in trying to
21 maintain the containment integrity?

22 MR. ROSS: Yes, if you -- suppose you were in a
23 debris-bed situation, but the debris is still imparting heat
24 to the containment, then there's some value at that point in
25 having a heat removal system or a hydrogen combustion system.

1 Depending on the capability, you could preclude
2 overpressurization failure. This is so sequence-dependent,
3 it's kind of hard to say how much; but, yes, there would be
4 some calculated value. There's some improvement in risk
5 depending on how you went.

6 COMMISSIONER GILINSKY: I would think so.

7 MR. ROSS: Yes. Presumably, for the reactors
8 we're talking about, you'll still get base-mat penetration,
9 which is -- as long as we're in this failure mode, is more
10 desirable than overpressurization. Yes.

11 COMMISSIONER GILINSKY: Yes.

12 CHAIRMAN AHEARNE: Let me ask, rather than trying
13 to extract out by question-and-answer, there's another
14 element. Let me see if I can't describe what I think is the
15 philosophy, and then tell me whether it's accurate or not.

16 At Three Mile Island we believe we got somewhere
17 between -- depending upon the calculations -- but say 30 to
18 50 percent of metal/water reaction generating hydrogen.
19 Consequently, you believe that it is appropriate in the --
20 and as you say, not to foreclose where we're going to come
21 out on the degraded core rulemaking -- conclude that at
22 least for the plants now in the construction permit
23 application to require at least the ability to handle that.
24 And since you can handle 100 percent as well as you can
25 handle 50 percent, and the fine-tuning in the calculation to

1 go in that intermediate range does not really seem to be
2 worth the effort, that's where you ended up on your
3 requirement? Is that a fair statement?

4 MR. DENTON: Yes. That's correct.

5 And in fact we still lack some of those
6 calculational codes to even convert the burning of 50
7 percent into real pressures because of the need to add heat
8 sinks and all that sort of thing into the --

9 CHAIRMAN AHEARNE: What I've got imbedded in my
10 question, I think you should appreciate, is the very
11 significant event, just one event --

12 MR. DENTON: Yes.

13 CHAIRMAN AHEARNE: And --

14 COMMISSIONER GILINSKY: Meaning what?

15 CHAIRMAN AHEARNE: Well, meaning that for myself
16 I'm still trying to think through and understand what ought
17 we to be applying for hydrogen control level requirements
18 for plants.

19 COMMISSIONER GILINSKY: Well, I was going to ask --

20 CHAIRMAN AHEARNE: And I haven't reached that
21 conclusion --

22 COMMISSIONER GILINSKY: -- why one necessarily
23 fixes on the percentage of metal/water reaction, rather than
24 say the amount -- you know, the number of kilograms. If you
25 pick the amount, I guess it would be more favorable to

1 boiling water reactors, and so it would be a smaller
2 percentage of their core. But --

3 MR. DENTON: I guess we have previously, in
4 earlier rules, gone with percentages, back in the 5 percent
5 days, and that's --

6 COMMISSIONER GILINSKY: There were some --

7 COMMISSIONER HENDRIE: Well, then after that we
8 went to -- gee, how did we work out the adjustment to --

9 MR. DENTON: Cladding thickness?

10 COMMISSIONER HENDRIE: It was a certain thickness,
11 wasn't it?

12 MR. DENTON: Yes.

13 CHAIRMAN AHEARNE: Thickness of?

14 COMMISSIONER HENDRIE: Cladding. It was assumed
15 to oxidize.

16 CHAIRMAN AHEARNE: See, I'm not really certain for
17 my own self what kind of a conclusion I would want to put in
18 place regarding what is the right hydrogen design
19 requirement.

20 MR. DENTON: Yes.

21 CHAIRMAN AHEARNE: And at some point we obviously
22 have to address what is the right requirement to impose on a
23 host of other plants. And I wanted to make sure I
24 understood the rationale the Staff had imbedded in this, so
25 that if I support this I know what rationale I'm

1 supporting.

2 MR. DENTON: You have correctly stated my
3 rationale for this proposal.

4 MR. PURPLE: The next item on the slide is one I
5 really already mentioned, that we had provision in the
6 statement of requirement to be sure the design of the
7 containment and its associated systems are such that you
8 don't get detonable pockets -- and it's carefully worded
9 that it's "detonable pockets" that would cause harm that you
10 don't want to have happen, recognizing that there could be
11 detonable pockets that if they didn't cause any harm you
12 wouldn't care.

13 We have put into the statement -- the last item on
14 the vu-graph -- special requirements for those who chose the
15 inerting option. We've talked about the need --

16 COMMISSIONER GILINSKY: This is the inerting after?

17 MR. PURPLE: I'm sorry, for those -- yes,
18 inerting, post-accident inerting. Post-accident inerting.

19 We've talked about the need to be prepared to
20 accommodate an inadvertent inerting without -- at the
21 Service Level A type levels, and that's spelled out. To
22 demonstrate that that can be done, we have required in this
23 statement that a test at 1.1 or 1.15 times whatever the
24 inerted pressure is be conducted.

25 And then, required a demonstration and test that:

1 Should this inadvertent inerting happen while you're
2 operating, that you can in fact accommodate it only in the
3 structure of the -- not only because of the containment
4 structure, but that you don't actually cause a reactor
5 accident because of the act of inerting. We're not sure
6 where that problem would come from, but certainly we want
7 them to look at it and in fact demonstrate it.

8 COMMISSIONER HENDRIE: How would you do this test?

9 MR. PURPLE: You would have to be in some normal
10 operational configuration, and --

11 COMMISSIONER HENDRIE: Dump 22 pounds guage of
12 CO into the containment --

13 ² MR. PURPLE: Dump 22 pounds CO into the
14 containment. ₂

15 CHAIRMAN AHEARNE: Are you really proposing that
16 they be running the plant to do this?

17 MR. PURPLE: I'm not sure that's necessary. I'm
18 not sure you couldn't -- you know, that you wouldn't
19 necessarily have to be at full power to do it, but we really
20 haven't thought through what they -- This requirement is to
21 show how you can safely do it.

22 CHAIRMAN AHEARNE: Not "whether"?

23 MR. PURPLE: No, not "whether." The requirement,
24 we would anticipate --

25 CHAIRMAN AHEARNE: Well, but if you had to show

1 how to --

2 MR. PURPLE: --unless it was unsafe, we would drop
3 it out.

4 CHAIRMAN AHEARNE: -- safely do something, and you
5 are saying that the requirement would be with the plant be
6 running that they must go through that test?

7 MR. DENTON: Well, I think we ought to state it
8 the other way: To propose some means of testing to show
9 that if it did happen with the plant running it wouldn't
10 cause an accident.

11 CHAIRMAN AHEARNE: That's different.

12 MR. PURPLE: Yes, it is.

13 MR. DENTON: And since we don't really know who is
14 going to propose this, as yet, and we haven't worked out the
15 details of that test, but we want to get that in there.

16 COMMISSIONER HENDRIE: I would delete
17 "demonstrated by test," for pity's sake.

18 CHAIRMAN AHEARNE: The idea of dumping that in
19 the e in a running plant is --

20 MR. DENTON: Well, it's easy enough to run the
21 pressure test without the plant running --

22 COMMISSIONER HENDRIE: You're going to have to run
23 the pressure test because the design rating on these
24 containments are going to be at this -- are going to get set
25 by this inerting requirement; and in order to get the damn

1 thing stamped, why you're going to have to run them at 10 or
2 15 percent, as the case may be, for the test pressure. So
3 you're going to get that, and you'll then know you have
4 pressure capability in the containment.

5 Now do you need to know beyond that? What
6 you'd like to know is that if you get a 22 pound, or
7 whatever the test pressure is, pressure excursion in the
8 containment, that essential instruments don't go galley west
9 on you. But you've got that kind of look that you take at
10 things in connection with some other things, too. And I
11 would limit it to that.

12 Anybody can see what else might come unstuck, why
13 they can bring it up in the review, but I certainly wouldn't
14 run a full test.

15 CHAIRMAN AHEARNE: What was the Staff rationale
16 for the requirement to run the test?

17 MR. PURPLE: That it would be difficult to analyze
18 this with assurance; and that it's an occurrence that we
19 would think in the lifetime of the plant might well happen,
20 and we would want added assurance over just analysis on
21 paper that in fact it could be tolerated without causing an
22 accident.

23 COMMISSIONER HENDRIE: Well, let's see. If there
24 were a circumstance that you didn't know about which would
25 cause an accident, okay, and you didn't require the test,

1 then that accident would only occur in those plants where
2 inadvertent operation in fact occurred. Whereas --

3 COMMISSIONER GILINSKY: You'd better go on to
4 another subject.

5 (Laughter.)

6 COMMISSIONER HENDRIE: -- if you do the test, you
7 know, you then get it in every plant. Okay?

8 COMMISSIONER GILINSKY: It's like cutting your
9 head off to see if it will bleed.

10 (Laughter.)

11 MR. DENTON: I think you've got a point.

12 COMMISSIONER HENDRIE: It's risk "minimization,"
13 not "maximization."

14 (Laughter.)

15 MR. DENTON: I --

16 COMMISSIONER GILINSKY: Anyway, that was an idea.

17 MR. DENTON: We need to sharpen that some.

18 (Laughter.)

19 COMMISSIONER HENDRIE: Some language adjustment
20 there might --

21 MR. PURPLE: Well, while I'm that far ahead, I'm
22 through.

23 COMMISSIONER HENDRIE: Let me ask a question,
24 then. What do you have in mind doing with the 3-foot piping
25 penetration on the floating plants? Not that I see it as

1 any, you know, any great agony. They can put in nozzles as
2 well as the next fellow, but --

3 MR. PURPLE: They've looked --

4 COMMISSIONER HENDRIE: Go ahead.

5 MR. PURPLE: They have looked at putting the
6 penetration in, with no difficulty because in their case
7 they have a pure steel containment.

8 COMMISSIONER HENDRIE: Well, I'm sure there's no
9 difficulty -- Well, you know, no extraordinary difficulty in
10 putting nozzles in; but suppose you had a plant floating
11 along. What would you do with the pipe you hooked to the
12 nozzle?

13 MR. PURPLE: Their thought is --

14 COMMISSIONER HENDRIE: Run it down 50 feet below
15 sea level --

16 MR. PURPLE: Exactly.

17 COMMISSIONER HENDRIE: -- and put a screen on it,
18 I guess.

19 MR. PURPLE: Exactly, and release it underwater.

20 COMMISSIONER HENDRIE: Use propulsion? Thank you.

21 (Laughter.)

22 MR. PURPLE: That is what they're looking at, if
23 they have to put it to use.

24 COMMISSIONER HENDRIE: You got out of ELD just in
25 time, Marty.

1 (Laughter.)

2 MR. DENTON: I would like to flag this issue of
3 inerting as one area in which we are not taking literally --
4 we're not doing what is recommended by the ACRS.

5 In the very last paragraph of their letter of
6 February 10th, they recommend that each licensee be required
7 to perform design studies of hydrogen control and filter of
8 containment venting systems, and including large-scale core
9 melt, including the calls for possible schedule, potential
10 for reduction in risk. And as we mentioned earlier in this
11 area, I saw these penetrations as a way of not foreclosing
12 ultimate actions there, and it just seemed to me premature
13 to require so much study of filter containment vent in
14 advance of the rulemaking in this area. And in fact, we
15 wouldn't know how to review the studies yet, in that we
16 haven't progressed that far.

17 COMMISSIONER HENDRIE: We've got this rulemaking
18 going forward, so that hopefully everybody in town doesn't
19 have to do his own study of this kind.

20 Furthermore, these people are committed to the
21 risk assessment proposition. I just see no need for it. I
22 think you made the right choice in leaving it out.

23 CHAIRMAN AHEARNE: Do you have anything else, Bob?

24 MR. PURPLE: No, I have nothing further.

25 CHAIRMAN AHEARNE: Vic?

1 COMMISSIONER GILINSKY: I wanted to ask about what
2 your thinking is about plants that have not yet been
3 designed, that haven't come in the door yet. Are we going
4 to provide any --

5 CHAIRMAN AHEARNE: Guidance?

6 COMMISSIONER GILINSKY: -- guidance for the
7 designers?

8 MR. DENTON: Well, it was not my view that these
9 requirements would be applicable to such plants, and I was
10 not aware of a resurgent demand of people who were waiting
11 for new requirements for brand-new designs.

12 I think you have a number of actions underway in
13 the near future such as the degraded rulemaking and siting,
14 all of which would lead to development of new criteria for
15 brand-new plants from a design standpoint.

16 Now if someone really did come in today, I think
17 these requirements would be a point of departure. But to
18 the extent that these requirements were limited by
19 practicality considerations, for example, in picking Level
20 C, I think we would suggest to the Commission that that be
21 treated on an ad hoc basis if someone showed up tomorrow
22 with a brand-new design and that we'd deal with it that
23 way.

24 Otherwise, I would expect that we would await the
25 outcome of these ongoing rulemakings, and then sometime next

1 year perhaps propose new requirements.

2 CHAIRMAN AHEARNE: Wait. Are you saying you think
3 that the degraded core rulemaking will be finished next year?

4 MR. DENTON: Well, when those rulemakings are
5 completed would be the proper time to reassess requirements
6 for new plants.

7 CHAIRMAN AHEARNE: Well, are you saying then that
8 if --

9 COMMISSIONER HENDRIE: It's a long time down the
10 line.

11 CHAIRMAN AHEARNE: -- if we get asked the
12 question: When will the NRC be prepared to describe the
13 requirements for additional construction, that our answer
14 is: We will first complete the degraded core rulemaking?

15 MR. DIRCKS: I think before we come out with
16 another rule proposal, I guess we'd wait for that. But it's
17 not saying that in the event that applications come in
18 between now and that time, that we wouldn't be able to
19 respond.

20 MR. DENTON: It may be reviewed on an ad hoc
21 basis.

22 COMMISSIONER HENDRIE: I think that may be a
23 little far away.

24 COMMISSIONER GILINSKY: I do, too.

25 COMMISSIONER HENDRIE: I think -- you know, I'll

1 tell you. Since we've been struggling valiantly to get the
2 so-called "interim hydrogen control rule" out, why I'm
3 willing to accept the proposition that we ought not to
4 work on new plant requirements until we at least get this
5 one published. But sometime hopefully in this year I wish a
6 few people could think a little bit about what the
7 Commission might be able then to publish as a general
8 guidance constituting a sort of interim proposition, and
9 until you've completed these rulemakings. Because I'm
10 afraid that some of these major rulemakings aren't going to
11 be all tied up for two, three, four years.

12 And if you think: Well, gee, a guy who might be
13 later this year saying, "Well, if I were to consider a
14 plant, what would it look like?" Somebody gets started on a
15 preliminary design so I can get some pricing. You mean you
16 can't start that for three or four years? I don't think
17 he'd buy that.

18 I suspect there are some things that we could
19 sketch out with, as you say, these propositions as points of
20 departure which would be imminently reasonable as an interim
21 proposition. You know, this is getting there.

22 COMMISSIONER GILINSKY: Well, that's where I was
23 headed with my question, but --

24 COMMISSIONER HENDRIE: Yes.

25 COMMISSIONER GILINSKY: -- it would seem to me

1 that there you would -- Well, really what you want to ask is
2 what would you have required if you were not constrained by
3 some of the practical considerations, you know, that come up
4 here?

5 MR. DENTON: Yes.

6 COMMISSIONER GILINSKY: The fact is, utilities
7 have made certain commitments, and they've factored into
8 their planning plants that are in the review process.

9 COMMISSIONER HENDRIE: Yes.

10 COMMISSIONER GILINSKY: I must say, I am inclined
11 to treat the ice condenser plants in the same category as
12 new plants, because there is not a utility commitment there
13 and they're not factored into energy planning. So I --

14 COMMISSIONER HENDRIE: You mean the manufacturing
15 license plant.

16 COMMISSIONER GILINSKY: Right. And we have to ask
17 ourselves: Are we really willing to let eight plants of
18 that sort be built with these sorts of conditions? You
19 know, there may not be orders for eight, but that's what we
20 would be agreeing to here.

21 So I think that's something we want to think over
22 very carefully.

23 CHAIRMAN AHEARNE: Harold, if a company were
24 interested in coming in for a -- to start a construction
25 plant review, is it correct that if we go ahead with this

1 what they would be faced with is that all of the issues that
2 you have addressed are open issues, both from the standpoint
3 of what they might want to design against, or what they
4 might have to, if it went down the hearing process, have to
5 then have open in front of them? That there's no envelope
6 that would really refer to that?

7 MR. DENTON: Well, I don't -- Maybe I need
8 clarification on the word "open." I think many of the
9 approaches that are taken here for near-term CPs would be
10 directly applicable to someone who just came in tomorrow.
11 And I don't know if you would call that "opened" or
12 "closed," --

13 CHAIRMAN AHEARNE: From the Staff point of view.
14 But as far as anything in the way of a regulation, they are
15 open.

16 MR. DENTON: I think that's right.

17 CHAIRMAN AHEARNE: So unless we took some --
18 because this really only specifically addresses applications
19 we have in hand.

20 MR. DENTON: Yes.

21 MR. BICKWIT: By its terms.

22 CHAIRMAN AHEARNE: Yes.

23 COMMISSIONER GILINSKY: What is the number of
24 plants, again, that is involved here?

25 CHAIRMAN AHEARNE: Eleven plants, not counting the

1 floating nuclear plants.

2 COMMISSIONER GILINSKY: And how many of those are
3 MARK IIIs?

4 MR. PURPLE: Three. Oh, I'm sorry, three of the
5 stations are --

6 COMMISSIONER GILINSKY: Six, five.

7 MR. PURPLE: Five or six.

8 MR. SCINTO: Let me respond. Right now you have
9 no moratorium on new construction permits --

10 CHAIRMAN AHEARNE: But in essence we have a
11 moratorium on the Boards.

12 MR. SCINTO: But you have no regulations; none.
13 Somebody comes in, the presently applicable requirements for
14 any construction permit of the ones presently existing in
15 the regulations. You are going to add requirements for
16 these six -- six or seven; you will just not have additional
17 requirements for them.

18 CHAIRMAN AHEARNE: Are you saying that someone
19 could come in, then, for a new application and request to be
20 licensed against the existing regulations to get a
21 construction permit?

22 MR. SCINTO: Right now, that's what governs him.

23 CHAIRMAN AHEARNE: Okay. Anything else, Vic?

24 COMMISSIONER GILINSKY: Well, no, just to repeat
25 the point that's been made here --

1 CHAIRMAN AHEARNE: Yes.

2 COMMISSIONER GILINSKY: -- by several of us, that
3 I think at the completion of this effort one ought to sit
4 down and try to lay out requirements for the next group of
5 plants, however you define them, so that those who are
6 sitting down to think about designs -- which, after all,
7 won't turn into applications for a number of years anyway,
8 and so one has to start thinking about them now -- will be
9 clear on what it is they have to do.

10 COMMISSIONER HENDRIE: Or at least to have some
11 guidance.

12 COMMISSIONER GILINSKY: Yes.

13 COMMISSIONER HENDRIE: I don't think that one
14 would --

15 COMMISSIONER GILINSKY: Well, will have reasonable
16 guidance.

17 COMMISSIONER HENDRIE: Yes. I don't think one
18 would attempt, or probably could set out a set of additional
19 requirements and say: Now this is going to be it until the
20 end of the Century, or something like that. I expect there
21 are a few things that are in mind that could be suggested
22 and be useful guidance to designers.

23 CHAIRMAN AHEARNE: Joe?

24 COMMISSIONER HENDRIE: Where do we go from here?
25 I've got two questions: Where do we go from here -- Well,

1 it's one question.

2 Where do we go from here in terms of (a)
3 straightening out whether we're going to write all this into
4 the rule; or (b) perform some adroit referencing mechanism
5 to 0718?

6 CHAIRMAN AHEARNE: I would say that what I think
7 the best thing is to attempt to do, much as I don't
8 particularly like the incorporation-by-reference approach, I
9 think in this particular case I would prefer, in order to
10 move forward, to do it that way. But that still would
11 require, at least as far as I can see, three things.

12 First --

13 COMMISSIONER BRADFORD: Three votes.

14 (Laughter.)

15 CHAIRMAN AHEARNE: -- this 0718 has to be put in
16 shape to sort of clean it up to make it clear, and to work
17 the changes that Harold has been discussing this afternoon.
18 The issue that Len has raised and that Joe has raised has to
19 be worked through to make sure that it can be incorporated.
20 And then the document itself I think has to be reviewed by
21 the lawyers to make sure that the language is right.

22 COMMISSIONER HENDRIE: Is it clear that 0718, that
23 the essential requirements can't be shaken out of 0718 into
24 rule form?

25 CHAIRMAN AHEARNE: Well, obviously it can.

1 COMMISSIONER HENDRIE: Obviously in principle. My
2 question implies a more rapid extraction than that.

3 MR. BICKWIT: I hope so.

4 CHAIRMAN AHEARNE: I mean, that's --

5 COMMISSIONER HENDRIE: You can obviously start
6 from scratch and create the whole prose body afresh, but I
7 had some hope that 0718 --

8 CHAIRMAN AHEARNE: Based on limited experience, I
9 would have guessed that that would take substantially longer.

10 COMMISSIONER GILINSKY: You would do what? Factor
11 it into a number of rules?

12 COMMISSIONER HENDRIE: No, just take it out and
13 stick in -- what section is this? 50--

14 MR. DIRCKS: 34.

15 COMMISSIONER HENDRIE: 50.34, or make it 50.35, or
16 whatever. There are a lot of spare numbers laying around in
17 there. We're not about to saturate there. I just wondered,
18 if you --

19 CHAIRMAN AHEARNE: Joe, what would be your
20 estimate today in terms of time?

21 MR. SCINTO: I just don't know. That one I
22 haven't thought about. Have you?

23 MR. SHIELDS: It would be a big job, and it
24 basically would involve simply taking all of the NUREG,
25 making a few deletions in the introduction, and so on, and

1 putting it in the Regulations.

2 Part of the problem is also with the Federal
3 Register. The gentleman who deals with them regularly isn't
4 here today, but they have some --

5 COMMISSIONER HENDRIE: They don't like that, do
6 they?

7 MR. SHIELDS: They have some objections in
8 principle, number one, to putting in a regulation in Part 50
9 which would probably be nearly as long as all of Part 50 is
10 today, excluding the appendices, and there are reasons why
11 they will not --

12 COMMISSIONER HENDRIE: Well, I'll tell you, you
13 know if 0718 is too windy to be a reasonable regulation in
14 the Code of Federal Regulations, it's not clear to me that
15 it is an appropriate document to make a regulation by
16 referencing it in the CFR. Okay? You know, if it stinks as
17 a regulation, I'm not sure that having it out here with the
18 number "0718" on it, but over here in the regulations saying
19 that that's a regulation, cures the problem.

20 MR. SHIELDS: I think "stinks" is too strong a
21 word.

22 (Laughter.)

23 CHAIRMAN AHEARNE: Yes. It's not obvious that the
24 Federal Register is the final arbiter of whether or not --
25 of deciding whether or not a regulation stinks.

1 COMMISSIONER HENDRIE: Does it all --

2 CHAIRMAN AHEARNE: Joe, obviously there would be a
3 better way to do it to extract it, distill it, revise it,
4 and polish it, and I think in six or nine months we could
5 undoubtedly have that fine-tuned, honed regulation, and that
6 would work beautifully.

7 But I think as has been pointed out several times,
8 it really is for a limited set of plants and Boards that are
9 waiting. It's not obvious to me that we really are being
10 most responsible if that's the approach we're taking. It
11 seems to me we would be better off the other way.

12 COMMISSIONER HENDRIE: Well, so who is going to
13 break this deadlock? The legal offices will strive?

14 CHAIRMAN AHEARNE: Well, it's not obvious at the
15 moment. I think we're one to one on that. We have two
16 other votes.

17 COMMISSIONER HENDRIE: Well, I'm not voting any
18 particular way. I would just like to know how we're going
19 to get on with it.

20 COMMISSIONER GILINSKY: What is the advantage of
21 putting it into the Federal Register?

22 MR. DIRCKS: As a rule?

23 COMMISSIONER HENDRIE: Well, it's pretty clear
24 what is a rule and what is --

25 COMMISSIONER GILINSKY: -- what is a requirement.

1 COMMISSIONER HENDRIE: Yes. It's pretty clear,
2 then, what is a regulation of the Commission.

3 MR. BICKWIT: It will still not be entirely clear,
4 because 0718 references additional documents.

5 COMMISSIONER HENDRIE: No, no. I say, if one puts
6 into Part 50 those things one wants as regulations and
7 leaves to 0718 those things one is willing to have as
8 supplementary information and guidance --

9 MR. BICKWIT: Oh, I see.

10 COMMISSIONER HENDRIE: -- that it's quite clear
11 what the regulations are.

12 MR. BICKWIT: I see.

13 COMMISSIONER HENDRIE: Whereas, if you reference
14 this thing, then I have just the problem you cite. That
15 this thing references other NUREGs, which reference other
16 NUREGs, which reference articles in The New York Times in
17 1954, for God's sake, which mention the diary of a man named
18 Smith born in 1702 --

19 (Laughter.)

20 COMMISSIONER HENDRIE: It can go back through the
21 whole of English literature.

22 (Laughter.)

23 CHAIRMAN AHEARNE: Boy, when you were down in the
24 Staff, Joe, you wrote some strange documents.

25 (Laughter.)

1 COMMISSICNER HENDRIE: Well, I don't remember
2 writing regulations that referenced back that way. Well, I
3 don't know. The legal offices will try to make a
4 recommendation --

5 CHAIRMAN AHEARNE: We're not sure. We're not
6 sure, yet. We have two other people who --

7 COMMISSIONER HENDRIE: Oh, sorry. I'm --

8 COMMISSIONER BRADFORD: I must say, I'm not
9 inclined in this direction. I certainly wouldn't foreclose
10 a reasonable effort by ELD and the General Counsel's office,
11 except that before they embarked on the longer effort -- the
12 one involving a number of months -- I would think it would
13 be well to be sure that there was a Commission majority that
14 was inclined in the direction of a rule at all.

15 I'm not -- It seems to me that it's at least as
16 good a way to deal with this problem and to deal with this
17 document to approve it, whatever document we finally agree
18 on, in the way that I advocated with the Action Plan:
19 Approve it as a Staff position; permit its litigation; and
20 here we have the added possibility of being able to issue
21 LWAs in all but one of the cases, in all likelihood, once
22 the site-related issues are resolved so that there isn't the
23 significant potential for delay of plants in the hearing
24 process.

25 COMMISSIONER GILINSKY: Joe --

1 CHAIRMAN AHEARNE: Could I --

2 COMMISSIONER GILINSKY: Yes.

3 CHAIRMAN AHEARNE: I would guess, Peter, that at
4 least -- and it's probably not being as familiar with the
5 legal system that maybe I'm wrong on this -- but I think
6 that the approach you took in the policy statement and
7 eventually not making it a rule has substantially added to
8 the delay. I would have thought the same thing would be
9 happening here.

10 COMMISSIONER BRADFORD: Well, in the case of the
11 policy statement, first of all one didn't have the LWA
12 alternative.

13 Second --

14 CHAIRMAN AHEARNE: That's only of limited use.

15 COMMISSIONER BRADFORD: Second, the difficulty we
16 had with the -- Well, I'm not sure it is of limited use
17 here. It sounded to me as though it was clearly applicable
18 to five of the six sites, and conceivably the sixth.

19 CHAIRMAN AHEARNE: And conceivably one of them has
20 an LWA-1.

21 COMMISSIONER BRADFORD: That's right, an LWA-1.

22 CHAIRMAN AHEARNE: Right. And at least I think
23 that we haven't really explored how significant not being
24 able to get the 2 is. I don't think the lawyers were really
25 prepared to address that at any length --

1 COMMISSIONER BRADFORD: No, I --

2 CHAIRMAN AHEARNE: -- with the specific point that
3 at least was made in response to your question; that
4 probably two contentions could be raised to prevent it. One
5 of them already has, the LWA, and also that in itself only
6 allows a limited amount of work.

7 COMMISSIONER BRADFORD: Well, that's right, but
8 during the time that work is going on, the other issues
9 would be being resolved.

10 CHAIRMAN AHEARNE: Would be "being addressed." At
11 the pace at which the proceedings now run, the resolution
12 isn't necessarily quick.

13 MR. DIRCKS: Can I just mention one thing? If you
14 go --

15 CHAIRMAN AHEARNE: Just one thing.

16 MR. DIRCKS: All right, just one thing. We've got
17 to keep in mind that we are really straining manpower
18 reserves of the agency now. If you take this thing into
19 case-by-case litigation, it's going to be another immediate
20 drain off the available manpower in NRR, because every time
21 an issue is raised they're going to have to addresss it and
22 testify to it and prepare briefs and hammer it out. We are
23 straining now.

24 COMMISSIONER GILINSKY: Joe, let me ask about
25 putting it into the rules. Since this would apply to

1 something like 10 plants, and then when we start to deal
2 with plants that would be coming in with applications in the
3 future, we'd have to have some comparable set of rules, some
4 modification of these, and we'd have to have a bunch of
5 references saying that this applies to these 10 plants, and
6 other modified requirements applies to a subsequent group of
7 plants. It seems to me you could end up with a tremendous
8 amount of --

9 COMMISSIONER HENDRIE: Yes.

10 COMMISSIONER GILINSKY: -- a big hunk in the rules
11 which is just going to apply to a very small number of
12 plants.

13 COMMISSIONER HENDRIE: Well, my objections don't
14 rise to the level of saying I'm adamantly opposed to simply
15 referencing 0718. As I scan through it, I see it's got the
16 whole Action Plan in it, or a good piece of it.

17 CHAIRMAN AHEARNE: At least those appropriate to
18 construction.

19 COMMISSIONER HENDRIE: Yes.

20 CHAIRMAN AHEARNE: It seems to be what it's
21 supposed to be.

22 COMMISSIONER BRADFORD: Bill, I think the answer
23 to the point regarding agency resources, beyond the fact
24 that I just don't foresee the kind of drain that you do,
25 because I don't think the people out there have the

1 capability to litigate all these issues in every case, is to
2 litigate them centrally if it comes to that. Do what we did
3 in the Radon Rule.

4 If it turns out that in all of these cases
5 somebody wants to raise -- well, say in the MARK III case if
6 everybody wants to raise hydrogen control, have a central
7 proceeding on hydrogen control. There are ways to control
8 that kind of problem.

9 MR. DIRCKS: In this case we did go through the
10 process according to the book. We did go out with a
11 proposed rule. We did collect comments. We did address the
12 comments, and we have here before you a proposed effective
13 rule.

14 COMMISSIONER BRADFORD: I'm not saying that you
15 can't do it in this case; I'm just saying I wouldn't. I
16 think there's a better way to deal with it, with the same
17 problem.

18 MR. DIRCKS: Well, I'm just very shy on resources,
19 I guess, and the probability is -- I think it's pretty
20 high-- that it would take resources. If it takes any
21 resources, we're in trouble.

22 MR. DENTON: Let me make a different comment.
23 Even if it's not contested, per se, the failure to have a
24 rule is a resource strain, because that leaves it open for
25 back-and-forth between the Applicant and the Staff.

1 COMMISSIONER BRADFORD: Well, now, wait --

2 MR. DENTON: The advantage of a rule, at least all
3 the parties know what the threshold for acceptability is.

4 COMMISSIONER BRADFORD: My proposal has always
5 been -- both with this and the other -- that the Commission
6 take this document, or in the case of the other the Action
7 Plan, and instruct that it be the Staff's position. Because
8 I think we are in a position clearly, once we've agreed
9 among ourselves what we think the outcome ought to be, to
10 impose that on the Staff.

11 MR. DENTON: Let me just pick one of those up.
12 Let's take the 45 psi pressure capability. Absent a rule,
13 that figure could then be litigated by the Applicant in each
14 case, theoretically, and he might propose "no change," or
15 "less than 45," or what have you.

16 It seems to me the big advantage of making it a
17 rule is the Commission does -- in addition to telling the
18 Staff to take that as the marching orders -- is you tell the
19 world that's what you want it built to, and that cuts out
20 all of the uncertainty about it.

21 Otherwise, I could end up having to litigate or
22 try to advocate 45 before six boards.

23 COMMISSIONER BRADFORD: Well, Harold, have you
24 found historically that Applicants have tended to take
25 issues to boards where they were in significant disagreement

1 with the Staff?

2 MR. DENTON: Seldom.

3 COMMISSIONER BRADFORD: Seldom?

4 MR. DENTON: Yes. It's a lot before we get to the
5 boards. It seems to --

6 CHAIRMAN AHEARNE: And a lot of things are
7 changing, Peter. Much of the system is changing.

8 Victor, where do you come out?

9 COMMISSIONER GILINSKY: You mean whether to
10 incorporate? I guess --

11 CHAIRMAN AHEARNE: No. First, whether to even
12 make it a rule.

13 COMMISSIONER GILINSKY: I think I'm inclined to a
14 rule.

15 CHAIRMAN AHEARNE: Okay, then, would you be for
16 the incorporation?

17 COMMISSIONER GILINSKY: I don't know, yet. I want
18 to think about that.

19 CHAIRMAN AHEARNE: Okay.

20 MR. PURPLE: Mr. Chairman, excuse me. There was
21 an item on the agenda we overlooked, and that was a report
22 on the status of the --

23 CHAIRMAN AHEARNE: No, that's still coming.

24 MR. PURPLE: Okay.

25 CHAIRMAN AHEARNE: I wasn't about to close.

1 I think, then, the majority seems to be in favor
2 of a rule. We're not yet clear whether or not it should be
3 by incorporation or scrubbing down. I think that then,
4 therefore, certainly an initial issue has to be resolved,
5 which is the legal one that the legal offices have to look
6 at.

7 If the answer is that you can't do it by
8 reference, then that really -- or that the magnitude of the
9 effort to get there is equivalent to the magnitude of the
10 effort to do it the other way, then that's --

11 MR. BICKWIT: I think I've given you our position,
12 which is: That you can do it by incorporation if it's clear
13 what is required after you look through the --

14 CHAIRMAN AHEARNE: ELD hasn't yet reached that.

15 MR. BICKWIT: -- after you take that road map
16 through the maze. And if that would be our conclusion, fine.

17 CHAIRMAN AHEARNE: And I guess the three of us who
18 are leaning more towards a -- who seem to be coming out for
19 a rule will have to reach a decision as to which is the best
20 approach to tell you to do.

21 There is another question that relates to the
22 floating nuclear power plant. You would prefer to strike
23 that? Correct?

24 COMMISSIONER GILINSKY: (Nodding in the
25 affirmative.)

1 CHAIRMAN AHEARNE: Joe, where do you come out?

2 COMMISSIONER HENDRIE: Well, it's a pending
3 proceeding which is hung up on these issues just like the
4 others. I would take it along.

5 CHAIRMAN AHEARNE: Peter?

6 COMMISSIONER BRADFORD: Are there customers for
7 floating nuclear power plants, at this point?

8 COMMISSIONER GILINSKY: Well, let me just
9 interject. I would do one of two things. I would either
10 leave them out of this rule, or I would impose conditions of
11 a sort I would be inclined to impose on a new application.
12 So I would not feel constrained -- I mean, in imposing these
13 requirements, you felt, I gather, constrained to maintain
14 the -- stay pretty close to the design as it is, and I would
15 feel in that case less constrained.

16 COMMISSIONER HENDRIE: Well, I think that's
17 tantamount to cancelling the manufacturing license
18 proceeding and denying the license. You know, the only
19 viability it has, it's been a proceeding which has been
20 underway -- when did it first come into the shop? 1971, or
21 something like that?

22 MR. CASE: Yes.

23 COMMISSIONER HENDRIE: And to stop it now and say,
24 you know, back to the drawing board in some time, months or
25 years, we'll let you know what the requirements are that you

1 have to redesign to -- you know, that's denial.

2 H. DENTON: One unique feature of that
3 application, it's the only application where we specifically
4 considered Class 9 accidents in the review, and they have
5 included provisions for core meltdown, and quite a
6 contamination.

7 COMMISSIONER HENDRIE: Yes.

8 CHAIRMAN AHEARNE: Peter, did you change your mind?

9 COMMISSIONER BRADFORD: Well, it's a point that I
10 hadn't given much thought to. I must say, it's been a
11 situation in which there are no customers and I'm
12 uncomfortable with sort of imposing on that proceeding
13 constraints which have arisen from compromises in situations
14 in which people are really out there trying to get
15 individual plants built.

16 I am also, as I have said before, not much
17 inclined to the rule approach, anyway, and therefore I would
18 to make it a rule for -- and this is sort of a subclass of
19 that question --

20 CHAIRMAN AHEARNE: Yes, I understand.

21 COMMISSIONER BRADFORD: I am prepared to let Joe
22 try to talk me out of it, though, in the time between now
23 and whenever we can come to close on this, because I'm not
24 very familiar with the separate history of the floating
25 nuclear plants.

1 CHAIRMAN AHEARNE: All right. I guess I would
2 probably lean with -- go with Joe on that issue, but that
3 might end up being a 2 to 2, so that would in essence not
4 put it in the rule.

5 The final issue then would be the remaining
6 portions that they have described, which I would -- for
7 myself, I would be in favor of.

8 Vic?

9 COMMISSIONER BRADFORD: Let me ask some questions
10 on that, if I could. I haven't asked any questions yet
11 today.

12 You all are proposing with regard to siting
13 requirements that those not be part of the -- there is no
14 comparison with whatever it is, NUREG-0625, be done as part
15 of whatever rule or requirements come forward?

16 MR. PURPLE: That's correct. We're not proposing
17 that they do anything specific in the siting area.

18 COMMISSIONER BRADFORD: And the basis for that is
19 that the plants would all pass anyway?

20 MR. PURPLE: A preliminary evaluation by the Staff
21 that there is nothing unique at any one of these sites that
22 makes them not appear to pass even the illustrative criteria
23 of the Siting Policy Task Force and the best judgment of the
24 people working on the problem, the expected criteria that
25 would come out of the rulemaking.

1 Things related to site will be picked up in the
2 probabilistic risk analysis, because that's called a "plant
3 site-specific analysis." So judgments that would be
4 important based on where the thing is located and how their
5 high population zones are, and so forth, would be factored
6 into those analyses. So to some degree siting gets in there.

7 COMMISSIONER BRADFORD: Let's see. I guess what
8 you're saying is that there's some reason why it's
9 preferable just to leave it out, rather than have them do
10 whatever analysis is necessary and pass? What is the point
11 there? That it's just a resource drain?

12 MR. DENTON: Well, no. When we first thought
13 about that comparison in the early days, it was because we
14 hadn't had the opportunity to do it. I think in one of our
15 Staff papers sufficient time had gone by that we had
16 actually been able to accomplish that comparison and we did
17 report the results to the Commission, having already done
18 it.

19 So having done it and found that it was no
20 outlier, or didn't see any point in singling it out just to
21 go through it again since it's been reported.

22 COMMISSIONER BRADFORD: I guess that's what I'm
23 groping toward. Are you really saying that you've pretty
24 well done the analysis that you would have required, and
25 that they pass? Or are you saying that you've done a

1 superficial form of it, and they seem all right?

2 MR. DENTON: Well, how would you characterize our--

3 MR. PURPLE: I think it was more than superficial,
4 but it certainly was -- I think I would call it more than a
5 "preliminary look."

6 MR. DENTON: Well, what we found was that the
7 sites fell in various groups. Several of the sites were in
8 the very lowest population areas of any plants; and then we
9 looked somewhat harder at the ones that were in the slightly
10 above-average category and concluded even that one would
11 pass the illustrious example today, and we didn't see that
12 it needed any further discussion, especially since we had
13 tied in the risk study, as Bob said, along the Limerick line
14 so that we will get a specific plant site risk study done
15 very shortly after -- if CPs were to issue, that would lead
16 toward further plant improvements if the site warranted it.

17 COMMISSIONER BRADFORD: Let me move on to
18 something else.

19 MR. BUCKWIT: Excuse me. Just before you leave
20 siting. I just wanted to make one minor point: That in the
21 comment analysis on a couple of occasions there's a
22 reference in which you seem to be embracing the view of some
23 commenters that it would not be possible to impose siting
24 requirements to pre-'79 CP applications on the grounds of
25 the '80 Authorization Act.

1 My own feeling is that that can be done consistent
2 with the '80 Authorization Act, and I think it's important
3 to preserve the Commission's option to impose any siting
4 requirements, rules or otherwise, that it chooses to to
5 pre-'79 applications.

6 And I would like to, if the Commission is
7 agreeable, to work with the Staff to review that language,
8 and if the Staff agrees with our analysis, to get that out
9 of there.

10 MR. PURPLE: I have no problem with that. I
11 didn't think we wrote it that way, but if it is going to
12 come across that way --

13 MR. BICKWIT: On a couple of occasions, it looks
14 like you went along with the commenters' views along those
15 lines.

16 MR. DENTON: I don't think we intended to imply
17 that it was determinate. It's just that we wanted to be
18 cognizant of it. But really I think our views were based on
19 the comparison that was done and reported.

20 MR. SCINTO: We will -- I just want to make it
21 very clear to Len, that we went through the language so that
22 in our mind we were not making such a statement that we
23 agreed with it. It may not be as clear as you would like,
24 but we went through it for that point, too.

25 CHAIRMAN AHEARNE: Okay. Go ahead, Peter.

1 COMMISSIONER BRADFORD: I will just skip around on
2 a number of things and try to touch on them quickly.

3 On your Enclosure three to the original paper-- we
4 may have touched on this at the last meeting, but if we did
5 I've forgotten it -- what is the basis for going, if I've
6 understood it correctly, on the control room design standard
7 from something to be reviewed in the CP stage to something
8 to be reviewed at the OL stage?

9 MR. PURPLE: I believe basically because we felt
10 that's a long-term program of us developing the criteria for
11 what the next generation of control rooms might look like.
12 I don't think we had enough basis to review it at the CP
13 stage in anything more than a very superficial way compared
14 to, what it might look like when the criteria developed three
15 or four years down the pike.

16 COMMISSIONER BRADFORD: Okay. Let's see. What
17 does that mean as a practical matter, Bob? Does that mean
18 they will start building the control rooms without knowing
19 what our review will be? Or, alternatively, that we'll come
20 up with a set of criteria but be foreclosed from applyin
21 them because the control rooms will have already been
22 completed?

23 MR. PURPLE: Well, to put it another way, I don't
24 believe that we intended to say that these plants would have
25 to meet whatever criteria we may develop three or four years

1 from now. So the item of control room design review is an
2 item that's left for detailed review at that stage.

3 MR. EISENHUT: Bob, let me say it just slightly
4 differently, the same thing.

5 We actually think the control room design would be
6 better if we laid off this time and wait for it to come
7 around and picked it up thoroughly through the OL review. If
8 we did it right now, it's probably going to be pretty much
9 of the same kind of review we're doing on the OLs which we
10 really don't have a firm standard and we're going through in
11 a very preliminary manner.

12 That's really all we can do probably over the next
13 few months. Down the road over the next couple of years
14 we're going to be developing new standards and requirements
15 for control room design, and the design will probably have
16 proceeded far enough we think that those two will mesh
17 together and you really won't lose that option.

18 But we will be, sometime between before an FSAR is
19 submitted, we'll very likely be issuing requirements for
20 control room design. So it will probably be picked up going
21 down that scheme of --

22 COMMISSIONER BRADFORD: So what you're saying is
23 that these plants won't be so far along by the --

24 MR. EISENHUT: That's right.

25 COMMISSIONER BRADFORD: -- time those requirements

1 are issued --

2 MR. EISENHUT: I think that's right.

3 COMMISSIONER BRADFORD: Deviations from the
4 Standard Review Plan, a favorite subject of mine. You're
5 not proposing that those deviations have to be documented
6 and justified for these plants?

7 MR. PURPLE: Not as a condition of getting the
8 CP. I think our proposal in another arena on the subject
9 was that it be done during the course of construction.

10 MR. CASE: No, no, not in the other -- in the
11 other arena, it was proposed to be done at the OL stage.

12 MR. PURPLE: Okay, the OL stage, but not at the CP
13 stage.

14 COMMISSIONER BRADFORD: Let's see. Isn't it --
15 Well, first of all, why do it that way? Why not make it a
16 condition of the CP?

17 MR. DENTON: Well, I think it's -- in my mind,
18 it's two arguments. We reviewed all these plants years ago,
19 and in all of the changes that have occurred in the
20 TMI-related areas we're sweeping into this voluminous
21 document. I don't think there have been any types of
22 changes in the other parts of the Standard Review Plan that
23 would really be foreclosed to be picked up in any real
24 manner at the OL Stage.

25

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1 And secondly, that the thought of re-reviewing all
2 of these again is just, in terms of resources, is very
3 difficult to do.

4 COMMISSIONER BRADFORD: You're saying that these
5 six were reviewed pursuant to the Standard Review Plan?

6 MR. DENTON: No, I'm saying these are the most
7 recent, best --

8 COMMISSIONER BRADFORD: These are closest we
9 have to --

10 MR. DENTON: -- review of any that we've reviewed
11 since the CP stage.

12 CHAIRMAN AHEARNE: Well, no, what it really
13 means is that these plants were reviewed most recently, and
14 so they had as thorough a review as any plants have had.

15 MR. DENTON: Yes.

16 COMMISSIONER BRADFORD: But that's not the same
17 as a Standard Review Plan review, I'm afraid.

18 CHAIRMAN AHEARNE: It is the same as a "thorough
19 Staff review," which is --

20 COMMISSIONER BRADFORD: No, it's the same as the
21 most thorough Staff review we've had yet.

22 CHAIRMAN AHEARNE: Correct, which is -- and then
23 the safety significance of additional review compared to
24 other uses of the resources is I think the issue that at
25 least I would raise if they're not raising.

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1 COMMISSIONER BRADFORD: Well, of course the
2 requirement would be on the licensee to justify deviations
3 other than those which the Staff itself might have explained
4 and justified in preparing the SER.

5 CHAIRMAN AHEARNE: It would end up, I'm sure,
6 with a lot of Staff resources being allocated.

7 COMMISSIONER BRADFORD: Well, they'd have to
8 review the licensee justifications.

9 MR. DENTON: It's hard to just pick up and do the
10 review again. It sounds like maybe a simple task, but if
11 our reviewer in a given area has changed jobs or is no longer
12 here who reviewed that one and another man starts it, you
13 end up having to spend about the same level of effort in
14 doing that review and documenting the deviation that we
15 spent the first time, just because of turnover in the Staff
16 and that sort of thing.

17 COMMISSIONER BRADFORD: Well, yes.

18 MR. DENTON: I think it can be handled at the OL
19 stage without --

20 COMMISSIONER HENDRIE: I thought we --

21 MR. DENTON: -- since we simply pick up the TMI
22 matters --

23 COMMISSIONER HENDRIE: I thought we came to
24 agreement on how to handle this class of plants when we dealt
25 with the assorted proposals of the Standard Review Plan

1 documentation, and so on?

2 COMMISSIONER BRADFORD: Well, let's see. Have we
3 reached agreement on that package?

4 COMMISSIONER HENDRIE: I don't know. I didn't
5 think this point --

6 COMMISSIONER BRADFORD: I didn't know that we had.

7 COMMISSIONER HENDRIE: Maybe not.

8 CHAIRMAN AHEARNE: I thought we did send something
9 to the Congress before on that?

10 COMMISSIONER HENDRIE: That was the plan for the
11 Bingham -- for the Part 1.10.

12 CHAIRMAN AHEARNE: Well, but it was also proposed
13 against what would be reviewed against (inaudible) was it not?

14 MR. CASE: At the time we sent the report to the
15 Congress, the proposal was for these plants, to review
16 them -- to have them document against the existing Standard
17 Review Plan. I don't know whether that was incorporated in
18 the material that went to the Congress or not.

19 CHAIRMAN AHEARNE: We sent whatever was the NRR
20 proposal.

21 MR. CASE: We changed that proposal when we came
22 back with the SEP Program and the Section 1.10 package, to
23 require these six plants be done at the OL stage.

24 CHAIRMAN AHEARNE: Well, I guess we ought to
25 see what we've already said we would do.

1 COMMISSIONER BRADFORD: Harold, are you telling
2 me, then, that in your judgment there would not be significant
3 safety issues foreclosed by allowing the plant in essence to
4 be built before such a review were done?

5 MR. DENTON: That's my judgment. I can't say
6 that there might not be one or two issues lurking somewhere
7 that will make it more difficult to deal with at the OL stage,
8 but I don't think in those parts of the Standard Review Plan
9 that have not been affected by TMI and all the growth since
10 then, that it's really going to foreclose any meaningful
11 safety aspects at the OL stage. There will be other ways to
12 handle those things.

13 COMMISSIONER BRADFORD: Well, for example, in
14 fire protection if you were requiring a three-foot barrier
15 as part of the Standard Review Plan, and if the plant weren't
16 built that way, it's pretty hard to put it in afterwards,
17 isn't it?

18 MR. PURPLE: Well, the Fire Protection Rule has
19 recently been published which, I would think, would catch
20 these plants.

21 MR. EISENHUT: No, it would not.

22 MR. VOLMER: No.

23 MR. PURPLE: I take that one back.

24 (Pause.)

25 CHAIRMAN AHEARNE: If we act on the proposed new

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rule it might.

MR. DENTON: Well, there might well be that example and others, but I think if that were the case that would just impose some additional need for review, and maybe design changes at the OL stage if it turned out they couldn't meet the Commission's regulations at that time.

COMMISSIONER BRADFORD: Is there any way to take a fast look at the Standard Review Plan with an eye toward areas in which that kind of foreclosure might take place, and to justify deviations in just those areas?

MR. DENTON: I'm afraid that we've not invented a good system for a quick, superficial look in that area. It tends to be that someone will want 30 days and a new application to get the answer. It's what level of effort. I just don't think it's likely to be cost-effective to do that.

CHAIRMAN AHEARNE: It continues to be a question of resources. I think we're really hurting on resources, and the freeze that has been put into place is just exacerbating that.

COMMISSIONER BRADFORD: Well, I've just finished agreeing with your point to OMB that it's conceivable that the freeze will affect our ability to license and to make safety judgments.

(Laughter.)

1 CHAIRMAN AHEARNE: But we don't have to try to
2 make --

3 COMMISSIONER BRADFORD: We're not in the process
4 of illustrating a practical application.

5 MR. DENTON: Well, I think if it were to become
6 a concern, these plants are a long way from, even if we were
7 to clean up these issues and issue some final form of this,
8 they're a long way from receiving a construction permit -- and
9 we're revising the Standard Review Plan even today, picking
10 up new requirements.

11 So once we get a new batch of Standard Review
12 Plans, we could come up with mechanisms to keep all classes
13 of plants informed as to what they are.

14 CHAIRMAN AHEARNE: Further questions?

15 COMMISSIONER BRADFORD: No.

16 CHAIRMAN AHEARNE: All right, Victor, where do
17 you come out on the other elements of what Harold has
18 proposed?

19 COMMISSIONER GILINSKY: You mean the details of
20 the rule?

21 CHAIRMAN AHEARNE: Right.

22 COMMISSIONER GILINSKY: I guess I want to think
23 over what we've heard today. I assume we'll come to some
24 reasonable agreement.

25 CHAIRMAN AHEARNE: Joe?

1 COMMISSIONER HENDRIE: I think it sounds pretty
2 good if you'll take out that "dump of CO₂ into the containment
3 of an operating machine."

4 CHAIRMAN AHEARNE: Okay, that was the problem that
5 I had with it, also. So I would agree with that change.

6 I think where we are, then, is that on this -- I
7 think on this side, we have to amongst ourselves reach some
8 kind of a conclusion as to whether to go forward with a rule
9 which the majority of us seem to be leaning in that direction,
10 two of us in favor and Vic thinking further, and Peter
11 against; whether to incorporate or not, I think Vic and Joe
12 if a rule were to be put in place are leaning towards
13 scrubbing this down in some way and putting it directly in,
14 and I am more in favor of trying to just tighten it up and
15 publish it as you proposed. And ELD at least is still thinking
16 and going to have to reach their final recommendation as
17 to whether or not that can be done.

18 So I would propose --

19 COMMISSIONER HENDRIE: Back my vote a little bit
20 out of that. I'd like the legal offices' collectively to
21 judge how best this can be done with expedition in mind --
22 they can do it by reference and find some way to clip the
23 chain of subsequent references in there, that would be
24 helpful, and I'll be glad to have it that way.

25 CHAIRMAN AHEARNE: Okay. I would prefer to have

1 them tell us how that can be done expeditiously and done
2 well. And I will try to see whether we can reach an agree-
3 ment on this side, and we will try to rapidly reach agreement
4 if the legal offices will give us that advice.

5 You do have some changes independent of how it is
6 done. You will want to publish 0718, you've got to make some
7 changes to that.

8 All right. I think that completes that part of it.

9 You're now going to report on the other piece that
10 you're prepared to report on.

11 MR. PURPLE: I'm going to ask Jim Norberg to speak
12 to that, from Standards.

13 CHAIRMAN AHEARNE: On a Staff Requirements memo of
14 February 5th, we had requested the Staff be prepared to
15 discuss the status of the interim regulations related to
16 hydrogen control.

17 MR. NORBERG: I'm Jim Norberg in Standards.

18 The status of this rule is that it was put out and
19 published and we received all of the comments. We are in the
20 process of now pulling together all of these comments. We've
21 collated them, and we're in the process now of developing
22 what kind of resolutions we should take to the comments.

23 We received about 33 comment letters that had
24 some 155 separate comments in them. Many of them were the
25 same kinds of comments, and we're in the process of collating

1 all of these.

2 The comments kind of run the gamut, I guess,
3 from what one would expect. We have a lot of commenters that
4 say we should withdraw this rule and put it into context with
5 the long-range rule. We have others that say that the BWRs
6 should not be inerted, which we've heard before.

7 We have several commenters, some 16 commenters,
8 that think that we should not put the design analysis in the
9 rule at this time without criteria first. The design basis
10 for hydrogen generation and the radiation source terms have
11 been challenged several times.

12 I guess that's the major comments that we've had,
13 and we're in the process now of responding to these. We've
14 got them all collated, and I hope to have a rule to the Staff
15 for review here in the next couple of weeks. We have had a
16 problem in that our principal technical Staff person came down
17 with the flu and has been out of work here for awhile, so
18 we've had to put another person on to work in this area, which
19 has slowed us down a little bit, unfortunately.

20 CHAIRMAN AHEARNE: Does that satisfy you?

21 COMMISSIONER HENDRIE: Yes.

22 CHAIRMAN AHEARNE: Any other items on this?

23 (No response.)

24 CHAIRMAN AHEARNE: All right, Bill, Harold, Bob,
25 thank you very much. You will do your portion, and we will

1 do ours, and hopefully we will meet again soon on this.

2 Thank you very much.

3 (Whereupon, at 4:40 p.m., the meeting was
4 adjourned.)

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300 7TH STREET, S.W., REPORTERS BUILDING, WASHINGTON, D.C. 20024 (202) 554-2345

NUCLEAR REGULATORY COMMISSION

This is to certify that the attached proceedings before the
Commission Meeting

in the matter of: Public Meeting - Discussion on SECY-81-20

Date of Proceeding: February 12, 1981

Docket Number: _____

Place of Proceeding: Washington, D. C.

were held as herein appears, and that this is the original transcript
thereof for the file of the Commission.

Jane W. Beach

Official Reporter (Typed)

Jane W. Beach

Official Reporter (Signature)

February 11, 1981



SECY-81-20A

RULEMAKING ISSUE
(Commission Meeting)

For: The Commission

From: William J. Dircks
Executive Director for Operations

Subject: POLICY ON PROCEEDING WITH PENDING CONSTRUCTION PERMIT
AND MANUFACTURING LICENSE APPLICATIONS

Purpose: The Commission considered this subject at a meeting
January 13, 1980. As a result of that meeting, the
staff was requested to:

- (1) Prepare a final rule;
- (2) Study further the staff recommendation for requirements
related to degraded core rulemaking (Action Item
II.B.8); and
- (3) Provide staff views on how the construction permit
process can be modified to ensure that major design
changes are subject to prior NRC approval.

This paper responds to that request.

Discussion: 1. Final Rule

Attached as Enclosure 1 is a draft of the proposed final
rule. NUREG 0718, referenced in the rule, contains a
statement of requirement for Action Plan Item II.B.8
consistent with the discussion and recommendations in
the following section.

Contact:
R. A. Purple
X27980

SECY NOTE: This paper, which is identical to ADVANCE COPIES which were distributed
to Commissioners on February 11, 1981, is currently scheduled for
discussion at a Commission meeting on Thursday, February 12.

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CF
DUPLICATE



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

February 10, 1981

The Honorable John F. Ahearne
Chairman
U. S. Nuclear Regulatory Commission
Washington, DC 20555

SUBJECT: ACRS REPORT ON REQUIREMENTS FOR NEAR-TERM CONSTRUCTION PERMITS
AND MANUFACTURING LICENSES

Dear Dr. Ahearne:

During its 250th meeting, February 5-7, 1981, the ACRS again reviewed the status of requirements for near-term construction permits (NTCPs) and manufacturing licenses (MLs). The Committee reported to you previously on this subject in letters dated May 6, 1980 and January 12, 1981. In the present review we had the benefit of a Subcommittee meeting on February 4, 1981 and of discussions with members of the NRC Staff and representatives of the Houston Lighting and Power Company, Offshore Power Systems, Boston Edison Company, and the General Electric Company.

In our letter dated January 12, 1981, we agreed with the general position outlined by Harold Denton to the ACRS but recommended that a decision be deferred while the NRC Staff better defined its proposal and the Houston Lighting and Power Company was provided an opportunity to present the results of their study of the merits of possible preventive and mitigative design features for the proposed Allens Creek boiling water reactor.

During the 250th ACRS meeting, the NRC Staff presented the attached proposed position regarding requirements for NTCP and ML applicants. We have the following comments on these proposed requirements:

Item 1 - Site/plant specific probabilistic risk analysis

The current NRC Staff position is similar to the Staff position of January 9, 1981 which the ACRS supported. The new position on reliability engineering is more specific in that it would require the applicant to submit the risk assessment within two years after issuance of the construction permit and call for an NRC review at that time to determine possible requirements for preventive and mitigative actions. The criteria which would be used in this selection process have not been specified nor are they easily specified at this time. The Committee suggests that the Commission consider stating as an aim the seeking of such improvements in the reliability of core and containment heat removal systems as are significant and practical and do not impact excessively on the plant, with the intent of encouraging each applicant to take those steps which are in harmony with such an aim.

2/10....To EDO for Appropriate Action...Cpys to: RF....81-0153

Dep #
2102187263
POB
S...
Name

February 10, 1981

Item 2 - Dedicated penetration for possible installation of systems to prevent containment failure

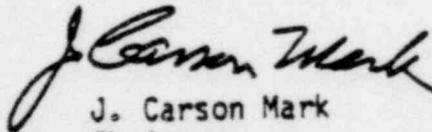
This is identical to the Staff position discussed in January and has the support of the ACRS.

Items 3 and 4 - Hydrogen control measures and containment strengthening requirements

These represent a modified statement of the position proposed by Harold Denton in January to strengthen relatively low-design pressure containments against internal pressure as practical, within the existing design concept and without excessive impact. Items 3 and 4 require hydrogen control measures and pose some specific requirements with regard to minimum internal pressure capability. The ACRS believes that the NRC Staff approach in this regard is acceptable. However, while the ACRS wishes to encourage applicants to provide containment strengthening of the type proposed in Item 4 a., we believe that, if proposed by any of the applicants, modest deviations from the specific requirements should be considered on their merits.

In a letter to you dated September 8, 1980 providing additional comments on hydrogen control and improvement of containment capability, the ACRS stated its belief that each licensee should be required to perform design studies of possible hydrogen control and filtered venting systems which have the potential for mitigation of accidents involving large scale core damage or core melting, including an estimate of the cost, the possible schedule, and the potential for reduction in risk. The Committee believes that such studies should also be made by NTCP and ML plants during construction and that the final choice of hydrogen control system for each plant should be made with the benefit of such broader studies.

Sincerely,



J. Carson Mark
Chairman

Attachment:

Staff Position With Regard to NTCP Requirements With
Respect to Degraded Core Rulemaking, dated 2/6/81

STAFF POSITION WITH REGARD TO NEAR-TERM CONSTRUCTION PERMIT REQUIREMENTS
WITH RESPECT TO DEGRADED CORE RULEMAKING - FEBRUARY 6, 1981

1. Applicants shall commit to performing a site/plant-specific probabilistic risk assessment and incorporating the results of the assessment into the design of the facility. The commitment must include a program plan, acceptable to the Staff, that demonstrates how the risk assessment program will be scheduled so as to influence system designs as they are being developed. The assessment shall be completed and submitted to NRC within two years of issuance of the construction permit. The outcome of this study and the NRC review of it will be a determination of specific preventive and mitigative actions to be implemented to reduce these risks. A prevention feature that must be considered is an additional decay heat removal system whose functional requirements and criteria would be derived from the probabilistic risk assessment study.
2. In order not to preclude the installation of systems to prevent containment failure, such as a filtered vented containment system, the containment design shall include provisions for one or more dedicated penetrations, equivalent in size to a single three foot diameter opening.
3. Hydrogen control measures shall be provided.
4. Applicants shall provide preliminary design information at a level consistent with that normally required at the construction permit stage of review sufficient to demonstrate that:
 - a. Containment integrity will be maintained (i.e., for steel containments, ASME Service Level C based on ASME code specified minimum yield values and considering pressure and dead load alone. For concrete containments, an equivalent approach based on ASME Div. 2) during an accident that releases hydrogen generated from 100% fuel clad metal-water reaction accompanied by either hydrogen burning or the added pressure from post-accident inerting assuming carbon-dioxide is the inerting agent depending upon which option is chosen for control of hydrogen. As a minimum, for steel containments ASME Service Level C (based on ASME Code specified minimum yield values and considering pressure and dead load alone) will not be exceeded at an internal pressure of 45 psig. For reinforced concrete containment structures, an equivalent standard based on ASME Division 2 is satisfied at the same internal pressure. Systems necessary to ensure containment integrity shall also be demonstrated to perform their function under these conditions.

- b. The containment and associated systems will provide reasonable assurance that uniformly distributed hydrogen concentrations do not exceed 10% associated with an accident that releases hydrogen generated from 100% fuel clad metal-water reaction, or that the post-accident atmosphere will not support hydrogen combustion.
- c. The facility design will provide reasonable assurance that, based on a 100% fuel clad metal-water reaction, combustible concentrations of hydrogen will not collect in areas where unintended combustion or detonation could cause loss of containment integrity or loss of appropriate mitigating features.
- d. If the option chosen for hydrogen control is post-accident inerting:
 - (1) Containment structure loadings produced by an inadvertent full inerting (assuming carbon dioxide) but not including seismic or design basis accident loadings, will not produce stresses in excess of the acceptable maximum for Service Level A specified in ASME Code Section III, Subsection NE (ASME Div. 2 for concrete containments).
 - (2) A pressure test of the containment at 1.15 times the pressure calculated to result from carbon dioxide inerting can be safely conducted.
 - (3) Inadvertent full inerting of the containment can be safely accommodated during plant operation and demonstrated by test.



Mag...

MEMORANDUM FOR: Chairman Ahearne

FROM: Harold R. Denton, Director, Office of Nuclear Reactor Regulation

THRU: William J. Dircks, Executive Director for Operations

SUBJECT: PROJECTED TARGET SCHEDULES FOR PENDING CP APPLICATIONS

The enclosed is in response to your recent request on the subject matter.

Original Signed by
H. R. Denton

Harold R. Denton, Director
Office of Nuclear Reactor Regulation

cc: Commissioner Gilinsky
 Commissioner Hendrie
 Commissioner Bradford
 OPE
 OGC
 SECY

81-20
Sched 2/12

dupe 8102280289 (7pp) **DUPLICATE**

AGENDA

1. FINAL RULE
2. DESIGN CHANGES
3. INDUSTRY STUDIES
4. DEGRADED CORE REQUIREMENTS
5. STATUS OF INTERIM RULEMAKING

FINAL RULE

ADDED PARAGRAPH TO §50.34

APPLICABLE ONLY TO PENDING CP/ML

EFFECTIVE IN 30 DAYS

DESIGN CHANGES

DEFER TO OTHER RULEMAKING

HAVE OPTION OF CP CONDITION
(NOT NEEDED UNTIL 1982)

(PILGRIM 2)

CONTAINMENT CAPABILITY

<u>CONDITION</u>	<u>CONTAINMENT</u>	
	<u>PRESSURE</u>	<u>STRESS LEVEL</u>
75% METAL WATER REACTION	~80 PSIG	<YIELD
100% METAL WATER REACTION WITH H ₂ IGNITORS	<80 PSIG	<YIELD

(OPS)

CONCLUSIONS

1. CONTAINMENT PRESSURE CAPABILITY

<u>EVALUATION CRITERIA</u>	<u>CURRENT</u>	<u>POTENTIAL</u>
DESIGN PRESSURE	15 PSIG	25 PSIG
ASME LEVEL C SERVICE LIMITS	18 (36) PSIG	30 <u>(55)</u> PSIG
FUNCTIONAL CAPABILITY	55 PSIG	80 PSIG

2. CLASIX ANALYSIS OF HYDROGEN BURN

PEAK PRESSURES WELL WITHIN CONTAINMENT FUNCTIONAL CAPABILITY WITH SAFEGUARDS
AND DISTRIBUTED IGNITION SOURCES.

GE
BWR6/MARK III STANDARD PLANT

CONTAINMENT CAPABILITY

	<u>PRESENT</u>	<u>MODIFIED</u>
- DESIGN	15 PSIG	45 PSIG
- SERVICE LEVEL C	41 PSIG	79 PSIG

RISK REDUCTION (RELATIVE TO WASH-1400)

BWR/6 (AS IS)	- 30
BWR/6 (POST TMI)	- 200
W/STRONGER CONTAINMENT	- 200
W/HYDROGEN CONTROL	- 300

GE CONCLUSION - NO BASIS FOR JUSTIFYING FURTHER DESIGN CHANGES
TO REDUCE RISK

HOUSTON LIGHTING & POWER STUDIES

OBJECTIVE

- EVALUATE FEASIBILITY, EFFECTIVENESS AND RELATIVE RISK REDUCTION OF PROSPECTIVE ADDITIONAL PLANT FEATURES

APPROACH

- STUDY FEATURES THAT REDUCE RISKS ASSOCIATED WITH:
 - (1) FAILURE TO REMOVE DECAY HEAT
 - (2) FAILURE TO PROVIDE WATER MAKEUP
- STUDY MITIGATIVE FEATURES

DRAFT RESULTS

- 15 FEATURES SCREENED TO 8
- 4 PREVENTIVE - RRF 1.1 TO 5
- 4 MITIGATIVE - RRF <1.3

NO RECOMMENDATIONS

FEATURES

PREVENTION

1. CONTAINMENT PRESSURE RELIEF (2)
2. INTERNAL ISOLATION CONDENSER (5)
3. REACTOR VESSEL DEPRESSURIZATION AUGMENTATION (1.1)
4. COMBINATION OF (1) AND (3) ABOVE (3)

MITIGATION

1. CONTAINMENT POST-INERTING (<1.3)
2. CONTROLLED HYDROGEN BURNING WITH PRESENT CONTAINMENT SPRAY (<1.3)
3. INCREASED CONTAINMENT PRESSURE CAPABILITY (<1.3)
4. VENTING OF CONTAINMENT

HOUSTON LIGHTING & POWER STUDIES

APPLICANT PRELIMINARY CONCLUSIONS

- CAN MAKE PROVISION FOR FUTURE INSTALLATION OF IN-CONTAINMENT ISOLATION CONDENSER
- CAN INCREASE CONTAINMENT INTEGRITY BY ~20% w/o MAJOR REDESIGN (CONSISTENT w/45PSIG YIELD CRITERIA)
- HYDROGEN CONTROL MEASURE IS NECESSARY - PREFER POST-ACCIDENT INERTING

GOAL

ALLOW CP's TO PROCEED:

- W/O FORECLOSING OPTIONS THAT MAY COME FROM RULEMAKING
- W/O REQUIRING MAJOR STRUCTURE REDESIGN
- W/MINIMAL UNCERTAINTY

GENERAL APPROACH

- FOCUS ON MAJOR STRUCTURAL FEATURES
- SYSTEM MODIFICATIONS/ADDITIONS CAN BE DECIDED LATER -
GENERALLY NOT FORECLOSED

PROBABILISTIC RISK ASSESSMENT

3' DIAMETER PENETRATION

HYDROGEN CONTROL MEASURES

CONTAINMENT STRENGTHENING

- SUFFICIENT CONTAINMENT STRENGTH TO ACCOMMODATE HYDROGEN (100%)
- MINIMUM REQUIREMENT

FACTOR OF 2 MARGIN FROM DETONATION OF LARGE AMOUNTS OF H₂

AVOID DETONABLE POCKETS

SPECIAL REQUIREMENTS FOR INERTING OPTION

POST-ACCIDENT INERTING

INJECT INERTING GAS PRIOR TO HYDROGEN EVOLUTION

CO₂

- ADDS ~22PSIG
- RELATIVELY INEXPENSIVE

HALON

- ADDS ~6PSIG
- CORROSION PROBLEM
- VERY EXPENSIVE

NEED DELAY TO PERMIT PERSONNEL EVALUATION

15 MINUTE INJECTION

MUST ACCOMMODATE INADVERTENT INJECTION

AVOIDS EQ PROBLEM OF BURNING AND LESS CHANCE OF DETONABLE
POCKETS

CONTAINMENT STRENGTHENING

WHY STRENGTHEN?

HYDROGEN CONTROL MEASURES ADD PRESSURE TO CONTAINMENT -
NOT PREVIOUSLY CONSIDERED

CONTAINMENT STRENGTHENING GIVES ADDED MARGIN AGAINST HYDROGEN
AND OTHER EVENTS THAT THREATEN CONTAINMENT INTEGRITY

HOW SPECIFY?

DIFFICULT TO SPECIFY MAXIMUM PRACTICABLE STRENGTHENING
THEREFORE, CRITERIA BASED ON POTENTIAL HYDROGEN - CAUSED
PRESSURES

UNCERTAINTIES IN EFFECTS OF HYDROGEN GENERATION AND CONTROL -
COULD GET ARGUMENTS NO STRENGTHENING NEEDED

THEREFORE; SPECIFIED A MINIMUM

WHY 45 PSIG?

- WITH HYDROGEN CONTROL, PRESSURES <45 PSIG
- ACHIEVABLE WITHOUT MAJOR REDESIGN
- MEETING SERVICE LEVEL C AT 45 PSIG LEAVES CONSIDERABLE
MARGIN TO FAILURE

CONTAINMENT STRUCTURAL EVALUATION

GENERAL ELECTRIC STANDARD PLANT

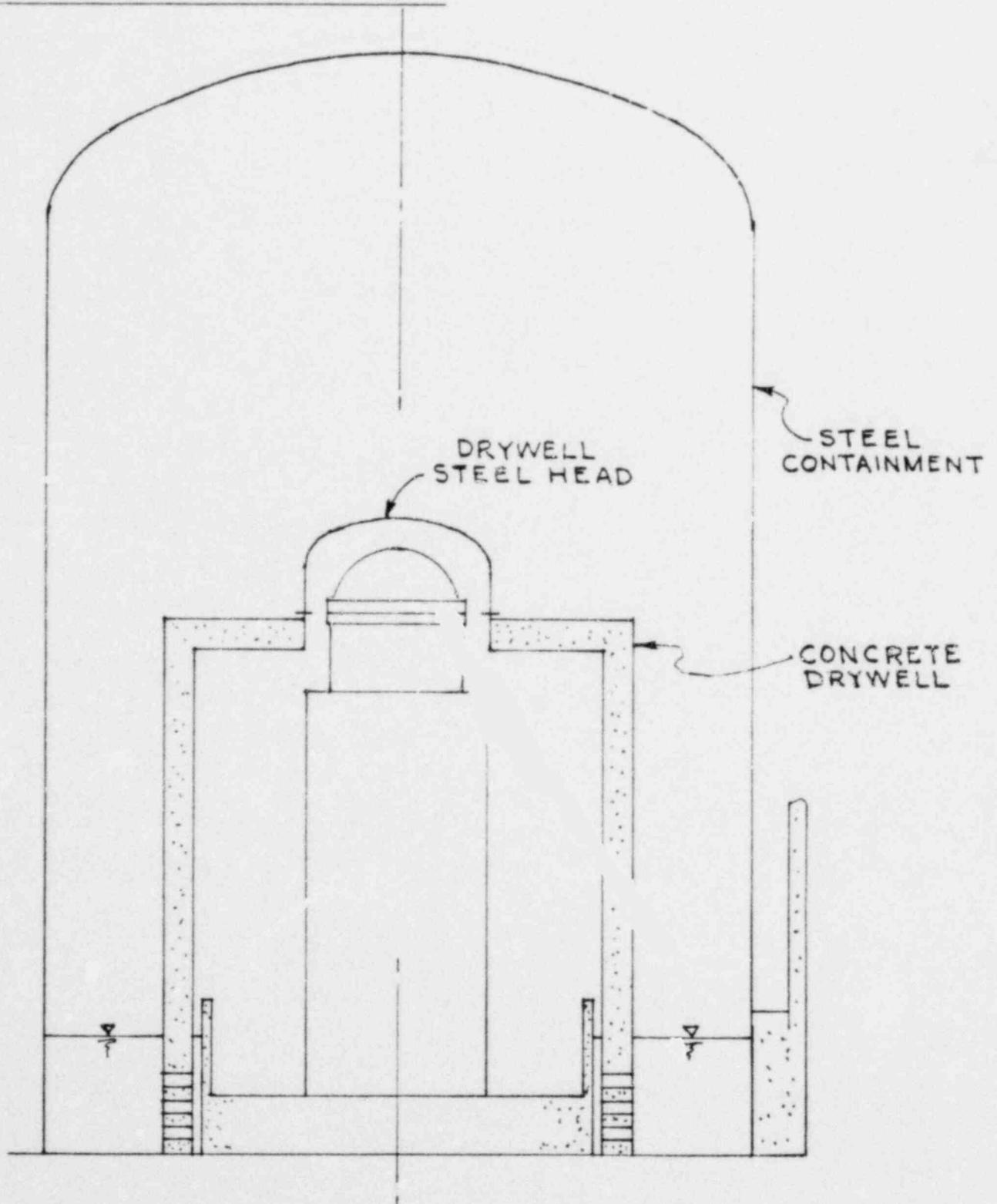


FIGURE 1- PROBABILITY OF CORE DAMAGE OR CONTAINMENT FAILURE

