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**UNITED STATES
NUCLEAR REGULATORY COMMISSION**

ADVISORY COMMITTEE ON REACTOR SAFEGUARDS

In the Matter of:

354th General Meeting

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Place: Bethesda, Maryland

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3 ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
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8 proceedings of the United States Nuclear Regulatory
9 Commission's Advisory Committee on Reactor Safeguards (ACRS),
10 as reported herein, is an uncorrected record of the discussions
11 recorded at the meeting held on the above date.

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1 UNITED STATES NUCLEAR REGULATORY COMMISSION
2 ADVISORY COMMITTEE ON REACTOR SAFEGUARDS

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4 In the Matter of:)
5)
6 354th GENERAL MEETING)

7

Thursday,
October 5, 1989

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Room P-110
7920 Norfolk Avenue
Bethesda, Maryland

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The above-entitled matter came on for hearing,
11 pursuant to notice, at 8:30 a.m.

12

13 BEFORE: DR. FORREST J. REMICK
Chairman
14 Associate Vice-President for Research
Professor of Nuclear Engineering
15 The Pennsylvania State University
University Park, Pennsylvania

16

ACRS MEMBERS PRESENT:

17

MR. CARLYLE MICHELSON
18 Vice-Chairman
Retired Principal Nuclear Engineer
Tennessee Valley Authority
19 Knoxville, Tennessee
and Retired Director, Office for Analysis
20 and Evaluation of Operational Data
U.S. Nuclear Regulatory Commission
21 Washington, D.C.

22

DR. WILLIAM KERR
23 Professor of Nuclear Engineering and Director
of the Office of Energy Research
University of Michigan
24 Ann Arbor, Michigan

25

1 MR. DAVID A. WARD
2 Research Manager on Special Assignment
3 E. I. du Pont de Nemours & Company
4 Savannah River Laboratory
5 Aiken, South Carolina

6 DR. CHESTER P. SIESS
7 Professor Emeritus of Civil Engineering
8 University of Illinois
9 Urbana, Illinois

10 MR. CHARLES J. WYLIE
11 Retired Chief Engineer
12 Electrical Division
13 Duke Power Company
14 Charlotte, North Carolina

15 DR. PAUL G. SHEWMON
16 Professor, Metallurgical Engineering Department
17 Ohio State University
18 Urbana, Illinois

19 DR. HAROLD W. LEWIS
20 Professor of Physics
21 Department of Physics
22 University of California
23 Santa Barbara, California

24 MR. JAMES CARROLL
25 Retired Manager, Nuclear Operations Support
Pacific Gas & Electric Company
San Francisco, California

DR. IVAN CATTON
Professor of Engineering
Department of Mechanical, Aerospace and Nuclear
Engineering
School of Engineering and Applied Science
University of California
Los Angeles, California

ACRS COGNIZANT STAFF MEMBER:
Raymond F. Fraley

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NRC STAFF PRESENTERS:

A. Notafrancesco

P R O C E E D I N G S

1
2 CHAIRMAN REMICK: The meeting will now come to
3 order.

4 This is the first day of the 354th meeting of the
5 Advisory Committee on Reactor Safeguards. During the meeting
6 today the Committee will discuss and hear reports on the
7 following--definition of adequate protection, Generic Issue
8 135, steam generator and steam line overfill issues, meeting
9 with the Director of the NRC Office of Nuclear Regulatory
10 Research, maintenance and nuclear power plants, and future
11 ACRS activities.

12 Items for tomorrow's discussion are posted in the
13 back of the meeting room. The meeting is being conducted in
14 accordance with provisions of the Federal Advisory Committee
15 Act and the Government and the Sunshine Act.

16 Mr. Raymond Fraley is the designated federal
17 official for the initial portion of the meeting. A transcript
18 of portions of the meeting is being kept, and it is requested
19 that each speaker identify himself or herself and speak with
20 sufficient clarity and volume so that he or she can be readily
21 heard.

22 We received no written comments or requests to make
23 oral statements from members of the public regarding today's
24 meeting.

25 I have a couple items of current interest this

1 morning.

2 (Items of current interest were discussed off the
3 record.)

4 CHAIRMAN REMICK: Let's turn to our first main
5 agenda item, definition of adequate protection.

6 MR. FRALEY: Mr. Chairman, I had one administrative
7 announcement.

8 (A discussion was held off the record.)

9 CHAIRMAN REMICK: All right. Gentlemen, then let's
10 turn to definition of adequate protection. As I say, this is
11 a continuation of discussion of safety goals in which the
12 Commission has asked the staff and the Committee to get
13 together and tell them where we differ on the, if I recall,
14 the subject of adequate protection, and Wayne Houston is here
15 from the staff to adequately protect us this morning, and help
16 us in that, and I'll turn the meeting over to our subcommittee
17 Chairman, Dave Ward.

18 MR. WARD: Thank you, Mr. Chairman. I'm going to go
19 back a couple of steps from the adequate protection because I
20 think it is important that we put this in the context or at
21 least include a few other issues that remain relative to the
22 safety goal development and use of the safety goal.

23 As you know, we have had a, an interchange with the
24 staff, to some extent with the Commission over the last couple
25 of years on the development of the safety goal policy, and in

1 fact something called implementation of the policy, which I
2 think is more properly viewed as sort of a flushing out of the
3 policy rather than necessarily implementation, but a little
4 more about that later.

5 We haven't quite reached--Wayne Houston who is here
6 has been the primary spokesman for the staff, and I think the
7 primary resource on the staff that has been working on this
8 I'm sure, but we haven't quite reached closure. The Committee
9 has had some, taken some positions on this, and I think we
10 have gradually reached closure with, with the staff, but not
11 completely. I guess the only way we know whether we are
12 reaching closure is when we compare what we asked for in our
13 latest letter with what Mr. Houston's latest draft of the SECY
14 paper says.

15 There remain three or four items where we haven't
16 reached agreement, and in the meeting we held, we, the ACRS
17 held with the commissioners back in on May 3rd of this year,
18 we outlined those, and let me go over those quickly. There
19 are actually four of them.

20 The first was the, the definition of a large
21 release. The Committee has continued to insist that the large
22 release be defined as both large and as a release rather than
23 as a health effect or some other use of some other parameter
24 which we viewed in effect as being more, too similar to, in
25 effect more restrictive than the upper level health protection

1 quantitative goal, so we have disagreement on that.

2 The second was that the Committee has continued to
3 advise the Commission that the goal, the policy should include
4 a containment performance guideline of some sort. We had
5 suggested one at one time. I don't think we have ever
6 insisted that, on that suggestion, but we have been insistent
7 that a guideline of some sort be maintained, so that the
8 Commission's overall policy in, you know, for its regulatory
9 position, would insist on the defense in-depth that, that this
10 would, would provide.

11 We also asked that the policy statement or the plan
12 for implementation, whatever it is to be called, would include
13 a, what we call a caveat about the inability of PRA to
14 adequately assess human performance in a plant, particularly
15 the management, the effect of management organization upon
16 safety of the plant operation, and I think we heard in our
17 subcommittee meeting yesterday that this is probably a, it's
18 acknowledged that this is a gap in the ability of the PRA. We
19 think that somehow the present safety goal policy leaves the
20 impression that, that a PRA can really provide a quantitative
21 estimate of the total risk from the plant, and our position
22 that we have expressed in our letter is that, well, there is a
23 big hole in that estimate, and that in fact the PRA technology
24 just doesn't have the ability to provide a quantitative
25 estimate of the effect of the management organization.

1 And then finally, we took a position that the goal
2 can be and in fact should be used as a way of defining
3 adequate protection.

4 CHAIRMAN REMICK: Indirectly, right?

5 MR. WARD: At least indirectly, and we came about
6 that first of all, by recognizing and not disagreeing with
7 the, kind of the traditional concept that, that compliance
8 with the Commission's regulations by a licensee implies that
9 the plant is, a plant is being operated with the public
10 adequately protected, so therefore, compliance with the
11 regulations is a definition of adequate protection and it is
12 kind of a legal tool, but it has traditionally been used in
13 that way, and I, I don't think the Committee wants to take any
14 position to alter that or upset that.

15 Now on the other side, I guess the one clear
16 recommendation that, or I think fundamental recommendation we
17 have made about the safety goal policy was that the safety
18 goal should not be used by the staff or by the Commission to
19 make what are called narrowly differentiated judgments about
20 individual plants, but instead the safety goal should be used
21 to make judgments about whether the Commission's body of
22 regulations and regulatory practice is providing a population
23 of plants that meets the safety goal.

24 Okay. If we come down to those two things, that
25 adequate protection is at least more or less equivalent to

1 meeting the regulations, and that the test of adequate
2 regulations is whether they meet the safety goal, we have at
3 least a kind of indirect equivalence that the safety goal is a
4 definition of adequate protection, and I think that's the
5 point that we think could be usefully made in the Commission's
6 safety goal policy.

7 Of those four points--we made all these four points
8 in our discussion with the, with the Commission in May--the
9 only one they picked up on was the last one, and they in fact
10 have asked, sent a, whatever you call them, staff requirements
11 memo, to both the staff and to the ACRS, asking us to resolve
12 our differences on the use of the safety goal and the
13 definition of adequate protection.

14 They were silent on the other three points. I guess
15 I personally think the other three points are as important or
16 perhaps more important than the disagreement over adequate
17 protection.

18 I don't want to see those points lost, so Wayne
19 Houston is here today to talk I think primarily about the
20 adequate protection because we are kind of under the gun from
21 the Commission to say something about that soon. Actually I
22 think they have asked for something this month. They
23 originally asked us to write, I guess to write a joint paper
24 which seemed kind of unworkable unless we worked very late and
25 worked very hard, but I don't know how we do that, but instead

1 of that, we might take a more traditional Committee approach
2 and comment on the draft of a paper that Wayne Houston has
3 provided in which he is documenting what he sees as the
4 positions of both the staff and the Committee on the
5 definition of adequate protection, and we have a draft of that
6 paper. It's blue, big No. 2. When I read it, I'm not sure
7 that a lot would be gained by commenting on the paper in its
8 present form. That is something we are going to have to
9 discuss, but we have allotted a couple of hours this morning
10 to talk about this.

11 We also have some letter writing time tomorrow for,
12 discussion or letter writing time tomorrow, so we will see
13 what Wayne has to say in that letter.

14 One more comment--we had a subcommittee meeting last
15 week to discuss this subject. It was rather thinly attended
16 by ACRS members, so it turned into a dialogue between Wayne
17 and myself, but--

18 MR. MICHELSON: How many members attended?

19 MR. WARD: One, so it is an exaggeration to call it
20 a subcommittee meeting.

21 MR. MICHELSON: Thinly didn't--

22 MR. WARD: I won't tell you who was supposed to be
23 there and didn't show up.

24 DR. LEWIS: You are worried about the word thinly?

25 MR. MICHELSON: I don't know how thin.

1 MR. WARD: Well, I'm anticipating something on that,
2 right, Ivan? They are accusing me of not being thin. Just
3 wait six months, right?

4 DR. CATTON: Forewarning!

5 MR. WARD: Okay. I don't want to take too much more
6 time, but there is one other point that came up, and maybe
7 this is just a semantic problem, but this program for
8 continuing the development of or flushing out of something of
9 the safety goal has been called an implementation plan, and I
10 think that's at best an awkward definition of what is being
11 attempted.

12 Implementing the safety goal doesn't seem to make a
13 lot of, doesn't seem to really be what is being done, and so I
14 would ask Wayne to see if he couldn't come back today with a,
15 a different way of describing whatever this activity or
16 program is other than implementing the safety goal, so--

17 DR. SHEWMON: I'm sorry. My education or memory or
18 both is so inadequate, but adequate protection seems to have
19 been committed into, chipped into marble here some place.

20 Is that--would you tell me where?

21 MR. WARD: Yes. Wayne can expand on it, but as I
22 understand, it's in, it's in the Atomic Energy Act. The only
23 place that it appears in the regulations is in the backfit
24 rule, but it became, it is sort of high profile in the backfit
25 rule, and there has been quite a bit of discussion and some

1 judicial decision and everything related to it.

2 DR. SHEWMON: Okay.

3 DR. LEWIS: I think that the Commission has to jump
4 through different loops in order to do things that are not
5 necessary for adequate protection under the Act, and then the
6 ones that it has to jump through in order to provide adequate
7 protection so they begin to distinguish where they become
8 capricious and where they are allowed to cut corners. They
9 are allowed to cut corners if they go beyond adequate
10 protection but not cut corners prior to, and that's for the
11 lawyers.

12 I wonder if I would make a comment? This may be a
13 nit, but I may have my epidemiology wrong, but I think nits
14 carry typhus or some strange disease, so you have got to watch
15 out for nits.

16 The question of whether compliance with the
17 regulations is equivalent to adequate protection, I thought
18 that what we had said in the past was that it is a suitable
19 surrogate for adequate protection and that really is to my
20 mind an important difference.

21 Am I wrong?

22 MR. WARD: I think that's a better way to put it,
23 yes. I think you're right.

24 MR. FRALEY: Dave, could I just volunteer? One of
25 the problems is that we are talking about different rules and

1 regulations. When the staff says adequate protection of a
2 plant, they are talking about the regulations that applied to
3 that plant when it was licensed and have been backfitted over
4 the years.

5 You gentlemen are talking about regulations that
6 have been measured against the safety goals. They are
7 different regulations. You have to bear that in mind. When
8 the staff says a plant is adequately safe, it is per the
9 regulations that, that existed when that plant was licensed.
10 That's what the backfitting rule says. You are talking about
11 a different set of regulations.

12 MR. WARD: No, I don't think so, Ray. First there
13 is only one set of regulations.

14 MR. FRALEY: No. There are many sets, many sets.
15 They, over the years, the regulations have evolved.

16 MR. WARD: There are many regulations.

17 MR. FRALEY: There are many sets of regulations.

18 DR. KERR: I think what we are talking about is the
19 body of regulations that now exist and this body of
20 regulations may permit a plant to conform to an earlier
21 definition of regulations, but the existing body of
22 regulations is what we are talking about.

23 MR. FRALEY: But the staff does not. The staff is
24 talking--

25 DR. KERR: The staff has to, Ray. It has no choice.

1 MR. FRALEY: I know don't. You look at the
2 backfitting rule.

3 DR. SHEWMON: Why don't we wait..

4 MR. WARD: There is one other point I want to make.
5 The Committee in writing its letters on the safety goal and on
6 this issue of adequate protection was silent on where the
7 backfit rule fits into this whole scheme of things, and I have
8 to admit that is sort of troublesome. We avoided that issue.

9 One suggestion that I made at the subcommittee and
10 our discussion of the subcommittee meeting is that the backfit
11 rule could be used to, in the scheme of things, to deal with
12 what I call the, I mean the threshold problem that any time
13 you have a, a quantitative limit or any sort of a definite
14 limit you also have a problem with, you know, approaching the
15 line or being just over it one way or the other, and reaching,
16 you know, making decisions that are ill founded because of
17 being right at some sort of semi-arbitrary threshold, and the
18 backfit rule could be used in dealing with that in a more
19 systematic and sensible way.

20 Okay. Any other members who attended the
21 subcommittee meeting have anything they would like to say?

22 Okay. We will go to Wayne Houston.

23 MR. WAYNE HOUSTON: Thank you, Dave. It is a
24 pleasure to be here once again.

25 DR. KERR: Can we trust anything else he says this

1 morning?!

2 MR. WAYNE HOUSTON: I'll be prepared to leave at any
3 time!

4 CHAIRMAN REMICK: Is it true that was the best
5 managed subcommittee meeting you have attended?

6 MR. WAYNE HOUSTON: Undoubtedly--and the least
7 controversial.

8 (Slide)

9 MR. WAYNE HOUSTON: It must be clear to all of you
10 now that I seem to be the flag bearer, the standard bearer on
11 the subject of safety goals. It is a job that has been
12 assigned to me for some time, and I'm only the most recent and
13 the present in a succession of members of the staff who have
14 attempted to come to grips with not only the development
15 stages of safety goal policy, but now what we have rightly or
16 wrongly been calling implementation of safety goal policy.

17 I think what we have heard already this morning,
18 which has been, which has been somewhat disturbing to me, is
19 that although there are some differences, some real
20 differences I think between what the staff has proposed and
21 what the ACRS has recommended, I think there are also some
22 serious communication problems here, and hopefully we can make
23 a little progress this morning. Some of them are semantic. I
24 think perhaps all of them are semantic, but perhaps not.

25 I have prepared just a couple of vignettes to try to

1 organize a discussion addressing what I would prefer to call,
2 and here is the semantic problem, the concept of adequate
3 protection as it relates to safety goal policy. The semantic
4 problem here is in part, if not in total, I begin to hear that
5 the subject was the definition of adequate
6 protection--entirely different thing, and I did not come down
7 here this morning to discuss, or I will be glad to discuss
8 it--that was not my purpose.

9 It has been properly pointed out by Dave Ward that
10 the origin of this, these two words, adequate protection,
11 which is an abbreviation of language that first appeared in
12 the Atomic Energy Act, and is sometimes referred to as a
13 statutory standard, as a legal standard, arising explicitly in
14 the statutes which the now Nuclear Regulatory Commission has
15 to apply to every licensing decision it makes.

16 What has happened over the years is that it has made
17 a finding in each case that there is adequate protection of
18 the public health and safety, but it has been a finding and
19 has been done on a case-by-case basis, and that is where the
20 NRC is today.

21 There is no qualitative definition and there
22 certainly is no quantitative definition of what that means.
23 And at the present time, the staff is not recommending, has
24 not recommended to the Commission a program to try to develop
25 and quantify a, what the statutory standard might mean in

1 terms of adequate protection, that is, as some sort of a gauge
2 or a measure or yardstick as it were as to whether or not it
3 is something that in fact exists or not.

4 Given that probabalistic risk analysis would appear
5 to be the, primarily the primary tool that would be available
6 for using such a gauge, we feel, as does the the ACRS feel I
7 think, that it is not up to the task, and I think we are in
8 total agreement on why that is the case.

9 Nevertheless, we have felt that in order to achieve
10 and to borrow a word that the ACRS has used, some coherence in
11 policy statements that have been issued by the Commission, we
12 see here the potential for some incoherence or lack of
13 coordination if you will between backfit policy as expressed
14 in the backfit rule, and safety goal policy, so I think one
15 way to proceed, what the staff is trying do and is
16 recommending to the Commission is to try to achieve some
17 coherence between these two, and we had recommended to or we
18 had asked the Commission, not recommended, to tell the staff
19 whether or not it would wish us to do something with the
20 safety goal policy statement to show a relationship, that is,
21 to achieve some coherence or harmonization between safety goal
22 policy on the one hand, and backfit policy as expressed on the
23 backfit rule on the other hand.

24 Dave Ward made a very good point a moment ago, and I
25 think that stems from our discussion in the subcommittee, with

1 the subcommittee, the only place in the regulations with the
2 Commission where the words adequate protection appear are now
3 in the backfit rule.

4 Now as you probably all know, the backfit rule has
5 changed in, over the course of the last several years.
6 Previous versions which existed throughout much of the
7 licensing process, the version of the backfit rule did not use
8 the term adequate protection, and nowhere else to the best of
9 my knowledge, are the words adequate protection used anywhere
10 in the regulations.

11 Nevertheless, I believe that if one were to examine
12 the documentation on the issuances of licenses, for example,
13 to operate nuclear power plants, in many, if not all cases,
14 you would, you would find the words that express the
15 Commission's view that there is, there is evidence on the
16 record, the full record, that in the judgment of the
17 Commission, there is adequate protection of the health and
18 safety of the public, and this statement is made as a finding
19 but not a definition.

20 Many people I think when they start thinking about
21 this term, and it is a relatively recent origin, there has
22 been focus on what this term might mean, seem to react in the
23 same way that I've heard this morning, that compliance with
24 the regulations is really what is important.

25 The, in the Statement of Considerations or

1 discussion, which was prepared in our Office of General
2 Counsel, that accompanied the issuance of the backfit rule,
3 there are a number of pages which deal with this subject, and
4 I'm sorry that the principal attorney who was involved with
5 that is not with us this morning. I thought he was going to
6 be--Steve Crockett.

7 The point is I think very carefully and very clearly
8 made that compliance with the Commission's regulations is
9 presumptive evidence of adequate protection, but it is not a
10 definition.

11 In other words, what is adequate protection for one
12 case, one plant, is not necessarily the same for another
13 plant. The problem of the term I think has been alluded to to
14 a certain extent. I think what Harold Lewis said a moment ago
15 is pertinent to this. The problem here is that the legal
16 aspect of it is that the NRC cannot use cost arguments in
17 making a decision as to whether or not a particular
18 requirement is needed for adequate protection, which means, of
19 course, you can't use cost/benefit arguments. Some of the
20 regulations which are on the books have been put there with a
21 basis in whole or in part, of cost/benefit analysis. An
22 example would be the Station Blackout rule.

23 Some time ago, members of the Office of General
24 Counsel went back through the Statements of Consideration, the
25 discussion section as they are now called, of rules, I think

1 particularly in Part 50 of the regulations, to try to see, to
2 look for clues as to whether or not particular rules when they
3 were made effective, whether there were cost arguments as part
4 of the basis of it. Their findings I believe, which are
5 informal, were inconclusive on this point, but so that I think
6 the statement that we heard a moment ago is not quite correct.

7 The staff general, what the staff generally has done
8 is determine whether things are acceptable or not. Now that's
9 not a term that's in the statutes, but you will find time
10 after time in the safety evaluation reports that the manner in
11 which an applicant has addressed an issue after it is new, and
12 dialogue with the staff and so forth, is found to be
13 acceptable.

14 This may refer to an acceptable way of complying
15 with the regulations, or an acceptable--generally that's
16 exactly what that means. It is a way that is acceptable to
17 the staff to demonstrate compliance with the regulations, and
18 such findings have always been, virtually always been made
19 without any concern or consideration as to whether or not the
20 particular regulation that was put on the book was done with
21 or without cost considerations, and therefore, was done
22 without any consideration as to whether that compliance with
23 that particular requirement was a necessary and legal part of
24 any proposed concept or definition of adequate protection.

25 DR. KERR: Let me see if I understand that example.

1 Appendix I of 10 CFR 50 determines compliance with calculated
2 release of the plants by using cost/benefit analysis.

3 Is that an example of cost being used, or cost not
4 being used?

5 MR. WAYNE HOUSTON: That's an example of cost being
6 used for consideration and is probably one of the clearest cut
7 examples that is actually in the regulations.

8 CHAIRMAN KERR: Okay.

9 MR. WAYNE HOUSTON: In the language itself, without
10 having to delve into the background, as the basis for
11 the--which is also authorized by statute. I'm sorry, I don't
12 have ready at hand the reference to the part of the statute,
13 but it is something that is authorized by law to do this, but
14 in that particular instance, you are right. It is quite clear
15 that that, Appendix I, would not be a part of any proposed
16 definition of adequate protection. That is correct.

17 So the first point here is that we don't have a
18 definition. We are not proposing a definition, and based upon
19 the discussion that I had with the subcommittee a week ago, I
20 came to the conclusion, and here may be, there is a gap in the
21 communication, that the earlier interpretation or inferences
22 that we were drawing from ACRS letters that neither the ACRS
23 nor the staff were in fact proposing to use safety goals to
24 define adequate protection. What I heard--

25 CHAIRMAN REMICK: In the SECY.

1 MR. WAYNE HOUSTON: It seems to be a little bit
2 different, so we have a communication problem.

3 CHAIRMAN REMICK: In the SECY document, you came
4 pretty close to saying that was our position.

5 MR. WAYNE HOUSTON: That is correct; that is
6 correct, but this was an inference. It was an inference
7 because none of the ACRS letters ever specifically say that.

8 CHAIRMAN REMICK: I agree.

9 MR. WAYNE HOUSTON: And as a matter of fact, what I
10 have said in this draft paper, which you all may not have had
11 a chance to read--

12 CHAIRMAN REMICK: I see you corrected it.

13 MR. WAYNE HOUSTON: The first three letters on this
14 subject beginning with I think in May or sometime in early
15 1987, the words adequate protection never appear, but in the
16 February '88 letter, they do, and this is pointed out in the
17 paper.

18 CHAIRMAN REMICK: Dr. Shewmon has a comment.

19 DR. SHEWMON: I guess I'm trying to see where the
20 Committee thinks they are going on this. I would pay
21 attention, but if I could coin a new phrase and call it
22 sufficient protection instead of adequate protection, to
23 change the words, but not the meaning, it was my impression
24 that that was the original purpose of the safety goals was to
25 define indeed what was sufficient protection, and so I--why

1 don't we like it? Because we felt that it couldn't be
2 implemented whereas the regulations were better defined?

3 CHAIRMAN REMICK: We said it defines how safe is
4 safe enough. The reason we got into this is the staff
5 discussed the adequate protection in their proposed
6 implementation plan. You were commenting on the
7 implementation, so we differed with the staff and said how we
8 thought the safety goal could use indirectly as a surrogate
9 for adequate protection.

10 Am I correct, Wayne? Do you agree with that
11 characterization?

12 MR. WAYNE HOUSTON: That is not--you've just thrown
13 me a curve on the, as a surrogate for--

14 CHAIRMAN REMICK: The words are right there.

15 MR. WARD: Let's read what was said. I was just
16 kind of confused by this.

17 CHAIRMAN REMICK: This is what you said in the SECY
18 document. I'm sorry. That's not--I have it here, Dave.
19 Okay. I have it here. It says we believe the safety
20 emphasis--this is on page 4 of our February 16th, 1989 letter.

21

22 MR. CARROLL: Seven, 7, Tab 2.

23 CHAIRMAN REMICK: The paragraph says, "We believe
24 that the safety goal should play an important but indirect
25 role in defining adequate protection. Ideally compliance with

1 the Commission's regulations is a suitable surrogate for
2 defining adequate protection of the public. However, we
3 believe that the adequacy of the regulations should be judged
4 from the viewpoint of whether nuclear power plants as a class,
5 licensed under those regulations, meet the safety goal."

6 So we definitely say the suitable surrogate and we
7 said to use indirectly.

8 MR. WAYNE HOUSTON: It was the regulations that are
9 the surrogate. Did I understand correctly?

10 CHAIRMAN REMICK: Compliance with the Commission
11 regulations is a suitable surrogate, that's right.

12 MR. WAYNE HOUSTON: Now I guess I read that as
13 meaning nothing different than what I would say the current
14 position of the NRC is. That is stated in different terms
15 which I mentioned a moment ago from the discussion or
16 Statement of Considerations in the backfit rule. It was also,
17 essentially the same argument was used in the UCS Port case.
18 This is one reason why this has become a highlighted issue,
19 that the Commission was taken to court by the Union of
20 Concerned Scientists vis-a-vis the backfit rule and one of the
21 things that they were seeking from the court was to force the
22 NRC to define what it meant by adequate protection. The court
23 ruled--

24 CHAIRMAN REMICK: We are not defining it. We are
25 saying it is a suitable surrogate for defining. Doesn't say

1 it is used to--it is a surrogate for defining. Instead of
2 defining you use this.

3 MR. WAYNE HOUSTON: That becomes the definition
4 then. I don't know.

5 DR. LEWIS: No, it is not the definition.

6 MR. WAYNE HOUSTON: It is not a definition, but it
7 comes close, does it not?

8 DR. LEWIS: I don't know what it means to come close
9 to a definition, but one of the things that--

10 DR. SHEWMON: I'll let you grade my papers some day!

11 DR. LEWIS: But one of the things that makes this
12 even more complex is that not only people like the Union of
13 Concerned Scientists but the courts you recall, and also the
14 term adequate protection just like the term no undue risk is
15 used as a judgment of individual plants, so we have to also
16 keep straight what we are applying these things to, and we
17 write letters saying that any given plant if operated, will
18 not pose an undue risk, and that's to my mind--I'm not a
19 lawyer -that's equivalent to saying that adequate protection
20 is being supplied in terms of that plant, but the safety goals
21 we have emphasized are used to judge the entire body of
22 regulations and show that the Commission is doing a job, and
23 you can't use the compliance with the regulations as a, as a
24 sufficient condition for adequate protection or for no undue
25 risk, but they are the best system in trying to assure it, so

1 there is a whole legion of complexities, and I think our best
2 bet as a Committee is to keep clear of the legal, the legal
3 obfuscation and concentrate on the question of whether the
4 safety goals really do define, define what is meant by, by how
5 safe is safe enough and answer the question of how safe is
6 safe enough and the body of regulations should work as well as
7 they can to, to meet that and keep out of the legal battles
8 about adequate protection.

9 MR. WARD: Chet?

10 DR. SIESS: The paragraph you were referring to in
11 our letter, I still don't think Wayne has interpreted it
12 properly. It says that compliance with the regulations,
13 suitable surrogate defining adequate protection. It then says
14 that we think that the safety goal has been used to judge the
15 adequacy of the regulations.

16 Now if we are not building plants and licensing
17 plants to provide adequate protection as measured by the
18 safety goal, what we are saying is that you should change the
19 regulations, not that you should backfit the plants.

20 MR. WARD: That's right.

21 DR. SIESS: Bringing the backfit rule I think is a
22 red herring because I believe the backfit rule, the lawyers
23 had ruled somewhere that if the Commission wants to raise the
24 standard of adequate protection by changing the regulations,
25 they may do that, but now the cost/benefits. Am I right?

1 MR. WARD: I think that's right.

2 MR. WAYNE HOUSTON: That is correct.

3 DR. SIESS: The cost/benefit is really a backfit.

4 Not changing--

5 MR. WARD: You mean you don't use the cost/benefit
6 rule or arguments in evaluating a change in regulation?

7 DR. SIESS: And if we think that the adequate
8 protection is not provided by the regulation, no matter how we
9 define adequate protection, then you can change the
10 regulations to raise the level of safety.

11 Let me say one more thing. It may or may not help
12 people semantically. Just turn to using a suitable surrogate.
13 I have been involved in safety regulation through the building
14 codes and so forth, and we write very descriptive building
15 codes in this country. We use the picture plans. Somebody
16 would use them against that code. Other countries don't do
17 that. For example, in England, their safety law simply says
18 about one paragraph, to paraphrase, that buildings should not
19 fall down.

20 Now they go ahead after that and write a descriptive
21 set of code and say that compliance with these prescriptive
22 requirements is deemed to satisfy the law.

23 Now I would put adequate protection as the law, and
24 compliance with the regulations as deemed to satisfy in NRC
25 that legal concept which apparently is legal in the British

1 law, and I think that's what we mean by surrogate.

2 CHAIRMAN REMICK: Hal and then Ray.

3 MR. CARROLL: It helps this discussion if you bring
4 this out I think.

5 MR. WARD: I'm not sure. Not yet.

6 MR. CARROLL: Okay. All right.

7 MR. WAYNE HOUSTON: You don't want this yet?

8 MR. WARD: No, yet.

9 DR. LEWIS: I agree with what Chet said, and it
10 is--I think a great help in understanding this whole thing
11 really is to distinguish between the things that apply to
12 individual plant licensing and the things that apply to
13 judging the industry and the population.

14 What it said in our letter was that the compliance
15 with the regulations is a suitable surrogate for adequate
16 safety. Both those apply to single plants. That was to say
17 the plant is licensed if adequate safety is provided and that
18 is done through the regulations.

19 I agree with Chet that the regulations are deemed
20 surrogate is the same term, and that's a subject which is
21 interesting but is not the subject of the safety goal.

22 The question of the safety goal is the population
23 and therefore it is, a way to meet safety goal is to change
24 the regulations because changing the regulation applies to
25 many plants, not to individual plants. If we keep these

1 things straight, we don't have a semantic problem.

2 MR. WARD: But I--

3 CHAIRMAN REMICK: Ray, did you want to make a
4 comment?

5 MR. WARD: I suggested a way out of this.

6 MR. FRALEY: There is a point that's worth
7 clarifying I think.

8 The backfit rule does apply to the regulations. You
9 cannot change the regulations willy-nilly. There are
10 regulations changes that have to meet cost/benefit, and there
11 are regulation changes that do not have to meet cost/benefit.
12 If it is a regulation change to make it adequately safe, it
13 does not have to meet the cost/benefit.

14 If it is a regulation to make it more than
15 adequately safe, it does have to meet cost/benefit, so
16 regulations are not exempt from backfitting considerations.

17 MR. WARD: Yes.

18 MR. WAYNE HOUSTON: Let me modify that statement.
19 Regulations can be put on the books which are strictly
20 forward, forward-looking regulations.

21 MR. FRALEY: Right.

22 MR. WAYNE HOUSTON: Backfit rule is silent on the
23 forward fit.

24 MR. FRALEY: That's true, but not when you are
25 looking at plants that have already been licensed.

1 MR. WAYNE HOUSTON: When a particular regulation is
2 issued and when it becomes effective, it is also intended to
3 apply to be made effective for existing plants.

4 MR. FRALEY: Backfitting does not apply to forward
5 fits.

6 MR. WARD: That is not quite as clear a distinction
7 as you, as you indicated because there is a circle in there.

8 MR. FRALEY: Not something quite as clear.

9 MR. WARD: To the extent that, as Wayne says,
10 compliance with regulations is presumptive evidence of
11 adequate protection, and I agree that's different than a
12 definition.

13 MR. WAYNE HOUSTON: If that means the same thing as
14 a surrogate for, then we have no disagreement.

15 MR. WARD: Yes, but my point is if--I could come up
16 with an argument that a new regulation didn't have to meet a
17 cost/benefit test because it is adding to the definition or
18 this, at least the surrogate definition of adequate protection.

19 MR. FRALEY: Right.

20 MR. WARD: So I mean you have got a circle there.

21 DR. SISS: That's exactly what the language says.
22 Regulatory analysis does not apply to regulatory action
23 involving in redefining what level of protection the public
24 health and safety--security should be regarded as adequate.
25 If we are going to change the regulations to raise the level

1 that we will call adequate protection, redefine it, that that
2 does not require a backfit analysis, and that's clear.

3 MR. FRALEY: But if it is to do, if it is to require
4 something that's considered more than this adequate level, it
5 does, and some regulations do that.

6 DR. SIESS: This is redefining the level.

7 DR. KERR: It seems to me that one can never
8 harmonize the backfit rule with the safety goals unless I
9 misunderstand what the goals means, because the safety goal
10 seems to define something that says if you resist, give it up.
11 Goals mean what I think--the backfit rule says if you can
12 justify it on cost/benefit analysis, you can do it
13 independently of whether you have reached the safety goal. It
14 seems to me the two are antithetical.

15 DR. LEWIS: The backfit rule is on specific
16 backfits, things that apply to a plant or a group of plants.
17 It is not the population.

18 MR. WAYNE HOUSTON: It can be the population, but
19 you are right. You read it--

20 DR. LEWIS: That's an unusual case.

21 CHAIRMAN REMICK: Wayne, I had a problem when you
22 came out with the proposed implementation plan and way you
23 even raised the cost/benefit in the the safety goal and
24 so-called implementation because it just didn't seem to fit.
25 There is nothing in the safety goal that talks about

1 cost/benefits anymore, and that confused me at the time, and I
2 think it is creating lots of difficulty now.

3 MR. WARD: And I think that's the point I wanted to
4 make. The Commission didn't really--Wayne, we kind of backed
5 into the discussion of adequate protection because, because
6 you had covered it in your paper, and we didn't really see
7 that as all that directly related. One way to get out of this
8 would be to drop it.

9 MR. WAYNE HOUSTON: Okay. The origin of it is that
10 in the safety goal policy statement itself, the first
11 paragraph of the introduction on the purpose and scope says
12 that the NRC is prepared to move forward with an explicit
13 policy statement on safety philosophy and the role of safety-
14 tradeoffs in the NRC safety decisions. This policy statement
15 is the result.

16 Now we have recognized that in a proposed version of
17 the policy statement, it was, it did consider the adopting the
18 thousand dollars per person-rem guideline and being
19 incorporated in it. The Commission decided to drop that from
20 this policy statement so that my understanding has been that
21 that was not necessarily a decision to divorce the two because
22 this statement remains, so there is--in other words, there
23 are--so the unfinished business here relates to safety goal.

24 DR. KERR: That could simply mean that considering
25 cost and benefit, one arrives at these goals. That could have

1 been made more stringent, but it would have been more costly,
2 so I think that opening statement could simply mean that
3 taking into account protection of the public, cost and
4 benefits, these are what one gets; well, either the
5 qualitative or quantitative numbers.

6 MR. WAYNE HOUSTON: Well, you see, right now if we
7 couple, if we one tries to couple the statement here with the
8 current policy of the Commission as expressed in the
9 regulations dealing with the general subject of backfit, to
10 make them consistent with one another--

11 DR. KERR: I don't think they will ever be made
12 consistent.

13 MR. WAYNE HOUSTON: Well, they can--the question
14 whether they should or not is another question, but they can
15 be. There is no reason why they can't be.

16 DR. KERR: In their present form, they cannot be.

17 MR. WAYNE HOUSTON: They have to be changed, yes.
18 They have to be changed to make them coherent.

19 DR. KERR: Okay.

20 MR. WAYNE HOUSTON: Which I thought was a goal that
21 the ACRS was very strongly recommending to the Commission.

22 CHAIRMAN REMICK: 182.

23 MR. WARD: It is not--

24 CHAIRMAN REMICK: Backfit rule is being revised. In
25 '81, '82, it was recommended that they be made consistent at

1 that time, but it was not done. It went off in different
2 directions, and I agree, Bill. I'm not sure now unless you
3 come back and revise the backfit rule again that you will ever
4 make them consistent, especially by finegling with the safety
5 rule.

6 DR. SIESS: When the Commission promulgated the
7 safety goal, I don't think they had any idea what use might be
8 made of it, what use should be made of it or could be made of
9 it, and they sort of passed it on to the staff. Somehow we
10 have said it you figure out what to do with it.

11 Now this term implementation of the safety goal is
12 ridiculous. You don't implement a goal. You might
13 implement--

14 MR. WAYNE HOUSTON: We talk about implementing a
15 policy.

16 DR. SIESS: You don't implement a policy. I don't
17 know how you--

18 MR. WAYNE HOUSTON: I don't know what you mean by
19 not implementing a policy. Most policies, if nobody does
20 anything about them, there are some statements, but nothing
21 necessarily happens.

22 DR. SIESS: There are all kinds of policies. Some
23 of them can be implemented, but I don't know how you implement
24 a policy that says we think plants are this safe.

25 MR. WAYNE HOUSTON: But the ACRS has talked about

1 implementation of the policy. Is this a semantics problem
2 that we have? I mean I really don't want to debate this one.

3 CHAIRMAN REMICK: You know, Wayne, don't follow what
4 we say. It's what we mean!

5 MR. WAYNE HOUSTON: That's what I am trying to
6 figure out.

7 DR. SIESS: You talked in the proposed SECY about
8 Safety goal implementation versus backfit implementation.

9 MR. WAYNE HOUSTON: Policy--

10 DR. SIESS: I am reading the words on page 2.

11 MR. WAYNE HOUSTON: It may be an oversight then.

12 DR. SIESS: You say cost/benefit analysis is not
13 properly a part of safety goal implementation in contrast to
14 backfit implementation, and this is apples and oranges. You
15 implement a safety goal by backfitting.

16 MR. WAYNE HOUSTON: It seems to me, you know,
17 because of the nature of the Advisory Committee, it certainly
18 is perfectly proper to make recommendations to the Commission,
19 in any fashion that you deem appropriate.

20 I think what I'm calling attention to is the fact
21 that with respect particularly to those situations in which
22 new requirements may be imposed on existing plants, the
23 authorized mechanism that exists from the Commission is in the
24 backfit rule.

25 DR. SIESS: No argument

1 MR. WAYNE HOUSTON: And if the ACRS wants to propose
2 some additional criterion that would be used or usable in a
3 backfit situation, then the backfit rule would have to be
4 changed.

5 DR. SIESS: Never have, have we?

6 MR. WAYNE HOUSTON: Now if on the other hand, you
7 are talking about the application of safety goal policy to
8 change, to potentially change regulations for future plants
9 only, then that's a different situation, and backfit policy
10 has nothing to do with it.

11 Now if that's what you mean, I haven't heard that.
12 As a matter of fact, in one discussion that we had with the
13 ACRS, sometime ago, it came from Mr. Siess, that he understood
14 that the earlier discussion on safety goal policy was for
15 present plants, not for future plants, so this is an area in
16 which there is still some confusion.

17 MR. WARD: He said he has changed his mind on that.

18 MR. WAYNE HOUSTON: I know you are working very hard
19 on the containment thing for future plants.

20 MR. WARD: I think this, I think Bill has got a
21 point with the safety goal and the backfit rule, but you know,
22 I think we need to, we shouldn't try to equate these things or
23 put them at the same level. I mean the safety goal is a, is a
24 grand general statement of the policy of the Commission about
25 how safe is safe enough and what it intends its regulations to

1 accomplish. The backfit rule is just one of many regulations.

2 Now you know, I think if the safety goal is used
3 properly, as regulations are changed, they will be tested
4 against this standard set by the safety goal. And in fact a
5 more, what I might call protractive program of actually
6 reviewing regulations against the intent to find out whether
7 they are good enough or whether they are unnecessary is really
8 appropriate activity for the staff, and I see the backfit rule
9 as just one of those. I think the backfit rule doesn't quite
10 measure up to this general policy, doesn't clearly coherently
11 at least conform with this general policy established by the
12 safety goal. I think there are a number of other regulations
13 that when we get to them we will find they don't conform to
14 this general policy, but I don't think there is any particular
15 reason to single out the backfit rule.

16 DR. SIESS: The TMI, they find, require backfit
17 cost/benefit analysis under the present rule?

18 MR. WAYNE HOUSTON: Yes, with respect to their
19 application to existing plants, yes. I guess I would say that
20 is Commission policy. Here is a case in which the policy is
21 expressed in the rule form.

22 DR. SIESS: The Commission changed its policy.

23 MR. WAYNE HOUSTON: Now let me modify my answer to
24 your question. There are three circumstances in the backfit
25 policy dealing with backfits. One of them, one of them deals

1 with adequate protection. If a change which is a backfit is
2 to be mandated by the Commission, it is required for adequate
3 protection, then there is no cost/benefit.

4 DR. SIESS: Isn't that what they did after TMI-2?
5 Didn't they decide that the regulations need to be changed and
6 plants needed to be changed to bring them up to a level of
7 adequate detection in view of had happened at TMI? Several
8 hundred things had to be done to 80 or 90 plants. Wasn't that
9 a decision by the Commission to raise the level to change the
10 standard?

11 MR. WARD: I believe so, yes.

12 MR. WAYNE HOUSTON: The decision by the Commission
13 was to approve certain recommended changes which were properly
14 be called backfits, but none of those were ever associated, to
15 the best of my knowledge and belief, with this concept of
16 adequate protection.

17 DR. SIESS: Oh, come on!

18 MR. WARD: Oh, they must have been.

19 MR. WAYNE HOUSTON: Look at the literature. Look at
20 documentation and see if you find any evidence that says we
21 need to do this for adequate protection, compliance with the
22 statutory standard. It is a legalistic approach.

23 DR. LEWIS: Two things I think--one is Dave is
24 right. We ought to rule the backfit subject out of this
25 conversation because I don't think it has much to do with it.

1 MR. WAYNE HOUSTON: I can't do that in representing
2 to the Commission.

3 DR. LEWIS: Regardless of what Chet just said, yes,
4 the regulation changes after TMI were designed to raise the
5 level of protection because people believed it was inadequate.
6 The fact it might be a backfit, this is an irrelevance. It
7 was simply an effort to raise the level, so backfit I think
8 should be ruled out, but I was out for a second and Wayne, did
9 I misunderstand you as saying that you felt that regulations
10 that affect future plants have nothing to do with the safety
11 goals? Did you say something?

12 MR. WAYNE HOUSTON: No, no. I did not say that. I
13 said the backfit rule has not doing do with regulations for
14 future plants.

15 DR. LEWIS: Except they are connected somewhere.
16 Okay. Fine. I think our problem is that we are talking about
17 five subjects and this Committee has trouble juggling more
18 than two.

19 CHAIRMAN REMICK: I am going to ask Wayne to help
20 us, move along in your presentation, Wayne, and help us get
21 off this.

22 DR. LEWIS: Let's rule the word backfit out of the
23 conversation. It would help a little bit, 20 percent.

24 MR. WARD: Excuse me, wayne. Could I, because I
25 mean I am supporting what Dr. Lewis has said because your last

1 line there is sort of putting the safety goal policy at the
2 same level as if it is necessary to, to harmonize the safety
3 goal policy with the backfit policy. Well, I think you have
4 got it backwards there. I mean--

5 MR. WAYNE HOUSTON: Turned around. That's all
6 right.

7 MR. WARD: Yes, but that makes a very different
8 thing, and I think if we, if we adopt the reasonable safety
9 goal policy and put some sort of implementing actions underway
10 for the policy, one of the things we want to do is look at
11 regulations such as the backfit regulations to see if they are
12 in harmony with this, with this grand scheme defined by the
13 safety goal policy, and it's a test of that backfit rule to
14 conform, not the other way around.

15 DR. LEWIS: The word harmony is inappropriate
16 because one is subordinate to the other.

17 MR. WARD: Yes.

18 MR. WAYNE HOUSTON: Consistency? Coherence?

19 DR. LEWIS: Obedience.

20 MR. WAYNE HOUSTON: Okay.

21 DR. LEWIS: Obedience, damn it--the backfit rule has
22 been adopted. I'm sorry. The safety goal policy--you've got
23 me doing it now.

24 MR. FRALEY: I think Dave has hit on a very
25 important point. The fact is the Commission has not yet I

1 guess legally agreed that the safety goal is the overall
2 umbrella for everything.

3 The thing that the Commission is using to define
4 adequate protection is the backfit rule. That has been tested
5 in the courts. They have been ordered to modify it by the
6 courts, have been ordered to work with the new version by the
7 courts, and that's what they are doing. The Committee keeps
8 saying the backfit. The goals ought to be the overall thing
9 that defines what is safe enough. The Commission has not yet
10 endorsed that philosophy. At least the staff hasn't, and I
11 think that's a very important point. You keep assuming that
12 they have, and then say well, the backfit rule has to be
13 brought up to it, but they haven't adopted that yet. That's
14 what you have to sell them.

15 DR. LEWIS: You are just wrong. The Commission has
16 adopted the safety goal policy. It is a Commission policy.
17 It states how safe things have to be. It gives numbers for
18 it. It is Commission policy. If the Commission policy about
19 how safe is safe enough is not an umbrella, I don't know what
20 is. The courts have ordered them to do things about, the
21 backfit rule court have ordered them to do things about lots
22 of different things.

23 MR. FRALEY: Now we are talking about the
24 implementing. I'm talking about implementing it, and, and how
25 does it fit into the regulatory process? The Commission has

1 not yet approved that it superseded the backfitting rule. The
2 backfitting rule is still the backfitting rule.

3 CHAIRMAN REMICK: Let's allow Wayne to continue. I
4 think we are once gain getting--I agree very much that Dave
5 has a very good point, and I think that's kind of a, I think
6 where I see us coming out, the importance of the safety goal
7 vis-a-vis the backfit. Let's let Wayne finish the
8 presentation.

9 MR. WAYNE HOUSTON: I think actually we have covered
10 in one way or another all of the subjects that I had indicated
11 there.

12 DR. LEWIS: That's a wonderful way to move on.

13 CHAIRMAN REMICK: One more slide.

14 MR. WAYNE HOUSTON: And I would like to take a look
15 at this and ask a simple question. Does this not characterize
16 appropriately a difference in views in the staff and the ACRS?

17 CHAIRMAN REMICK: I really don't understand. You
18 are going to have to explain it.

19 MR. WAYNE HOUSTON: All right. The ACRS has
20 recommended that when a change in regulations or requirements
21 is made, proposed to be made, the purpose of which is
22 performance with the safety goals, then that change should be
23 made without regard to the cost/benefit arguments.

24 Is that a fair statement?

25 DR. SIESS: Wayne--

1 MR. WAYNE HOUSTON: It is one of the ACRS letters.

2 DR. SIESS: Which one? I'm trying to find it.

3 MR. WAYNE HOUSTON: I think it is, I think it is
4 the--let me check.

5 CHAIRMAN REMICK: February 16th.

6 DR. SIESS: Page 7, the last page.

7 MR. WAYNE HOUSTON: No. It is page 3 of your April
8 12th, 1988 letter, the bottom of the page under the heading
9 use of cost/benefit analysis, and it is also quoted I believe
10 in the draft Commission paper.

11 MR. WARD: Is that in the book, Dean?

12 MR. DEAN HOUSTON: Not page 3--page 4.

13 MR. WARD: Is that letter in the book?

14 MR. DEAN HOUSTON: Just part of it. Page 4 is
15 there.

16 MR. WARD: What number do I look for in the lower
17 right-hand corner?

18 DR. SIESS: It is not there.

19 MR. DEAN HOUSTON: It is not there. We will get it
20 for you.

21 CHAIRMAN REMICK: What I have is in the project
22 status report for all of the subcommittee meetings.

23 MR. WAYNE HOUSTON: The particular language which I
24 read is also quoted on page 2 of the draft paper, which I sent
25 down to Dave. It is in the middle of page 2.

1 DR. SIESS: That's the paragraph we just read and
2 that doesn't say anything about backfit.

3 MR. WAYNE HOUSTON: I didn't use the word backfit in
4 what I just said. I just said without recourse to
5 cost/benefit arguments.

6 DR. SIESS: I'm sorry. That doesn't say anything
7 about cost/benefit, either.

8 MR. WAYNE HOUSTON: Yes, it does.

9 DR. SIESS: Where?

10 MR. WAYNE HOUSTON: The last three words or two
11 words depending on how you read it, are cost/benefit argument.

12 DR. LEWIS: But that is taken out of context. If I
13 remember the letter--I don't have it in front of me--the
14 reference to cost/benefit is because it had been brought up
15 and was kind of an overdictum. It wasn't a central issue. It
16 was just dealing with one of the things that had come up.

17 DR. SIESS: Put it differently. That reference to
18 cost/benefit says the regulations should be revised. It has
19 nothing to do with backfits.

20 MR. WAYNE HOUSTON: I didn't say anything about
21 backfits just now.

22 DR. SIESS: That's what you have got on your figure.

23 MR. WAYNE HOUSTON: If I may, hear me out. What I'm
24 attempting to present here, and I think in all fairness, this
25 needs to be explained to the Commission, presently what the

1 Commission has authorized, as far as requirements applying to,
2 new requirements applying to present plants is concerned--

3 DR. SIESS: Plant-specific backfits, generic
4 backfits, GS> plant backfits.

5 MR. WAYNE HOUSTON: Correct. What the Commission
6 has authorized is--

7 DR. SIESS: Okay.

8 MR. WAYNE HOUSTON: If something is needed for, to
9 maintain a standard of adequate protection, cost is not a
10 consideration. If something other than that is needed to
11 enhance, to improve, to increase protection of the health and
12 safety of the public, then cost/benefit is a consideration.

13 DR. SIESS: For a plant, not for regulation.

14 MR. WAYNE HOUSTON: Right. One of the things I note
15 here I put a question mark here because now this is--and this
16 comes from the backfit rule because that's, that's where at
17 the moment, the Commission has addressed cost/benefit as a
18 consideration in regulatory decisions.

19 I believe it is the only place in the regulations
20 where it has done so, but it is, direction here is the
21 regulation that is primarily directed at the staff.

22 DR. SIESS: No argument about that. That's fact.

23 MR. WAYNE HOUSTON: The backfit rule itself does not
24 explicitly identify some particular goal here such as how safe
25 is safe enough? Implicitly as the level of safety continues

1 to be improved, increased, at some point, logically one would
2 reach a point where no further justification is possible, but
3 there is no level set in the backfit rule for that.

4 DR. SIESS: There is a cost/benefits limit.

5 MR. WAYNE HOUSTON: There is no level of safety set.
6 The cost/benefit is a technique. It goes from here to here,
7 but not a specification of a level. Is that not clear?

8 MR. WARD: Yes. That's clear.

9 DR. SIESS: Just trying to find out where the--

10 DR. SHEWMON: Let me ask a simple question before
11 you get on.

12 Does the horizontal axis represent any difference
13 between left and right?

14 MR. WAYNE HOUSTON: No.

15 DR. SHEWMON: Fine. Thank you.

16 MR. WAYNE HOUSTON: Just to give us space, I put
17 these words here. Now what I have called here, I have called
18 here, then I call it a hypothetical representation of the
19 existence of something called adequate protection, a level of
20 safety. We will get to the question of how safe is safe
21 enough in a moment, which is not on here.

22 And I've put down here a level which is represented
23 by the safety goals. Now one way that one did look at the
24 issue as to whether or not there is a difference between the
25 two is as to whether these two are in fact the same level.

1 Earlier the staff thought that that's what the ACRS
2 was talking about. In a discussion with Dave Ward a week ago
3 in the subcommittee meeting, I came away with the distinct
4 impression that that was not what the ACRS was talking about.

5 DR. SIESS: It may even be the other side.

6 MR. WAYNE HOUSTON: It may be the other side, that
7 is correct.

8 MR. WARD: I don't--you may have left with that
9 impression. If I gave it to you, it was by accident, not my
10 intention.

11 MR. WAYNE HOUSTON: We have communication problems.

12 DR. KERR: I will--I am still not quite sure what
13 your last point was. Would you re-make it?

14 MR. WAYNE HOUSTON: Well, I'm talking about a
15 hypothetical conceptual level of safety now, and I have
16 illustrated this suggesting that the level of adequate
17 protection is something we call minimal safety, and safety
18 goals might be at a higher safety level. That's not
19 necessarily the case.

20 Another possibility that I mentioned is that safety
21 goals themselves could represent, in some sense be equated to
22 and be the standard for, if you will, criterion for adequate
23 protection, and therefore these two would come together.

24 Now for illustrative purposes, I have taken, I have
25 put in what I will call a staff bias if you will, saying there

1 are prospectively also possibly two levels, and that safety
2 goals is something that we are trying to strive for in the
3 regulations.

4 Now hypothetically if the regulations that exist at
5 the present time produce some level, that is in between these
6 two.

7 DR. SIESS: That's existing plants?

8 MR. WAYNE HOUSTON: That's existing plants.

9 DR. SIESS: Everything I have ever seen from PRAs
10 says that the existing plants are well below the safety goal.

11 DR. KERR: Chet, increasing safety is downward on
12 this chart.

13 MR. WAYNE HOUSTON: This is increasing safety and
14 increasing risk.

15 DR. SIESS: We saw a bunch of PRA results yesterday.

16 MR. WAYNE HOUSTON: I understand that.

17 DR. KERR: That did not say that. It said if you
18 look only at internal events--

19 DR. SHEWMON: External are there.

20 MR. FRALEY: One.

21 MR. WARD: Oh, yes, they showed a bunch of them.
22 They had both.

23 DR. SIESS: Not 1150.

24 MR. WARD: No.

25 MR. WAYNE HOUSTON: What I was trying to illustrate

1 on this same pictorial is what I call the hypothetical level
2 for existing regulations. We don't really know what that is.
3 Think of it as some mean value if you will. They are
4 scattered on any kind of a--if you put numbers on this, in
5 some sense, risk-oriented numbers, and actually put dots on
6 here that represent different plants, they would scatter a
7 fair amount I think.

8 At least if one took bottom line results from PRAs
9 or results from PRAs that are drawn precisely to make
10 comparisons with safety and the two quantitative health
11 objectives in the safety goal policy, one expects to see at
12 least a spread there. Mean value may be between these two.
13 If it were, what the staff is proposing is to utilize
14 cost/benefit to get to this point, but the ACRS has proposed
15 as I understand it not to use cost/benefit to get to this
16 point.

17 DR. KERR: I can't cite the letter but I'm sure
18 that we have written letters in the past in which we have
19 discussed the safety goals and we said that we would not
20 expect existing plants necessarily to meet safety goals
21 individually.

22 MR. WAYNE HOUSTON: Individually.

23 DR. KERR: Yes.

24 MR. WAYNE HOUSTON: Yes. No disagreement with that;
25 I don't believe that's an area of disagreement. I don't know

1 how many times we have discussed this.

2 DR. KERR: Okay. I thought you were suggesting that
3 the ACRS would want to push all plants up to the safety goals
4 without using cost/benefits. I thought that's what you just
5 said.

6 MR. WAYNE HOUSTON: No. You can get so much on a
7 pictorial.

8 DR. KERR: I know.

9 MR. WAYNE HOUSTON: There is no disagreement that
10 the safety goals is, safety goals can be a path to the
11 creation of some somewhat different or quite different body of
12 regulations, for example, the purpose of which is then the
13 regulations become, to use your language, the surrogate for.
14 Now whether that's adequate protection or something else is
15 the issue.

16 CHAIRMAN REMICK: Let me try to restate what you
17 have said.

18 I think it is in agreement with what we have said in
19 writing, and that is if through the use of PRAs, looking at a
20 number of plants, we found that the existing regulations were
21 not producing this class of plants that in general met the
22 safety goals, we would propose then that the regulations need
23 to be refined so that in general, plants would meet it.

24 MR. WAYNE HOUSTON: That is correct.

25 CHAIRMAN REMICK: And we said that in our letter

1 without recourse to cost/benefit arguments. I have to agree,
2 but that's what we said in writing anyhow in April.

3 Now when we say that--this is my personal view of
4 what we are saying--when we say that those regulations
5 therefore must be revised because in general we are not doing
6 classes of plants that meet the safety goal, regulations
7 should be revised to do that, we are not speaking, though,
8 what you do about existing plants, and the question of whether
9 you count it, need to backfit existing plants then is an
10 independent case-by-case decision I believe, in my view. The
11 Commission has to face that decision then what do we do about
12 these other plants? Are we going to have to backfit them?
13 And presumably that's where the backfit rule comes in.

14 MR. WAYNE HOUSTON: Okay.

15 CHAIRMAN REMICK: We do that all the time now when
16 we change regulations. We don't insist that all plants
17 immediately backfit. We make a decision are we going to
18 require it or not? And I would see that in the future.
19 That's my personal view of what we are saying would work. I
20 don't know if others agree or not.

21 MR. WARD: No. I think I agree with you. I think
22 that's what we are saying. I was a little bit bothered by
23 saying you agree with Wayne if that means you agree with this
24 illustration.

25 CHAIRMAN REMICK: No, not completely with the

1 illustration.

2 MR. WARD: I think this is turned around some.

3 DR. KERR: It sure is.

4 MR. WAYNE HOUSTON: How is it turned around? How
5 would you do it?

6 MR. WARD: I'll tell you what I think we meant. I
7 think we meant that the safety goals are definition of how
8 safe is safe enough, that that therefore is very similar to
9 what should be meant by adequate protection, so those two
10 things turn out to be in the same place.

11 We also have said--I don't know if we said it in a
12 letter--that there is at least reasonable evidence today that
13 the existing body of regulations is, has given us a population
14 of plants that's seems to be close to the safety goal or
15 performance of the safety goal. That's incomplete. The
16 evidence is very incomplete. We don't have enough PRAs. PRAs
17 aren't complete enough, but if you take those three
18 statements, all those three lines are at the same place.
19 And--

20 MR. WAYNE HOUSTON: Now what I heard you saying is
21 the inference we drew and the way we reflected it in the SECY
22 89-102 is correct? Am I entitled to say that?

23 DR. SIESS: I didn't hear it.

24 MR. WAYNE HOUSTON: What we said in so many
25 words--it was not a direct statement because of the lack of

1 clarity in reading the words, in the ACRS letters, but what,
2 what I heard you saying now is that yes, it was the intent of
3 the ACRS, the ACRS letters, in their view of the use of safety
4 goals, may I use the word to equate safety goals with the
5 standard of adequate protection? Is it quite the wrong word?

6 CHAIRMAN REMICK: Only indirectly.

7 MR. WAYNE HOUSTON: Indirectly--fine. By that you
8 mean through the mechanism of changing the regulations rather
9 than the plant-by-plant basis?

10 MR. WARD: Yes.

11 DR. LEWIS: In fact we say explicitly indirect but
12 important role. We say that explicitly in our letter.

13 MR. WAYNE HOUSTON: An indirect but important role.

14 DR. SIESS: It is inconceivable --

15 MR. WAYNE HOUSTON: Would the commissiners
16 understand that?

17 DR. SIESS: Obviously not.

18 DR. SHEWMON: In a month one of them may!

19 DR. SIESS: I think the Commission can understand
20 that about as well as we could understand the safety goal.

21 DR. LEWIS: You know, you don't have to understand
22 all these things. We seek precision. We are precisionists as
23 appropriate, and in the end we have to assume reasonable
24 people are doing these jobs, but I just want to respond to one
25 other thing.

1 Several times today people have said things like the
2 existing body of regulations has led us to a population of
3 plants that generally meets the safety goals. I think there
4 is a conclusion about the order of events there that may not
5 be justifiable. One could equally say well, despite the
6 present set of regulations, we have a population of plants,
7 you know. I think every now and then it is good to bear that
8 in mind.

9 MR. WAYNE HOUSTON: I'm very sympathetic to that
10 point because although this is characterized as hypothetical
11 level for existing regulations, if you look at any PRA, you
12 will almost never see any reference to what is there because
13 of the regulations, and in fact, what is often there because
14 it is in fact an integrated look at the plant is looking at
15 things that are beyond the regulations, and it is not all
16 together clear what PRAs do tell, but the regulations, I'm
17 sort of agreeing with you that it is.

18 DR. SIESS: PRAs don't tell you anything about the
19 regulations. They tell you something about the plants.

20 MR. WAYNE HOUSTON: Correct.

21 DR. SIESS: And--

22 CHAIRMAN REMICK: When I saw you this morning, you
23 said you thought it would take about ten minutes for this.

24 MR. WAYNE HOUSTON: Yes. Based on our earlier
25 discussion with Dave, I thought we were in agreement that our

1 present inference was incorrect, and now what I'm hearing, it
2 was more nearly correct, perhaps not properly articulated and
3 I mean what we should do is absolutely quote the words, and/or
4 just make the reference to the words. I hate to be accused of
5 taking them out of context.

6 CHAIRMAN REMICK: I thought what you said was SECY
7 89-102 was wrong. Personally I thought that was wrong.

8 MR. WAYNE HOUSTON: The characterization.

9 CHAIRMAN REMICK: The characterization, yes.
10 Anything else you want to tell us before we go into a
11 discussion on this point?

12 MR. WAYNE HOUSTON: No. I was prepared to talk
13 about other apparent or real differences in the safety goal
14 area.

15 MR. WARD: I would like to hear about that.

16 MR. WAYNE HOUSTON: And we will do that fairly
17 quickly I think.

18 (Slide)

19 MR. WAYNE HOUSTON: Large release definitions--
20 David made mention this is one area of a difference. I think
21 that here is a case where the ACRS may have misunderstood what
22 was said, but that aside, the major point I would like to make
23 here is that the large release guideline itself, no matter
24 what kind of definition you give it, in terms of health
25 effects, any definition that you give it, as long as it refers

1 or implies release, is more conservative than the quantitative
2 health objectives. The question is how much? And it could be
3 by as much as an order of magnitude.

4 Now that can raise the question then as to whether
5 or not then it would be appropriate to go back to the
6 Commission because they asked the staff to look at the
7 validity of this, see if it is useful or not. It may be
8 appropriate to go back. It would be, but one should recognize
9 that which is sort of implied in what we have done, but they
10 have been told explicitly that it is more conservative and why
11 it is more conservative.

12 CHAIRMAN REMICK: But need it be?

13 MR. WAYNE HOUSTON: Yes. I know of no way--

14 CHAIRMAN REMICK: Why?

15 MR. WAYNE HOUSTON: That you can make it equal to.

16 CHAIRMAN REMICK: If it is roughly order of
17 magnitude, why don't you change the number by a factor of ten?

18 MR. WAYNE HOUSTON: Change what number?

19 CHAIRMAN REMICK: Whatever number you are proposing.

20 MR. WAYNE HOUSTON: You could make it like the
21 probabalistic large release is 100 thousand rather than one in
22 a million. That would do it. Is that what you are mean?

23 CHAIRMAN REMICK: No, no. I'm not.

24 MR. WAYNE HOUSTON: What I remember saying--

25 MR. WARD: He is saying even the low enough core,

1 that once in a million years is going to give you a number.

2 MR. WAYNE HOUSTON: I don't care whether you are
3 talking about one curie or a billion curies.

4 DR. REMICK: I misunderstood what you say.

5 MR. WAYNE HOUSTON: The individual risk figure for
6 latent cancer mortality is 2 times ten to the minus 6 per
7 year. The large release guideline is a factor of 2 below
8 that, no matter how you define it.

9 CHAIRMAN REMICK: Ten to the minus 6 definitely is
10 conservative.

11 DR. SIESS: If I did a PRA, what you are saying or
12 under PRAs, a hundred PRAs, and all of them came out saying
13 the fatality and latent cancer criteria of the safety goal,
14 the one 10th of 1 percent, I would still have to go ahead and
15 calculate the probabilities of a large release in order to
16 satisfy the staff that I met the something?

17 MR. WAYNE HOUSTON: Well, only if that became let's
18 say a formal part of the safety goal policy or was formally
19 authorized by the Commission.

20 DR. SIESS: Right now you have decided to make that
21 a formal part?

22 MR. WAYNE HOUSTON: We recommended to the Commission
23 that it, you know, that yes, it be a formal part.

24 DR. SIESS: Why?

25 MR. WAYNE HOUSTON: Because it was not a bad idea.

1 DR. SIESS: Why--

2 MR. WAYNE HOUSTON: Let me give you a different and
3 better answer.

4 MR. WARD: Let me, Chet, because that was the whole
5 idea of this hierarchical arrangement.

6 DR. SIESS: It is a surrogate, but two orders of
7 magnitude below. It ain't much of a surrogate.

8 MR. WARD: Right.

9 DR. SIESS: It becomes a separate goal.

10 MR. WARD: Yes, and we said that in one of our
11 letters, that as you come down the approximation, you should
12 not be so conservative that it makes a new policy in effect,
13 and that's our complaint with this.

14 DR. SIESS: What is the advantage of that in
15 implementation? Can I stop with the Level 2 PRA if I just
16 want to look at the large release?

17 MR. WARD: Yes.

18 DR. SIESS: I don't have to go to a Level 3?

19 MR. WARD: That's right, and you don't get embroiled
20 in the--

21 DR. SIESS: Level 1 to meet one surrogate 10 to the
22 minus 4 core melt and another, Level 2 to meet another
23 surrogate?

24 MR. WARD: That's right.

25 MR. WAYNE HOUSTON: And what I'm saying then is that

1 there is no way you can define a surrogate in this context
2 which is not at least somewhat more conservative than the
3 quantitative health objectives.

4 MR. WARD: We agree, but just don't go crazy with
5 it. That's what we are asking.

6 MR. WAYNE HOUSTON: You can change the frequency,
7 yes. You can change.

8 DR. SIESS: Now see, there is a difference between
9 looking for a surrogate to the health effect, safety goal, and
10 trying to fit some commissioner's idea of once in a billion
11 years into the safety goal framework. Those are two separate
12 things.

13 MR. WAYNE HOUSTON: I thought that the substitution
14 came from the ACRS, but that's beside the point, but to try to
15 give a better answer to your question about why we proposed
16 it, although it is not stated in the Commission paper, a
17 consideration which I think has at least some significance is
18 that a target for a release, when used in conjunction in a
19 comparative sense as to what does a PRA on a particular plant
20 show relative to such a target as we, as what do a body of
21 PRAs show, is that there is no, in the, part of the PRA
22 analysis at which as you point out would end at Level 2, no
23 consideration is given to potential risk reduction by reason
24 of I will call off-site personnel taking protective actions to
25 prevent exposure or to minimize exposure.

1 DR. SIESS: That was the reason for minimizing the
2 large release, minimizing the need for off-site action. I
3 thought that is what the commissioners had in mind when they
4 said not once in a million years could we expect a large
5 release.

6 MR. WAYNE HOUSTON: Right. Okay, but if you tie
7 that to the need to take protective action, then logic would
8 suggest that you are talking about a release of the order of
9 magnitude that would create, would trigger the so-called
10 protective action guides, which is down in the one to five rem
11 level, and you said that's not correct. That has been
12 proposed by DOE for advanced plants, if they get the level
13 down so far that there is no need for protective action, but
14 that it is questionable as to whether that is a large release,
15 and it is certainly not a de facto new policy. No question
16 about it.

17 DR. SIESS: It might be possible to conclude that's
18 not a very good goal.

19 MR. WAYNE HOUSTON: That is one possible conclusion.

20 DR. SIESS: You might well state the goal as an
21 accident that could make front page of the New York Times!
22 Might be just as good, or just as bad.

23 MR. WAYNE HOUSTON: It certainly wouldn't take a
24 very large release to do that. The main point I wanted to
25 make is it doesn't make any difference how you define it. It

1 is still going to be more conservative, and it is a question
2 of degree and not a question of kind. I am not sure you get
3 real close without actually recommending changing the
4 frequency.

5 CHAIRMAN REMICK: I believe what the staff was
6 proposing on the one fatality is either a factor of ten below
7 that.

8 MR. WAYNE HOUSTON: You misread what the staff said
9 if I may say so. What the staff proposed was a qualitative
10 definition, and the reason the staff proposed it that way is
11 because we debated this question for perhaps a few hours, and
12 there was a question, and the question of consistency arose,
13 so what was given, perhaps it should not be regarded as a
14 definition but perhaps as a criterion for large release, we
15 spent quite a bit of time talking about the need to try to
16 make these things compatible, as consistent as possible with
17 the quantitative health objectives, and they recognized, as
18 Bill Kerr pointed out, the Commission has already recognized a
19 possibility of early fatalities. For example, in the QHO for
20 early fatality risk and the large release definition
21 guidelines should be consistent with that, and that was the
22 reaction to it.

23 We did propose for further testing the one or more
24 fatalities in the early containment failure, and yes, we have
25 more reasoned evidence now in the revised draft of the NUREG

1 1150 for the five plants. Yes, these are more conservative.
2 Both of them are. And substantially, maybe an order of
3 magnitude, but you cannot draw the order of magnitude
4 conclusion based upon the qualitative definition, and it is
5 comparable to its, analagous to the problem with core damage
6 frequency. We haven't tried to quantify real carefully, real
7 explicitly what core damage is. Do we need to try to quantify
8 what large release is? It is anocher way to look at it.

9 The second one which I'm sure could occupy us the
10 rest of the day is containment performance, deals with the
11 fact that what we have said in the paper is that at this time
12 we are not proposing to incorporate in the safety goal policy
13 framework proposed objective for containment performance, and
14 in the enclosure to the paper, we go through some arguments
15 that, some analysis if you will, that addressing different
16 ways that mitigation objectives can be defined.

17 One of the problems that we have with focusing on
18 performance, containment performance, is that it bypasses what
19 I consider to be, what we consider to be a very important
20 matter, which is the containment function, quote unquote, of
21 the primary coolant system, on which there is a lot of
22 reliance placed, I would say far more reliance than on the
23 containment itself as a structure.

24 Another problem is there are definitional problems
25 associated with it. If one thinks of it as a conditional

1 containment failure probability, which is sort of what the
2 ACRS has suggested, although I recognize it not be that, you
3 get into definitional problems of specifying the condition
4 with sufficient accuracy so that when an analyst does a PRA he
5 knows what you are talking about, and this deals with the
6 questions of the rate at which core material leaves the
7 pressure vessel and the core melting accident, its
8 composition, whether it has high metal content or high oxide
9 content, for example, what its temperature is, and then--and
10 it is just, it is fraught with all sorts of problems.

11 Now those are dealt with in a manner of speaking in
12 PRAs, and it isn't that they can't be dealt with. It is just
13 that the definition is imprecise, and I think it leaves open
14 the possibility of demonstrating that a goal or a target is
15 met when it is, the uncertainty involved in the thing is such
16 that it is hard to put any reliance on it.

17 DR. KERR: I think if I remember correctly we did
18 use additional probability and the number as an example of one
19 mechanism that could be used.

20 MR. WAYNE HOUSTON: We can take it that way, yes.
21 And what I'm saying is at this time, we did not propose it.
22 Now we are aware of the fact that of course, the ACRS has been
23 asked and is developing some recommendation to the Commission
24 on the subject of containment performance for future plants,
25 and what we said in the, in the, our paper was that for the

1 time being at any rate, we prefer an integrated approach which
2 was consistent with the way that we have dealt with or tried
3 to deal with the MARK I containment performance problem, the
4 integration meaning in that context, just dealing with the
5 large release guideline and the quantitative objectives, and
6 not segregating out a special target for containment.

7 MR. WARD: I would say that this other activity of
8 ACRS isn't all that interrelated or at least, you know,
9 whatever has developed, as I see it again, that would be at a
10 lower level of activity than this.

11 In other words, if there, if the sort of containment
12 performance or mitigation capability or something here is
13 defined somehow in the safety goal, then whatever new criteria
14 for containment design are developed by or adopted by the
15 Commission as, perhaps as a result of ACRS work, should be in
16 conformance with that so, so that I mean this can be developed
17 or should be developed. Whether or not this activity is going
18 on or --

19 MR. WAYNE HOUSTON: What you would like to have in
20 order to complete your task is something to shoot for. Is
21 that what--

22 MR. WARD: Yes. Right.

23 MR. WAYNE HOUSTON: On this item I think it is just
24 an oversight. There is no disagreement here. We simply did
25 not make an explicit statement in the staff paper to the

1 effect that yes, we think the policy statement should be clear
2 on this point. I don't think there is any area of
3 disagreement on this one.

4 Finally, under a heading which I call application of
5 safety goal policy, that--

6 DR. SIESS: Excuse me. Could I go back a minute to
7 large release and ask you a question?

8 Under the present design and licensing practices
9 now, we calculate a release for a LOCA, Chapter 15 under FSAR.
10 Would you call that a large release?

11 MR. WAYNE HOUSTON: Normally I wouldn't. Now what
12 you never see in those calculations is what the release itself
13 is to the environment.

14 DR. SIESS: Oh? You have got to calculate doses by
15 Part 100. There must be some--

16 MR. WAYNE HOUSTON: What you never see is the
17 numbers that represent curies of anything.

18 DR. SIESS: You couldn't tell me how many curies you
19 get?

20 MR. WAYNE HOUSTON: One can go back in the
21 calculation and work it out, yes, but that is not normally
22 presented as a result of the calculation.

23 DR. SIESS: How do they get doses without curies?

24 DR. KERR: Wayne said it was in the calculation. It
25 just wasn't presented.

1 DR. SIESS: Just qualitatively do you, would you
2 consider that a large release?

3 MR. WAYNE HOUSTON: Probably not; you know, I
4 haven't thought about that question. The release is supposed
5 to be of a character that the exposure to a person on the
6 exclusionary boundary, for example, does not exceed 25 rem in
7 two hours.

8 DR. SIESS: I'm thinking now in terms of release,
9 not in terms of consequences.

10 MR. WAYNE HOUSTON: I understand.

11 DR. SIESS: That release will trigger all sorts of
12 off-site activities.

13 MR. WAYNE HOUSTON: No doubt about it. In the
14 context of safety goal policy, my answer to your question is
15 no. I don't think we would.

16 DR. SIESS: You don't think it is a large release?

17 MR. WAYNE HOUSTON: If the ACRS has already
18 expressed its view that a large release is a large release--

19 DR. KERR: I think you would find that it probably
20 would be more than tens of thousands of curies certainly.

21 MR. WAYNE HOUSTON: I don't believe it goes that
22 high. Maybe one or two thousand, well, for iodine the focus
23 will be on thyroid dose and for those, that releases, these
24 are hokey calculations. They are very stylized calculations,
25 and--but to get up to numbers that gets close to 300 rem of

1 thyroid, it doesn't take a whole lot of iodine.

2 DR. KERR: You get--

3 MR. WAYNE HOUSTON: It is a very, very small
4 fraction of what is postulated to be inside containment,
5 so-called TID source term.

6 DR. SIESS: What is postulated to be inside the
7 containment is probably a multiple of what is really inside
8 the containment after a severe accident.

9 MR. WAYNE HOUSTON: In some respects, it is
10 bounding, yes.

11 DR. SIESS: Few hours.

12 MR. WARD: Yep. Depends on the accident.

13 MR. WAYNE HOUSTON: That's right.

14 MR. WARD: Okay. While we are on the large release,
15 I don't think the ACRS meant to necessarily insist on some
16 numerical, very definite quantitative definition of a large
17 release. We just meant philosophically it should be defined,
18 qualitatively or perhaps semi-quantitatively, as a large
19 release.

20 MR. WAYNE HOUSTON: Based on PRA results that you
21 see, in almost all cases, one might, for example, propose a
22 quote, definition, unquote, that it says very simply any
23 release that results in a substantially, all of the noble
24 gases getting out into the environment should be considered
25 large release.

1 DR. SIESS: Oh, no.

2 MR. WAYNE HOUSTON: That will automatically carry
3 with it, you know, varying amounts of other kinds of nuclides.

4 DR. SIESS: You couldn't vent.

5 MR. WAYNE HOUSTON: Pardon?

6 DR. SIESS: You couldn't use filtered vents, because
7 they won't take out the noble gases. Then you have an
8 accident management system that--

9 MR. WAYNE HOUSTON: A filtered vent would have as
10 its purpose minimizing release. They won't filter out noble
11 gases.

12 DR. KERR: It isn't anticipated that the safety goal
13 prevents this release. It just makes the probability lower.

14 MR. WAYNE HOUSTON: Anybody can dream up an accident
15 in which you can, you know, distribute a fraction of the core
16 inventory of radioisotopes to the environment without
17 violating any physical laws.

18 DR. SIESS: You do a PRA now, you have to do a Level
19 3 to prove you have it.

20 MR. WAYNE HOUSTON: Level 3 just deals with those
21 from source terms to consequences.

22 DR. SIESS: I mean--

23 MR. WARD: To health effects, consequence including
24 health effects.

25 DR. SIESS: The only reason for the surrogate is to

1 be able to stop at Level 2?

2 MR. WARD: Yes.

3 MR. WAYNE HOUSTON: That is correct.

4 DR. SIESS: Except that probably is not the reason
5 that ten to the minus 6 of a large release was mentioned in
6 the safety goals.

7 MR. WARD: I mean the reason it was mentioned was, I
8 guess is unknown at least to me. The ACRS tried to take what
9 was presented in the safety goal and put it as a logical
10 framework.

11 CHAIRMAN REMICK: When the 10 to the mine 6, the ten
12 to the minus 4 core damage frequency was dropped, and further
13 consideration of the containment performance in the safety
14 goal was dropped at the same time.

15 Did you want to continue?

16 MR. WAYNE HOUSTON: Just my final remarks is
17 something we have touched upon, which is the question of I
18 will call it applicability, and what I have heard already, I
19 think I know the answer to the question, but if the safety
20 goal policy--was it intended to be applied to dealing with
21 regulations that would apply to existing plants, or for future
22 plants?

23 Now I believe the ACRS position on that is clear.
24 Just one safety goal policy, across the Board, so in a sense,
25 the answer to your question is present and future plants and

1 we really are trying I think not to make the distinction
2 between the two. We are saying how safe is safe enough, in
3 effect it should comply across the board, pass, present and
4 future--present and future, and I think that's true.

5 CHAIRMAN REMICK: Applies to Chevy's as well as
6 Fords.

7 MR. WAYNE HOUSTON: Or Mercedes.

8 MR. WARD: And Studebakers.

9 MR. WAYNE HOUSTON: What the staff has presented,
10 however, what we said up front, that at the moment we are only
11 talking about the safety goal policy applicable to light water
12 reactors. That's what we said, and the reason we said it, it
13 was a pragmatic one, not a philosophic one so much, that other
14 activities were ongoing with the Commission with respect to
15 the advanced reactors, the so-called DOE designs, under the
16 heading, rubrick if you will, of key licensing issues dealing
17 with some of the same questions. That is, you know, I mean we
18 can state the staff position on, if you call that a position.
19 It is not really a position so much as it is a--

20 MR. WARD: We have already told the Commission what
21 we think about that in another letter on the licensing issue.

22 MR. WAYNE HOUSTON: But I would again say that going
23 back to discussions specifically with the ACRS, when this
24 question was raised, at least one member of the Committee
25 raised the question and said his view of what they had been

1 discussing when they were talking about the earliest version
2 of the ACRS recommendations was just present plants.

3 Now perhaps I put too much weight on that, but that
4 was, it is in the transcript of the--

5 CHAIRMAN REMICK: You have not brought up the
6 difference on the 10 to the minus 5 that the staff has
7 proposed for--

8 MR. WAYNE HOUSTON: Implicitly that is part of that
9 future question, and here what the staff is trying to do is to
10 come to grips with the, what I will call the expectations of
11 the Commission. They should be safer, but that does beg the
12 question as to whether it is the Commission's expectation they
13 become safer by regulatory action or simply by designers and
14 operators themselves, and that's a valid point of view.

15 My view is that it's a, we have, yes, we recommended
16 what we call the subsidiary objective, and I guess what that
17 was intended to mean is that it does not have formally what
18 the overall objective was, and what we said was that if, in
19 effect if, in the review of things like the advanced boiling
20 water reactor design, and the Westinghouse SP-90, et cetera,
21 they do achieve or apparently achieve a core damage frequency
22 of that character, that in the future, as the population of
23 plants changes over prospectively many decades, the average
24 core damage frequency would tend to increase and clearly
25 probably at some point in the future, insofar as PRA results

1 are capable of answering the question, that they are getting
2 better and better and safer and safer in terms of preventing
3 core damage, so it's a, because we did recommend 10 to the
4 minus 4 as a goal as a mean for the population of the plants
5 at any given time, present or future.

6 DR. KERR: implicit in the staff's recommendation
7 that making the core melt, damage core damage frequency 10 to
8 the minus 5, does decrease risk? This is not a facetious
9 question because--

10 MR. WAYNE HOUSTON: Does it decrease risk?

11 DR. KERR: Yes, compared to existing plants.

12 MR. WAYNE HOUSTON: It decreases the risk of core
13 damage. It should decrease the risk of core damage.

14 DR. KERR: When the Commission said it wanted to
15 decrease risk, was it really talking about the risk of core
16 damage, or the risk to the public?

17 MR. WAYNE HOUSTON: Well, generally, generally I
18 think it means risk to the public.

19 DR. KERR: I would think so, too.

20 MR. WAYNE HOUSTON: So what the, I can't--

21 DR. SIESS: Why did you qualify it?

22 MR. WAYNE HOUSTON: Qualify what?

23 DR. SIESS: Generally it means risk to the public.
24 The safety goal statements specifically means risk to the
25 public.

1 MR. WAYNE HOUSTON: I agree with that statement.

2 DR. SIESS: I just wondered why you qualified it.

3 MR. WAYNE HOUSTON: It is perfectly proper to speak
4 of risk of core damage and I think--

5 MR. WARD: Why? What business is that of the
6 Commission?

7 MR. WAYNE HOUSTON: If it is not the business of the
8 Commission, we would have almost no regulations on our books.

9 MR. WARD: That's only the intermediate.

10 MR. WAYNE HOUSTON : didn't say that's the final.
11 It is a piece of it; not the final, but--

12 MR. WARD: That's the point he is trying to get.

13 DR. KERR: I am not suggesting one shouldn't get
14 core damage frequency. If you are going from whatever exists
15 to 10 to the minus 5, I guarantee that's the case.

16 MR. WAYNE HOUSTON: It may not be.

17 CHAIRMAN REMICK: Were you going to say something,
18 Wayne?

19 MR. WAYNE HOUSTON: The Commission has made the
20 statement, and I think it's in--sometimes it is confusing as
21 to what is in the safety goal policy statement runs into
22 safety accident policy statement, but in the safety goal
23 policy statement, it does say the Commission intended to
24 continue to pursue a regulatory program that has as its
25 objective providing reasonable assurance of giving appropriate

1 consideration to the subjects involved, that a severe core
2 damage accident will not occur in a U.S. nuclear power plant.
3 Now the question is should any weight be put on that
4 statement? But it is there.

5 CHAIRMAN REMICK: That's a good question.

6 MR. WAYNE HOUSTON: And there you are.

7 DR. LEWIS: I was going to read precisely that
8 sentence from the policy goal statement, but I, but I agree
9 with Dave, but before that statement, it says in the policy
10 goal statement, safety goal statement, why they have that, and
11 they said--which is an interesting question, and the answer is
12 that a severe core damage act can erode public confidence in
13 the safety of nuclear power, and can lead to further
14 instability, unpredictability for the, in order to avoid these
15 adverse consequences, the Commission intends, just--and so the
16 Commission would be interested--the answer is given to the
17 safety goal statement.

18 DR. SIESS: And the industry efforts, they have
19 decided 10 to the minus 5 is the level they would like to
20 protect their investment. And that's their--

21 DR. LEWIS: That's a different situation.

22 MR. WARD: That's their business.

23 DR. SIESS: So it may be, they are not completely
24 different, but their investment might be a little more than
25 that particular plant that has the core melt.

1 DR. LEWIS: Dave's point is that the Commission
2 isn't in the business of protecting the industry's investment.

3 CHAIRMAN REMICK: Is that the end of your slides?

4 MR. WAYNE HOUSTON: Let me just qualify or
5 supplement I think my response to Bill Kerr's question.

6 My answer would be something like this--that I think
7 it certainly is not a direct indicator of decrease in risk to
8 the public. But I think most of us would regard it as what
9 I'll call an indirect indicator that it probably in most
10 instances would reduce the risk to the public.

11 DR. SIESS: That's well qualified.

12 MR. WAYNE HOUSTON: Well, it is not a, you know, a
13 factor of ten reduction in core damage frequency does not
14 represent a factor of ten decrease in public risk. It is
15 probably less than a factor of ten, and it could be a factor
16 of one. There are circumstances in which it could be a factor
17 of one. That is no decrease.

18 DR. SIESS: If I had a containment that contained a
19 hundred percent of all accidents, it wouldn't have any effect
20 on it.

21 MR. WAYNE HOUSTON: That is absolutely correct. I
22 think I've come to a conclusion, except my concluding remarks
23 it now appears to me that while we were requested, as Dave
24 pointed out, to prepare a joint paper, I think we usually
25 agreed that is not really, don't have a good mechanism for

1 handling that.

2 It is clear to me from this discussion that I need
3 to modify, to change the proposal to say how we are proposing
4 to respond to the Commission with respect to this, these
5 differences vis-a-vis the objection, and our discussion today
6 has been enlightening, if I can figure it out, and but what I
7 am going to suggest is that I don't think I can take any
8 action on it until you see the reaction and then you can agree
9 or disagree. I don't see how, as a pragmatic matter, I don't
10 see how we can do it otherwise.

11 Perhaps you would independently just now wish to sit
12 down and write a separate letter.

13 MR. WARD: Yes. And that's what I was going to ask
14 the Committee, what the, what they would like to do. Do you
15 want to say anything else?

16 MR. WAYNE HOUSTON: I'm finished.

17 MR. WARD: Well, let me talk about this, what sort
18 of strategy we might use.

19 We're, I'm concerned not as I said at the beginning,
20 not only about the adequate protection part of it, but also
21 about these other items, and the problem is that the, what
22 letter we wrote was in February of this year. That was really
23 in response to the SECY 89-102 draft which is dated March of
24 this year because we had a draft of that, so I don't think
25 that draft, the March draft, reflects--well, maybe it does.

1 You apparently decided not to change anything in 89-102 as a
2 result of our February letter. Is that--

3 MR. WAYNE HOUSTON: I believe that's a fair
4 statement because we didn't see anything in it that suggested
5 a need for change, rightly or wrongly. We read it.

6 MR. WARD: Didn't suggest to you, but there were
7 some, I think some major things, so I've got a problem there.
8 This whole list of things we were just talking about--

9 MR. WAYNE HOUSTON: Well--

10 MR. WARD: You mentioned one was an oversight, the
11 caveat was an oversight. I don't know.

12 MR. WAYNE HOUSTON: We agreed with you on that. We
13 just didn't say, you know, we will propose to put that in the
14 policy statement. That's all. That was the oversight.

15 MR. WARD: That's what we wanted in the policy
16 statement.

17 MR. WAYNE HOUSTON: I understand that. It was--we
18 talked about it, one of the things we asked the Commission was
19 to, you know, to if they agreed with what we were proposing
20 that we would propose to supplement or revise the policy
21 statement focusing primarily on that the Section 5 of the
22 policy statement which is implementing guidelines, but at the
23 same time, it was primarily focused on, what we had in mind
24 was there are other little editorial changes that one might
25 make. This would be a change that is subsequent. I had in

1 mind putting it in there. We just didn't say that, but we
2 agreed with your point.

3 MR. WARD: Well, what is going to happen as a result
4 of that agreement?

5 MR. WAYNE HOUSTON: If the policy statement is
6 changed, we would propose to incorporate the wording along
7 those lines.

8 MR. WARD: Okay.

9 MR. WAYNE HOUSTON: I'm being cautious because I'm
10 not, I don't have a crystal ball and I'm not, I cannot assert
11 that the policy statement will be changed.

12 MR. WARD: Yes, but see, I'm sort of left here. I
13 guess we just want to send out our February letter again.

14 MR. WAYNE HOUSTON: You can do whatever you want to.

15 DR. KERR: You can say Dear Mr. chairman, since we
16 don't think you received our letter of February whatever it
17 was, we will send you a copy, or something like that.

18 MR. WARD: See what I mean? I don't have anything
19 to react to it.

20 MR. WAYNE HOUSTON: At this time, that is correct,
21 you don't.

22 MR. WARD: Not only on the AP issue, but on these
23 other things. I mean--

24 MR. WAYNE HOUSTON: On the AP issue, what I have
25 just said, I think you need to wait and see what we say.

1 On the rest of these issues, the matter is before
2 the Commission and it's, you know, normally what we do is
3 expect the Commission to say yea or nay or this and that or do
4 the other thing, and we are getting back--

5 MR. WARD: I guess the thing--it has been before the
6 Commission for so long, I'm concerned that they will have lost
7 the thread or have not--

8 MR. WAYNE HOUSTON: I agree. We are, too.

9 CHAIRMAN REMICK: Don't you think the most orderly
10 thing, we should see what the staff comes out with and then
11 ACRS prepare its response?

12 MR. WARD: What he is going to come out with now is
13 just on the AM?

14 CHAIRMAN REMICK: That's right. That's right.

15 MR. WARD: We could sort of tack on.

16 CHAIRMAN REMICK: You might want to tack on a
17 reminder of your position on the other items so that's not
18 forgotten.

19 DR. LEWIS: Except there are things in our February
20 letter that have had no impact.

21 CHAIRMAN REMICK: That's what we are talking about.
22 We might want to tack those on.

23 DR. LEWIS: You still are not going to do anything
24 until we see yet another staff document.

25 CHAIRMAN REMICK: I am suggesting that's the most

1 orderly. I don't know if that's the way the Committee wants
2 to go or not.

3 MR. WARD: I would have hoped I guess that 89-102
4 would have, there would have been another version of it in
5 response to our February letter, but your response was that
6 you are not, you're not going to accept or deal with--

7 MR. WAYNE HOUSTON: I didn't feel there was anything
8 that was said in there that was basically all that much
9 different than what you have been saying before with one
10 exception, that to me or to us, it clarified, at the point in
11 time, it seemed to add additional clarity to what you were
12 talking about, what I'm calling equating safety goals with
13 adequate protection.

14 CHAIRMAN REMICK: Indirectly.

15 MR. WAYNE HOUSTON: Indirectly, whatever, and in the
16 future, I've got to be very careful just to use your language,
17 but you have the same problem with us as we have with you, is
18 trying to understand what you mean.

19 CHAIRMAN REMICK: Sure.

20 MR. WAYNE HOUSTON: And it is still not real clear.

21 CHAIRMAN REMICK: Anybody want to express a
22 preference on how to proceed from here on how you think--do
23 you want to wait for the staff clarification on adequate
24 protection, or do you want to independently send a letter at
25 this time?

1 DR. LEWIS: You know, I did have a concern that
2 there are things in our February letter--this is October of
3 1989. There are things in our February letter disagreeing
4 with the staff positions of which no cognizance has apparently
5 been taken, and here it is October, and we are--there has been
6 a staff document that is the SECY in the interim, and we
7 are--how long do we go? Do we set a deadline?

8 CHAIRMAN REMICK: The Commission, of course, had
9 asked us to respond by the 15th of this month, so I assume the
10 staff will be doing something shortly. Is that right?

11 MR. WAYNE HOUSTON: That is correct.

12 CHAIRMAN REMICK: So I guess is that next month you
13 are going to know what the staff position is, and my
14 presumption is the Committee is going to want to readdress
15 some of these things that you are referring to that haven't
16 been addressed to make sure the Commission is aware that
17 that's still the ACRS position. I assume that's what you
18 would do.

19 DR. LEWIS: But the last thing the Commission has is
20 the SECY, which is in a sense a staff response to our February
21 letter, namely, ignoring it.

22 MR. WARD: Yes. That's it.

23 DR. LEWIS: I'm reluctant to leave that on the
24 record.

25 MR. WARD: The problem is that the SECY is dated

1 after our letter, and the Commission might--well, I don't
2 know.

3 DR. KERR: Why don't we write a letter saying that
4 in our view, the SECY does not adequately reflect our
5 comments, and that we are going to talk to the commission or
6 we want to rewrite the letter so that it will be better
7 understood or whatever.

8 DR. LEWIS: I would be comfortable with a letter
9 that simply says that to put the Commission on notice that the
10 SECY ignored our February letter, that we are still waiting
11 for more staff papers, and then we will write more, but at
12 least to not leave that on the record as our acceptance of the
13 response to the February letter. We worked hard on the
14 February letter as I recall.

15 MR. WAYNE HOUSTON: It was not ignored. It was not
16 ignored.

17 DR. LEWIS: And long.

18 MR. WAYNE HOUSTON: And I request you make a
19 distinction between consideration of ACRS views and comments
20 and, on one hand, and adoption of them on the other hand.

21 DR. KERR: If one said that the SECY didn't reflect
22 our views, I think that would be an accurate statement. That
23 doesn't say you ignored them. It just says the SECY doesn't
24 reflect any of them.

25 MR. WAYNE HOUSTON: I don't think that's a true

1 statement. If that's the way you read it--

2 DR. LEWIS: Point of order, Mr. Chairman--I thought
3 we had reverted to the point at which we are talking to us
4 about what we are going to do. We shouldn't negotiate it with
5 Wayne.

6 MR. WAYNE HOUSTON: That is correct.

7 CHAIRMAN REMICK: He is not negotiating. We have
8 respect for you.

9 MR. WAYNE HOUSTON: We agree on that.

10 MR. WARD: Providing information.

11 DR. LEWIS: No disrespect.

12 CHAIRMAN REMICK: What is the consensus? Do you
13 want to send a short letter this time alerting the Commission
14 that--

15 MR. WARD: Why don't I do that? I'll draft a
16 short--

17 DR. SIESS: Meets our obligation on adequate
18 protection.

19 MR. WARD: Not really, but--

20 DR. SIESS: Should we say that it doesn't?

21 MR. WARD: Yes. We will say that.

22 CHAIRMAN REMICK: Anything further on this subject?

23 DR. SIESS: Something to the Commission, they
24 revisit the safety--

25 CHAIRMAN REMICK: We will have staff coming in for

1 eleven o'clock.

2 Do you think we can start after five of the hour, or
3 do you want to start on the hour?

4 MR. FRALEY: What is the next item? I believe the
5 staff representatives will be here for that session, yes.

6 CHAIRMAN REMICK: They are here, so let's return
7 then at, excuse me, five minutes to eleven.

8 Thank you, Wayne.

9 (A brief recess was taken.)

10 CHAIRMAN REMICK: The next item on the agenda is
11 Generic Issue 135, steam generator and steam line overfill
12 issues, and Dr. Shewmon is our subcommittee chairman, so Paul,
13 I turn the meeting over to you.

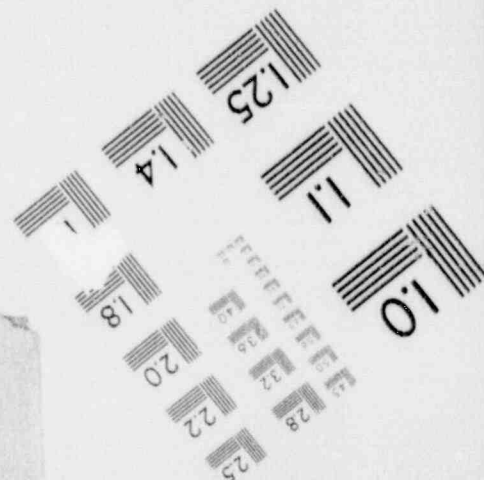
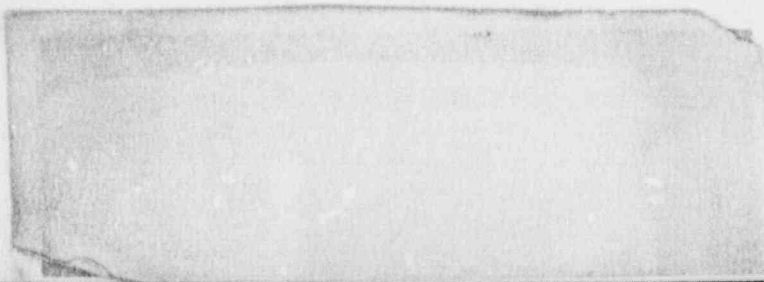
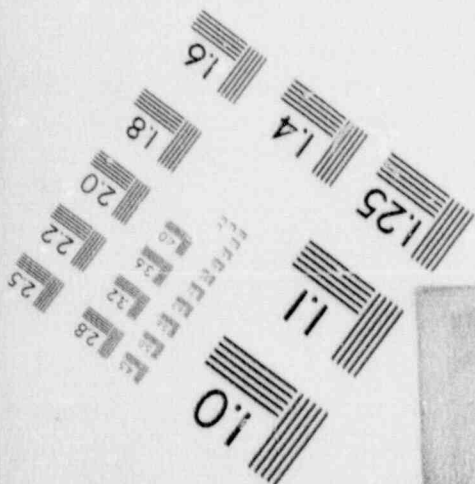
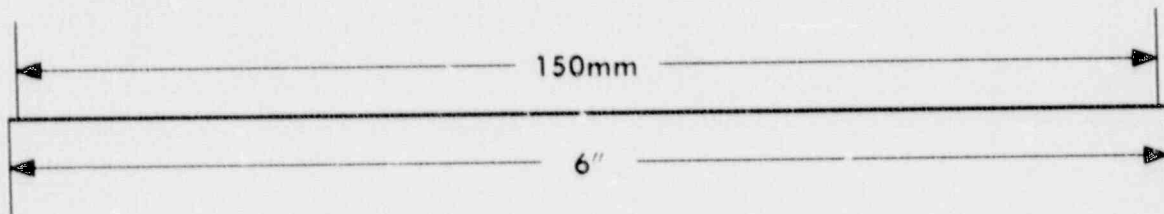
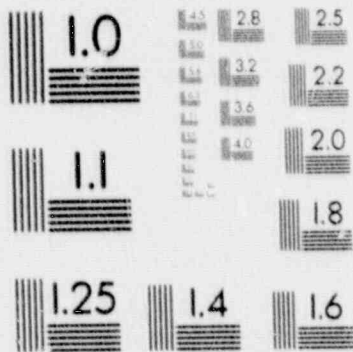
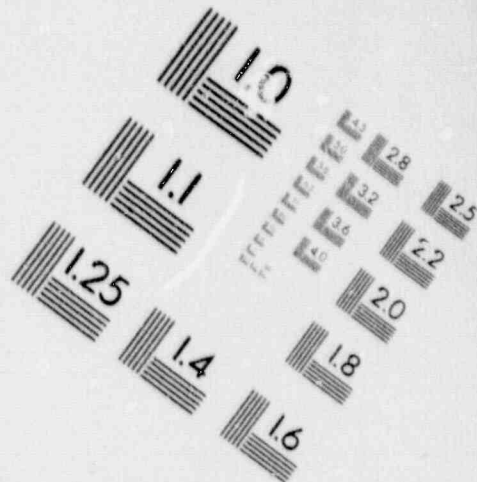
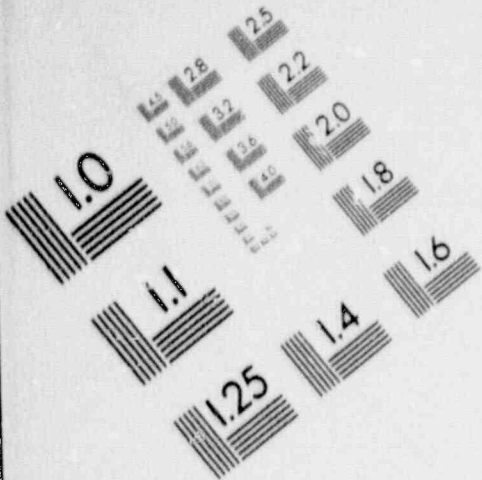
14 DR. SHEWMON: This is a generic safety issue that
15 came through No. 135 that isn't resolved.

16 Though the title implies or suggests only steam line
17 overfill, several things enter into it. A lot of it is the
18 frequency of steam generator tube rupture, and the ability
19 with respect to that and perhaps indirectly to derive new ways
20 that people have found for ruptures of Westinghouse steam
21 generator tubes in the last couple of years, and we had had
22 interest here earlier in the steam water, the steam line
23 overfill.

24 One of the questions that came up had to do with
25 whether the refilling, it was part of the design basis for the

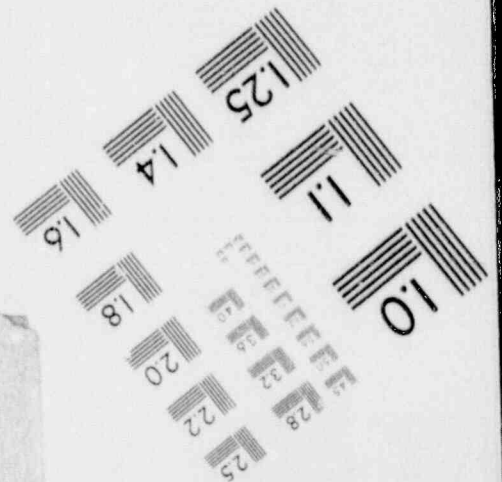
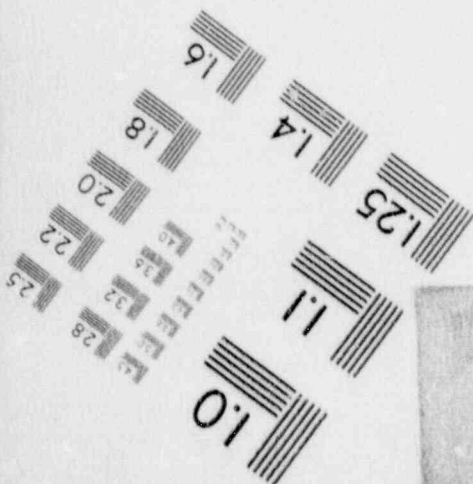
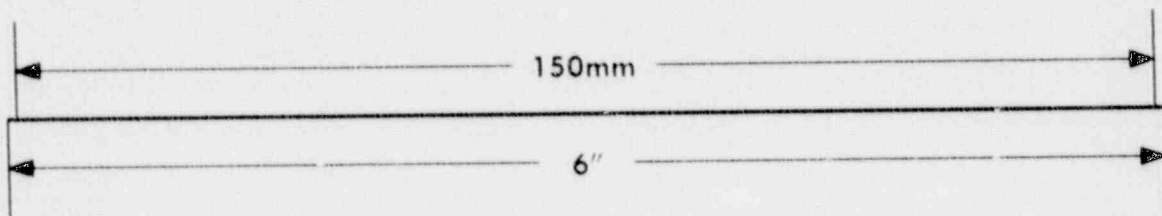
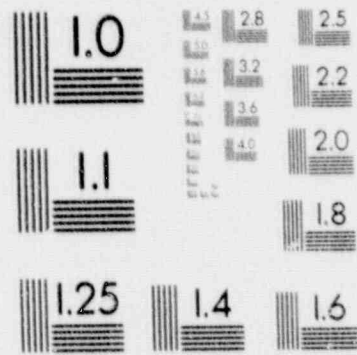
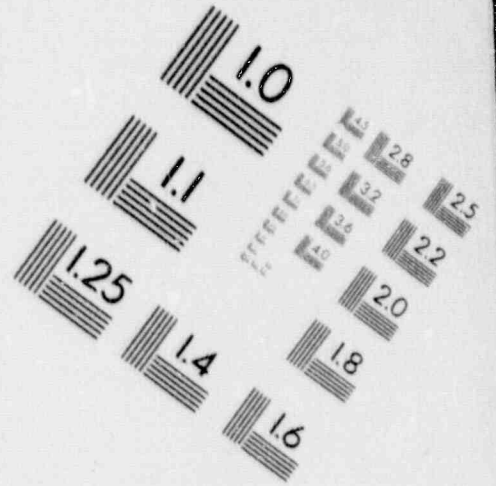
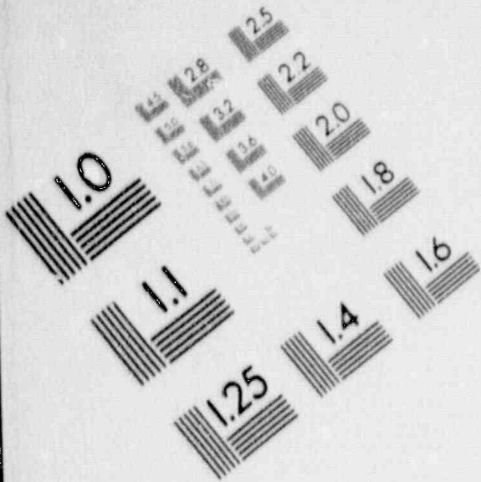
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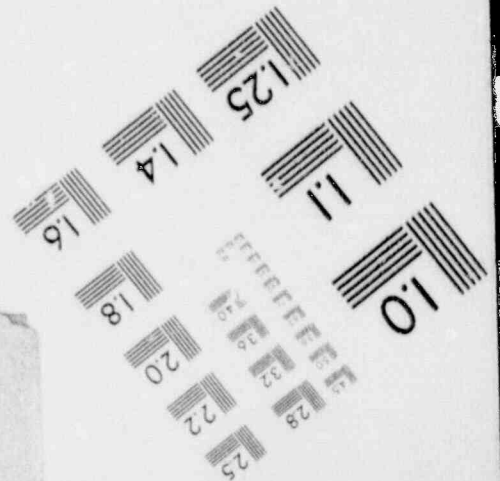
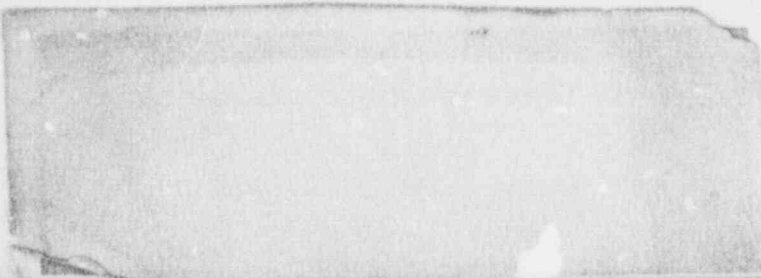
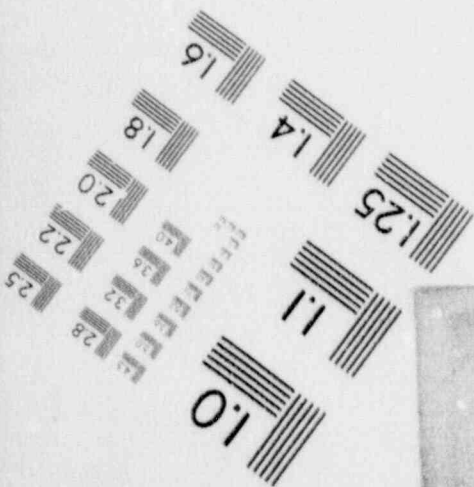
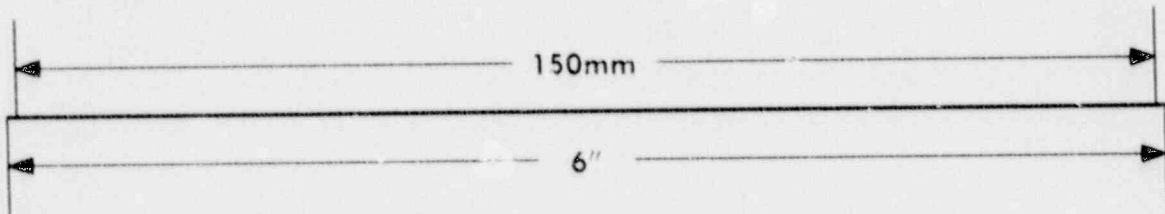
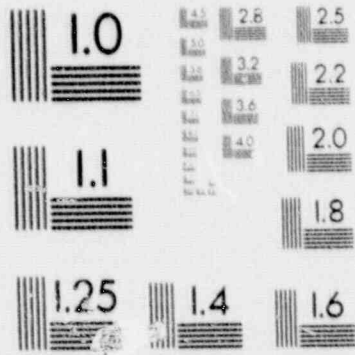
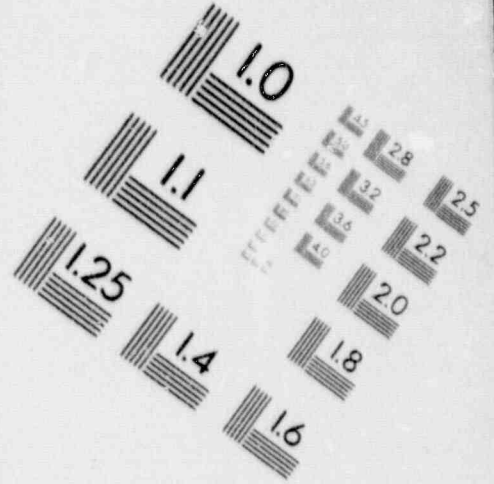
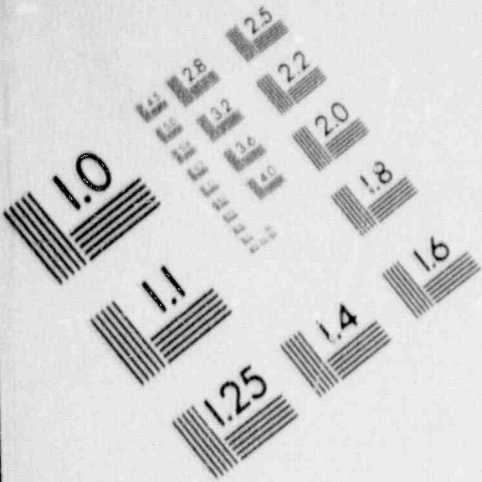
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IMAGE EVALUATION TEST TARGET (MT-3)



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TEST TARGET (MT-3)



1 hangars, and I don't know whether that question will be
2 answered today, but I'm sure the question will come up, and so
3 we felt that rather than sign off on it directly, we would
4 like to hear a presentation, and so we have got
5 representatives of Research, and their contractors to do the
6 same for us today, and I would like then to call on Allen
7 Notafrancesco. Please begin.

8 MR. NOTAFRANCESCO: Okay. I'm Al Notafrancesco,
9 task manager for Generic Issue 135, steam generator and steam
10 line overfill issues, a member of the Office of Research
11 Engineering Issues Branch.

12 (Slide)

13 MR. NOTAFRANCESCO: The purpose of this presentation
14 is to provide the ACRS with a staff position on GI-135, and
15 the basis for the resolution of GI-135, so I'll give a little
16 bit of background on the issue--was to integrate various
17 activities related to steam generator issues, emphasis on
18 steam generator tube rupture events. This issue is
19 essentially an extension of issues of USI A-3, 4, 5 and GI-66
20 and 67 are documented. Essentially GI-135 addresses 14
21 subissues derived from GI-67.

22 DR. CAT'ON: At the outset, this particular issue
23 would do things like the aux feed overfill and main feed
24 overfill?

25 MR. NOTAFRANCESCO: The main feed overfill is

1 addressed in A-47 on the control system failures.

2 DR. CATTON: That was the steam generator steam line
3 overfill issue?

4 MR. NOTAFRANCESCO: Right. That's part of the
5 solution.

6 DR. CATTON: This is, just addresses one small part
7 of it then, the steam generator tube?

8 MR. NOTAFRANCESCO: Tube rupture.

9 DR. CATTON: Only?

10 MR. NOTAFRANCESCO: Only.

11 DR. CATTON: Shouldn't it say that in the title
12 then?

13 MR. MINNERS: It is not an abstract. It is a title.

14 DR. CATTON: Okay.

15 MR. NOTAFRANCESCO: Okay. The objectives--

16 DR. SHEWMON: Copies pertaining to--

17 DR. CATTON: Right.

18 MR. NOTAFRANCESCO: Objectives of 135, to provide
19 bases for staff to develop a position on off-site doses,
20 operator action time, and steam generator tube integrity.

21 The work scope is divided into four tasks. Task 1
22 relates to any current testing and influences on the
23 regulatory guidance that we have in place.

24 Task 2 may affect possible changes to SRP Section
25 15.6.3.

1 Task 3, reassess remaining issues of GI-67, and Task
2 4, to review fixes of water in steam lines, including water
3 hammer, steam line sagging, and develop a proposal for
4 mitigating the consequences.

5 DR. SHEWMON: Let's stay with Task 1 for a minute.
6 Presumably the goal with that is to define some failure
7 frequency. Is that right? Or failure of probability of the
8 tubes?

9 MR. NOTAFRANCESCO: Not--I can't say outright if
10 that's the goal. I'll get into the, we will get--

11 DR. SHEWMON: Why is it we inspect if we don't care
12 how often they rupture? We aren't trying to--

13 MR. NOTAFRANCESCO: There will be a basis in which
14 how many are to be inspected and how often, and I assume there
15 will be some reliability aspects included.

16 DR. SHEWMON: My main point is that that's the main
17 thing here, which I would presume is supposed to be related to
18 the rupture frequency, yet really it hasn't been particularly
19 effective in preventing complete sudden failures in the last
20 couple of years, and so I kind of would like to get some ideas
21 as to how you, actually experience has been factored into the
22 exercise also.

23 MR. NOTAFRANCESCO: Okay.

24 (Slide)

25 MR. NOTAFRANCESCO: One point here is SCIENTECH, our

1 contractor, was awarded technical contract several years ago
2 and has done the bulk of the investigation on these four
3 issues or tasks.

4 (Slide)

5 MR. NOTAFRANCESCO: The way we see resolution of
6 GI-135 is SCIENTECH has produced a technical findings report.
7 The conclusions, no new safety requirements are warranted.
8 However, some subissues are being pursued independently and
9 may affect those SRPs and those several reg guides and
10 close-out, and we envision close-out of GI-135 with the
11 technical findings report, and we will present details of the
12 technical findings report through our presentation today by my
13 contractor.

14 MR. NEVE: My name is Ron Neve. I'm with SCIENTECH,
15 and my colleague, Gini Van Siden, is with me today, and we
16 will be reviewing the work that we've done relative to the
17 resolution of GI-135.

18 This work is summarized in a technical findings
19 report which Allan alluded to. It is NUREG/CR 4893, and it is
20 still in draft form. The details of this presentation are
21 contained in that report, and we will be basically summarizing
22 those results.

23 DR. CATTON: 4893?

24 MR. NEVE: It is NUREG CR-4893.

25 DR. SHEWMON: There is a report in the hand notebook

1 there. I presume that's what it is.

2 MR. CARROLL: It is.

3 DR. SHEWMON: Go ahead.

4 MR. NEVE: Al has pretty much addressed the
5 background information relative to the history of this generic
6 issue, and I would like to just reiterate that as I understand
7 it, the purpose here was to take an integrated look at the
8 various issues involving steam generators, probably with the
9 purpose that there might be some combined or integrated
10 resolution and maybe avoiding the individual or separate
11 treatment of all these issues somewhat in isolation of one
12 another, and again, these are the same four tasks that Al went
13 through, so we don't need to go through them again. They are
14 straight from the task action plan for GI-135.

15 As Al had mentioned, there are 14 subissues
16 inherited from Generic Issue 67 that really comprise GI-135 in
17 the integrated look at steam generator issues. This slide
18 here, which is kind of a summary of the scope, serves as a
19 cross-reference or a bit of a road map identifying or tying
20 together the task number from the task action plan for GI-35,
21 with the subissue number from Generic Issue 67, and then a
22 short title, and then upon the far right column, those are the
23 sections of the tech findings report, NUREG/CR 4893, that I
24 alluded to earlier that address those specific issues.

25 (Slide)

1 MR. NEVE: Now this slide basically gives the
2 general approach that was used in dealing with each of those
3 subissues. Another colleague of mine, a Dr. John Ballif, did
4 most of the detailed work in investigating these subissues.
5 Unfortunately, he is unable to be here today, but I'll make an
6 effort to at least present the results and so forth. If we
7 have some real detailed specific questions, we may have to
8 refer those to him and then get back to you, but essentially
9 relative to this approach or methodology, much of this was
10 reviewing the work of others, and determining if there were
11 some overlapping resolutions that were potentially available,
12 determining whether the resolution for individual issues was
13 adequate to address the concern especially relative to steam
14 generators.

15 Many of the subissues really deal with accidents in
16 general, and their mitigation and tracking and so forth, and
17 of course, the emphasis here is to look at these issues in
18 light of steam generator accidents and steam generator
19 concerns.

20 (Slide)

21 MR. NEVE: Now this table basically gives a line
22 item by line item summary of the status of each of these
23 subissues from the other slide. As you can see, eight of
24 these subissues are considered resolved, most of them by
25 multi-plan action items, which originated with TMI.

1 DR. SHEWMON: If we look at the second issue on
2 that, do you feel--this steam generator overfill, do you feel
3 it was a small risk because you thought it was improbable or
4 because if it occurred, it wouldn't have any untoward
5 consequences?

6 MR. NEVE: Yes.

7 DR. SHEWMON: Both?

8 MR. NEVE: Both, and we, actually we are recognizing
9 that steam generator overfill which was the Task 4 item in the
10 task action plan, is the primary area of interest and concern
11 relative to GI-135 and its resolution, and we have some
12 additional slides later. I'm giving a bit of an overview. We
13 will hone in on, focus on steam generator overfill a bit
14 later.

15 MR. CARROLL: At that time you will tell me what is
16 causing the steam generator to overfill?

17 MR. NEVE: I think I can do that now, but--

18 MR. CARROLL: All right.

19 MR. NEVE: We put too much water in it.

20 MR. CARROLL: Good. From what source? We are
21 talking tube ruptures?

22 MR. NEVE: We are going to focus on tube ruptures,
23 but the slides we have later will actually address the fact
24 that there is two main causes. I mean there is overfeeding
25 it, which is a normal way of overfilling it, and then there is

1 a rupture, which is an abnormal way due to a breach in the
2 primary system.

3 MR. CARROLL: And you are focusing on the latter?

4 MR. NEVE: Right, and we will explain why a little
5 bit later to you.

6 MR. CARROLL: Okay.

7 DR. SHEWMON: Something I don't see on that list
8 which is of some concern to me is the fact that we had several
9 rupture events over the last year by, couple of years, by new
10 mechanisms, and since the corrosion of these tubes from
11 primary site seems to be something we can't prevent, we are
12 probably going to have more, and your bottom line is that
13 these ruptures are not of safety concern, or something to that
14 effect, and I would like to know if some place in here we get
15 to a discussion of how many of those we can have for the year
16 and they are still not a safety issue. Do I get that if I
17 listen to all of these items being discussed?

18 MR. NEVE: I believe you will.

19 DR. SHEWMON: Fine.

20 MR. NEVE: And if you don't, please, I know you will
21 speak up later if you don't, so we will make an effort to
22 answer that.

23 DR. SIESS: That's for sure.

24 DR. CATTON: The elastic instabilities as well.

25 MR. NEVE: Elastic instabilities--I'm not sure

1 exactly what you are referring to in that sense.

2 DR. CATTON: Vibrating tubes.

3 MR. NEVE: Okay. Yes, that is certainly a concern
4 and a cause of problems with the tubes.

5 DR. SHEWMON: Trunk failure is another.

6 MR. NEVE: That's the North Anna event we have had
7 recently relative to a new failure mechanism for tubes, and--

8 DR. CATTON: You are going to discuss these a little
9 bit?

10 MR. NEVE: A little bit, yes, and we will go into
11 depth. We have in this handout--I might mention this now--we
12 have I think it is something like 17 slides in the handouts we
13 have given. We have backup slides that are available in
14 several different areas that we haven't handed out but
15 depending on the nature of the questions and the way we want
16 to go with this, with this session, we will get into this, so
17 there is more than just what you are looking at visually.

18 DR. SHEWMON: Go ahead.

19 MR. NEVE: All right.

20 (Slide)

21 MR. NEVE: This is again a summary of these 14
22 issues, subissues, and putting them basically into three
23 groups, and the ones that are basically being pursued
24 independently, our position on that now is we have taken an
25 integrated look, and if we--it would perhaps be unnecessarily

1 redundant to keep following them under GI-135 as well if there
2 are others that are responsible for their disposition, and now
3 we will go into, we will actually show the groups of these
4 issues.

5 MR. CARROLL: What is a regulatory impact issue?
6 What is that category?

7 MR. NEVE: Well, to give you a strict
8 definition--I'm reading from a, a Research Office letter No.
9 1. Rev. 1, that came out in March of this year, and it defines
10 a regulatory impact issue as a generic issue not related to
11 improving safety, but to modifying current NRC requirements or
12 guidance with the primary purpose of reducing the regulatory
13 impact, usually cost of requirements on licensees or
14 applicants.

15 So my understanding, and maybe some members of the
16 staff can correct me on this, is that it's considered to be of
17 little safety significance in terms of a potential risk
18 reduction to the public, but it might be very useful to do
19 some work in streamlining the regulatory process and easing
20 the burden on licensees and applicants.

21 Is that pretty fair? Okay.

22 (Slide)

23 MR. NEVE: Okay. This is the first group. These
24 are the eight issues, although there is only five on this
25 sheet. I have another slide that will pick up the other

1 three, that are considered resolved based on our technical
2 findings and review of the work that has been done.

3 As you can see, most of these, in fact seven of the
4 eight are issues that originally, originated with the TMI
5 accident in '79, and those same issues have flexibility to
6 steam generator accidents, and the primary initiator for that
7 concern, of course, was the Ginna accident in 1982, and so in
8 looking at these, we were primarily looking at them in the
9 context of steam generator accidents to see if the resolution
10 of these issues which was primarily contributed at TMI, you
11 know, covered the concerns that might be involved in a steam
12 generator accident like Ginna, and that's the sense that we
13 looked at it.

14 Again, my colleague Dr. Ballif was responsible for
15 detailed review of each of these multi-plant action items, and
16 the implementation letters that were sent and so forth,
17 relative to resolving these concerns.

18 DR. CATTON: One of the problems they had at Ginna
19 was attracting the--

20 MR. NEVE: Reactor vessel.

21 DR. CATTON: Will some of this instrumentation deal
22 with that?

23 MR. NEVE: I'm not sure. That may be on this next
24 one here.

25 DR. CATTON: Is that one of the things that you

1 didn't do?

2 MR. NEVE: I think that the 67.3.4 dealt with the
3 aspect of measuring reactor vessel inventory, and that
4 included, for example, the level indication on the reactor
5 vessel.

6 DR. CATTON: That won't tell them about a--

7 MR. CARROLL: I think your emergency operating
8 procedures.

9 MR. NEVE: Are you referring to bubble in the core,
10 or the steam generator?

11 DR. CATTON: They had a steam bubble in the head of
12 the reactor and it gave them some difficulty in controlling
13 the steam generator following the steam generator tube
14 rupture, and they needed to know where it was at.

15 MR. NEVE: What portion of the vessel head are you
16 saying?

17 DR. CATTON: It was the top.

18 MR. NEVE: Yes. Well, what you are asking, though,
19 is they needed to know where it was?

20 DR. CATTON: They needed to control it as part of
21 their response to the incident.

22 MR. NEVE: Right.

23 DR. CATTON: And the only reason they were able to
24 do it was because there was a temperature measurement in the
25 head and a thermocouple had been forgotten and left there and

1 the operator was able to use it, so he would--but that's not
2 part of the usual instrumentation.

3 MR. NEVE: Right. Now relative to that concern, to
4 my knowledge--I didn't do the detailed review, but to my
5 knowledge, that's, these are the only issues that were,
6 assigned subissues that were assigned GI-135. Warren?

7 MR. MINNERS: Warren Minners of Research--after TMI,
8 we went through a big hullabaloo. I remember we came down to
9 the ACRS several times to go over a list of I guess what could
10 be called severe accident implementation. We went back and
11 forth. People said the list was too long, and we didn't have
12 the right stuff on it. We went round and round and we decided
13 on the list of instrumentation licensees had to have, and we
14 went out with it.

15 Now I can't list for you now which instrument was
16 for which purpose, but all of these things were considered.
17 Okay. And the consensus was, is what we listed, was what
18 everybody needed to control accidents.

19 DR. CATTON: I'm just conveying to you what I found
20 out when I went to Ginna. I talked to the people who handled
21 the accident, and I asked them what was most troublesome. It
22 was the steam bubble in the head.

23 MR. MINNERS: Okay.

24 DR. CATTON: I just asked if you have
25 instrumentation for it and obviously the answer is no.

1 MR. MINNERS: I don't know the answer to that
2 question whether we have instrumentation to it or not.
3 Whatever instrumentation we have, it is part of Reg Guide 1.96
4 1.97, and you know, I guess we can look it up and find out,
5 but I don't know the specific answer to your question.

6 MR. BAER: I would like to comment I was in the
7 Incident Response Center during the Ginna event, and I
8 remember it rather vividly, and somewhat different than the
9 Ginna people apparently, because although we recognized that
10 they had a steam bubble in the head because the level in the
11 pressurizer kept rising, they didn't recognize that for a long
12 time, but they did recognize that they had to keep the core
13 covered, and I believe that some of the level instrumentation
14 that was added after TMI did, did convince them that the core
15 was well covered, although that the sweet levels, I have a
16 pressurizer level that wasn't working because the pressurizer
17 was full, and you have water going into the steam generator so
18 you don't have a good feel for the steam generator level, but
19 they did have certainly trouble in knowing where the water
20 was, but the core was always maintained covered, and I think
21 they had--

22 DR. CATTON: You are right. The core was kept
23 covered. I didn't try to imply that it wasn't.

24 MR. BAER: I don't think they had any doubt--at
25 least in the Incident Response Center we didn't have any

1 doubts that was the case, but there was definitely a bubble in
2 the head, yes.

3 DR. CATTON: And the operator kept the bubble in the
4 head by using the thermocouple that was left in the head.

5 DR. SHEWMON: He also had his level indicators if it
6 had gotten bigger.

7 DR. CATTON: I don't know what a level indicator
8 would pick up.

9 DR. SHEWMON: Brought his level down closer to the
10 top of the core.

11 DR. CATTON: Once it's that far, it would, but sure,
12 because he had the thermocouple, he could tell where the
13 bubble--if the bubble crossed it, and he could keep the bubble
14 well up in the head.

15 DR. SHEWMON: We agree not all plants have those.

16 DR. CATTON: That's right.

17 DR. SHEWMON: So can we go on?

18 DR. CATTON: I just asked if they had it. That's
19 all..

20 MR. NEVE: During this discussion, my colleague Gini
21 has reminded me that this issue was in fact addressed under
22 67.3.4, and she has given me one of our backup slides I would
23 like to put up here that basically describes in a little more
24 detail what was involved in that particular subissue and maybe
25 that will clarify some of this.

1 DR. SHEWMON: In general, move them up as high as
2 you can.

3 MR. NEVE: Okay. Even if I lose my border here--

4 DR. CATTON: I can't see resolution at all.

5 MR. CARROLL: We don't need the heading.

6 MR. NEVE: We will just crank it right up. Now more
7 detail on that is--

8 DR. KERR: What us the answer to Mr. Catton's
9 question?

10 MR. NEVE: I believe the answer is that in Issue
11 67.3.4, of which this gives a little more information,
12 addresses the concern that arose from Ginna relative to bubble
13 forming in the upper portion of the vessel head, and in terms
14 of the details of how that instrumentation that was added as a
15 result of this issue, how that did that, I'm not exactly sure.
16 As I said, I didn't do the real detailed review.

17 MR. CARROLL: At the time Ginna had their problem
18 had they installed their REVLIS?

19 MR. NEVE: That I do not know.

20 MR. CARROLL: Do you know, Bob?

21 MR. BAER: No, I don't believe they had.

22 DR. SHEWMON: But they have since?

23 MR. BAER: I believe so, but I'm not positive.

24 MR. CARROLL: Is it your impression that would have
25 helped them in dealing with this accident?

1 MR. BAER: Yes. Well, they didn't really have
2 trouble I don't think dealing with the accident, but they did
3 have trouble my recollection is in recognizing that they even
4 had a bubble in the head, but as I said, the level in the
5 pressurizer went up, and that didn't make a lot of sense based
6 on how much they were charging, knowing that they had a steam
7 generator tube rupture, so it was pretty obvious that they did
8 have a bubble in the head, but I don't think they had any
9 direct instrumentation until it got down quite a ways at that
10 time.

11 MR. CARROLL: Let me ask it this way. Have you
12 looked at, at plants like Ginna since they have installed
13 vessel level instrumentation to get some comfort that they can
14 form these kind of, kind of scenarios?

15 MR. BAER: Not me directly, no. I might give a
16 little added background to this whole issue as best I
17 understand it, and it somewhat predates my time on generic
18 issues, but there was a whole collection of activities going
19 on on steam generators in general as a result of USI A-3, 4
20 and 5, and the staff was asked I think somewhat by the ACRS to
21 make sure that this is being handled somewhat in an integrated
22 manner, and we had SCIENTECH look at it independently, and I
23 don't think SCIENTECH went beyond where they were asked to go,
24 beyond the fact that if NRC had issued a letter to licensees
25 requiring some action, that that was their point of saying

1 yes, that part seems to be being handled, and we have, among
2 ourselves, haven't gone back to each of these NPAs to see how
3 it has been implemented.

4 MR. NEVE: That is correct. We did not review
5 implementation. What we saw as our scope was reviewing the
6 NPA itself, and determining the resolution of it, which was
7 primarily directed at TMI.

8 We also resolved concern that would have arisen from
9 Ginna in terms of steam generator accidents, but we did not
10 review how many plants, for example, had already responded and
11 implemented the fix and how many hadn't.

12 MR. CARROLL: I understand that, so what I'm reading
13 here is whoever in your organization looked at it, concluded
14 that by having implemented whatever it is there--

15 MR. NEVE: Right, the generic letter and the TMI
16 action item IIF2.

17 MR. CARROLL: That the issue of steam bubble
18 formation could have been monitored?

19 MR. NEVE: Right.

20 DR. CATTON: It is my recollection that the
21 instrumentation required by 1797 was to track the level as it
22 dropped into the core. That wouldn't help you much with a
23 bubble.

24 DR. SHEWMON: Let me just--

25 MR. MINNERS: Its level didn't drop into the core.

1 What's the problem? You characterize it as they had a
2 problem, which is a rather vague characterization. In my
3 simplistic way of viewing the thing, if didn't go down into
4 the core, what is the problem?

5 DR. CATTON: It didn't go down into the core because
6 he knew from where it was and kept it out.

7 MR. MINNERS: So he didn't have a problem.

8 DR. SHEWMON: Other people wouldn't have the same
9 instrumentation to keep it out is his suggestion.

10 MR. MINNERS: But the, the IIF2 instrumentation, 197
11 instrumentation is supposed--it has got thermocouples on the
12 fuel, and it has got reactor level, and that was the whole
13 purpose of that.

14 DR. CATTON: If you wait until level drops into the
15 core, it seems to me in this particular case that's kind of
16 silly when you could keep the bubble in the head and not have
17 any problem like the operator did. Anyway--

18 DR. SHEWMON: A tangential point, Ginna is longer
19 back in history than Saint whatever--Anna, North Anna, or the
20 other one, Surry, and their ruptures, I guess one was fatigue.
21 The other was a plug rupture. Both of them were fairly large
22 single tube rupture events, but I didn't hear about any bubble
23 there.

24 Was Ginna a couple of tubes, or is it just that that
25 plant for some reason was more susceptible to bubble?

1 DR. CATTON: I don't recollect.

2 MR. BAER: Ginna was only one tube as far as I know,
3 and the operator, the operating crew is faced with a desire to
4 depressurize the reactor coolant system as rapidly as possible
5 to reduce the rate of leakage from, the reactor coolant from
6 the primary system into the secondary side of the steam
7 generator, and therefore, limit doses to the public.

8 At the same time, though, if they reduce the
9 pressure too rapidly, the hot water that is stagnant in the
10 upper head of the vessel starts to flash and forms a bubble.

11 DR. SHEWMON: I have some understanding of that. I
12 want to get on to North Anna soon. Go ahead.

13 MR. BAER: Well, I don't know much about the North
14 Anna thing. In the case of Ginna, they were on the path of
15 reducing reactor coolant pressure pretty rapidly to avoid the
16 leakages if I recall correctly. I think their atmospheric
17 dump valve may have stuck open or they were releasing more
18 than they wanted to out to the environment.

19 DR. CATTON: PORV stuck open.

20 MR. BAER: They reduced the pressure kind of
21 rapidly, which formed the bubble. I think the operating
22 procedures that plants have try and minimize that effect now.

23 DR. SHEWMON: The PORVs behave better in Virginia
24 than they did in northern New York state, and that's the
25 reason why the two accident scenarios were different? Is

1 that--

2 DR. CATTON: They had to struggle with the fact that
3 the PORV was giving them trouble somewhere along the line. I
4 don't recollect the details.

5 MR. MICHELSON: I thought there was, the dump valve,
6 the atmospheric dump valve was giving them--the trouble was
7 water was getting in the steam line they thought and it jammed
8 the thing open or something and it took an hour or so to get
9 it closed, to my recollection. That's where the release came
10 from for the environment, the dump valve.

11 I don't remember the PORV, whether it stuck or not.

12 DR. CATTON: They took it off and tested it. They
13 found out it failed three times out of ten.

14 MR. MICHELSON: But I don't recall whether it stuck.
15 It was a long time ago.

16 DR. SHEWMON: Okay. Here, Dave. It gives you the
17 date up top. Its says 1-25-82, steam generator safety valve.

18 MR. CARROLL: That really is--

19 DR. SHEWMON: That is not a PORV.

20 MR. MICHELSON: No. It stuck open over a period of
21 time.

22 MR. NEVE: This is a cryptic description of the
23 Ginna event. I also had my colleague give me a copy of this
24 report to Congress on the North Anna event, but I don't have a
25 slide on it. It gives a fairly detailed description of the

1 event, which a monitor tube, 74 gallon per minute leak in the
2 C steam generator gives a location of the tube and so forth
3 and so on.

4 DR. SHEWMON: 74 gallon?

5 MR. NEVE: That's what this indicates.

6 DR. SHEWMON: That's the tube rupture?

7 MR. NEVE: I am looking to see if it increased
8 later. This is at North Anna 1.

9 DR. SHEWMON: It was at Surry I think they
10 discovered it through a new fatigue mechanism, and that was a
11 couple of years ago?

12 MR. NEVE: I believe that's true. The North Anna
13 event was the fractured tube, inkenel tube plug.

14 DR. SHEWMON: That is just a little, one thing.

15 MR. NEVE: That's a small one and neither one of
16 those events to my knowledge resulted in an overfill which
17 Ginna did and that I think as the gentleman here pointed out,
18 was the primary release mechanism is that the overfill led to
19 a stuck open safety valve, and the release path.

20 MR. MICHELSON: They weren't sure it did, but that
21 was the speculation.

22 Now as long as we are talking scenarios, this is
23 something maybe you can clear up for me. In the process of
24 mitigating such ruptures, is there any reason to run the
25 auxiliary feedwater pump, the turbine-driven one,

1 particularly?

2 MR. NEVE: Well, I'm not an expert on that, but my
3 opinion is that there would not be. We have redundant
4 electric driven pumps, and if you are getting--

5 MR. MICHELSON: Let me tell you what my problem is
6 and then you can think about it or if you haven't considered
7 it, then I think it ought to be considered.

8 The problem is it certainly would be highly
9 undesirable if you already have water in the main steam lines
10 to start the auxiliary feedwater turbine because a portion of
11 that water is going to be expelled into the utility feedwater
12 turbine I think.

13 In fact, the whole auxiliary feedwater turbine line
14 may be full of water because it is generally at the lower
15 point in the plant, and if the water is already filling the
16 steam line, it is also filling that auxiliary line
17 potentially, and have you considered what happens if for any
18 reason the operator thinks he wants to run the auxiliary
19 feedwater turbine, not fully recognizing or not thinking about
20 the fact there may be water already in the lines?

21 MR. NEVE: One of the first actions, of course, for
22 the tube rupture is to identify which steam generator has the
23 leak, and that's usually done with level indication, and then
24 one of first operator actions is to isolate the steam line
25 from that steam generator which would include isolating the

1 steam supply to the turbine aux feed pump.

2 MR. MICHELSON: That steam supply comes from more
3 than one line?

4 MR. NEVE: If he needs to run it, he can actually
5 run it from the other operable steam generator.

6 MR. MICHELSON: For whatever reason he didn't
7 isolate it in time or he forgot to isolate it or whatever, it
8 is an operator error. Perhaps procedures always assure that
9 it is closed. Certainly instruments don't assure closure I
10 don't believe in this case, but correct me in I'm wrong, so my
11 concern is whether or not I can have potential water slugging
12 damage such as rupturing of pipe or something of that sort
13 from starting the auxiliary feedwater turbine with lots of
14 pressure, but water in the pipe.

15 MR. NEVE: I'm sure that you can damage the turbine
16 itself and you could probably damage the piping.

17 MR. MICHELSON: I would be more concerned if I broke
18 it open and started dumping this water that was in the steam
19 line coming over through the steam tube rupture on into the
20 auxiliary building, maybe not even being able to isolate it,
21 depending what is done to the valves that I need for
22 isolation.

23 Have you considered that scenario in the process of
24 deciding whether or not this is an important issue?

25 MR. NEVE: We have discussed that scenario with the

1 staff. Allen and I particularly have gone over that.

2 MR. MICHELSON: Could you tell me then the results?

3 MR. NEVE: Well, our feeling or the consensus of
4 opinion on that is that yes, it would require an operator
5 error not to isolate that line, if that line were not to be
6 isolated and you would have slug flow in it that could
7 potentially damage the piping.

8 Again, we will get into that later, but we don't
9 think there is a high degree of probability that we are going
10 to actually breach the piping. We may damage supports. The
11 evidence that we have looked at relative to steam generator
12 overfill and analyses of those events has indicated that
13 support damage is much more likely than any breach of the
14 actual pressure boundary.

15 MR. MICHELSON: You have actually done this for the
16 auxiliary steam line, not for the main steam line?

17 I agree on the main steam. I am not sure I am
18 convinced on the auxiliary steam line. If you have done the
19 homework, I am convinced.

20 MR. NEVE: We have looked at the branch lines in
21 particular that are up stream of the MSIVs, and that would--.

22 MR. MICHELSON: I am asking only one line. I am
23 asking have you looked at auxiliary feedwater steam line?
24 That's the one I'm asking about.

25 MR. NEVE: No, we haven't looked at any.

1 MR. MICHELSON: If you haven't looked at it, then I
2 would think that a part of this resolution ought to be to look
3 at it and put it to bed as a non-problem, and I will read
4 about it. It is not, if it is not documented, then you know,
5 you are just telling me what you think.

6 MR. NEVE: What we are saying is we didn't look at
7 specific steam lines in particular. What we looked at is the
8 main steam line and we looked at smaller branch lines. We
9 would include instrument lines which would include other steam
10 lines smaller than the main steam line.

11 MR. MICHELSON: Those are not getting water slug.
12 This line is getting a water column being driven down through
13 and has to pass through elbows and so forth, and it may be--I
14 don't know that the water may be up high in the pipe. It may
15 have been held high in the pipe by steam pressure, trapped
16 lower, and now you accelerate a water slug down the pipe, if
17 you have done that analysis, assure me no ruptures occurred,
18 then I'm happy. If you haven't done that analysis, I'm not
19 sure the issue has been resolved.

20 MR. NEVE: We have not done the analysis ourselves.
21 We have reviewed the available analyses in that area, and the
22 indications we have from those available analyses is that the
23 rupturing of the steam line is not a high probability, not
24 likely.

25 MR. MICHELSON: Was it done for the direct feedwater

1 steam line?

2 MR. NEVE: No.

3 MR. MICHELSON: You don't have an available analysis
4 for the auxiliary?

5 MR. NEVE: We don't have a specific one.

6 MR. MICHELSON: You haven't done the homework yet.

7 MR. NEVE: Okay. We did not analyze another lines
8 that are downstream in the main steam isolation valve, either,
9 that could be ruptured. Obviously there are many, many branch
10 lines.

11 MR. MICHELSON: Potentially it could be opened under
12 these circumstances and could be ruptured. If they aren't
13 potentially open, then of course we will read about it. You
14 do have water hammer--

15 MR. NEVE: Okay. We are going to get more into
16 water hammer and overfill a little bit later. We are getting
17 ahead of ourselves I think.

18 DR. SHEWMON: Fine.

19 MR. NEVE: Okay.

20 MR. MICHELSON: By the way, this is not a new issue
21 for the staff. We went through this same story on the steam
22 generator overfill, waiting until now to find out the answer
23 because they didn't want to us give the thing on the steam
24 generator overfill.

25 MR. NEVE: This is just a continuation of a previous

1 slide which has the remaining three issues. Again, the top
2 two again are carryovers from TMI action plan items, and the
3 last one, steam generator overfilling, which we keep getting
4 into, we will hopefully focus on that a little bit later; in
5 fact, just a couple of slides later.

6 (Slide)

7 MR. NEVE: Okay. Those are the issues that we
8 consider resolved, and these are the actual four issues that
9 are being pursued by others independently, and we feel that we
10 have already taken that integrated look we were asked to do
11 so, and these issues are being pursued by others within
12 Research, and really it is redundant to continue keep them
13 open under GI-135.

14 The top two there really involve the standard review
15 plan Section 15.6.3 that Al alluded to at the beginning of the
16 presentation relative to the steam generator tube rupture
17 design basis event, whether in fact that the event described
18 in the SRP section is in fact a conservative bounding event
19 for steam generator tube ruptures, and the radiological
20 consequences of that event which also involves concerns over
21 iodine partitioning and spiking and those characteristics
22 related to the release from a tube rupture.

23 The other two issues involve steam generator tube
24 integrity, the improved Eddy testing in a supplement tube
25 inspections. Again, much of what we reviewed there is

1 summarized in the document NUREG 0844 which gives the
2 resolution of USI A- 3, 4 and 5 dealing with steam generator
3 tube integrity issues. Again, we feel that those two issues
4 are being pursued independently, and the concerns there as
5 reiterated in NUREG 0844 are being folded into revisions to
6 the two regulatory guides referenced, 1.83 on tube inspections
7 and 1.121 on tube plugging.

8 DR. SHEWMON: On 5.2, that's a re-evaluation of
9 whether the design basis, which is one or two tubes, failing
10 is enough?

11 MR. NEVE: Right. It is actually about, well, there
12 are several concerns that arose relative to this steam
13 generator tube rupture as a design basis event. Application
14 of the single failure criterion is an example.

15 Another one is what about multi-tube ruptures? The
16 current steam generator tube rupture design basis event as
17 described in the SRP really looks at a single tube rupture as
18 a design basis event, and there are several concerns there. I
19 don't--we have a backup slide that just lists them if that's
20 of interest.

21 (Slide)

22 MR. NEVE: And of course these are being pursued
23 under 6755 and 52, but this is a listing of those concerns.
24 Again, you probably can't see all of it.

25 DR. SHEWMON: As a point of interest, our German

1 colleagues after the North Anna event did some arithmetic on
2 using the first law of motion I guess basically and convinced
3 themselves that it would be possible for a plug to take out a
4 couple of tubes when it came up to the top.

5 MR. NEVE: Right.

6 DR. SHEWMON: And so it is a new way to rupture two
7 tubes?

8 MR. NEVE: That was the concern about the North Anna
9 event of new failure mechanism that could result in multiple
10 tube failures and maybe that should change the design basis
11 event description in the SRP, and that again is being followed
12 by another group and pursued by them, and we feel it would be
13 redundant for us to get into that.

14 As a comment on that, LANL did some TRAC analyses
15 which we alluded to later on in the presentation relative to
16 multiple tube failures, and their position was that the
17 multiple tube failures for each of the PWR vendors did not
18 pose any additional health risks or radiologic concerns, and
19 the rationale for that was primarily the fact that yes, you
20 have a greater amount of leakage from the primary to the
21 secondary from the multiple tube failure, but on the other
22 hand, you are assisting with the cooldown and depressurization
23 of the primary, so the duration of the leakage is going to be
24 less and there is somewhat of an offsetting effect there, and
25 the TRAC analyses LANL runs seems to bear that out.

1 DR. SHEWMON: Fine. Thank you.

2 (Slide)

3 MR. NEVE: These are the remaining two issues of the
4 164, and these are the two that have been classified now as
5 regulatory impact issues, and I don't know. I think we gave
6 the definition of regulatory impact issue earlier in the
7 presentation, but basically judged to be not that, not having
8 that great a potential for public health risk reduction, and
9 therefore, relegated to this classification to be pursued as
10 time and resources permit by the staff.

11 MR. CARROLL: Does there exist regulatory guidance
12 on these two issues right now? The idea would be to withdraw
13 it or modify it or are they just things that were being
14 considered?

15 MR. NEVE: I would like to put a couple of backup
16 slides up here that give more background on these and what is
17 involved in them.

18 MR. CARROLL: I know what the issues are. I'm just
19 asking--

20 MR. NEVE: Well, the status, my understanding is
21 that denting criteria have been considered and even proposed
22 revision in the SRP outlining those criteria has been
23 considered, but the indication I'm --my impression now is that
24 the staff is not going to follow through with that,
25 establishing a separate section.

1 Certainly aspects of denting and sleeving relative
2 to tube inspections and plugging are being folded into the two
3 reg guides that were mentioned earlier in terms of developing
4 revisions to those reg guides, but as far as a major effort to
5 establish denting criteria and sleeving criteria, to my
6 knowledge, the staff has not, is not pursuing that at this
7 time.

8 MR. CARROLL: My question was sort of opposite. Do
9 criteria exist that they are planning to, to modify or
10 eliminate??

11 MR. NEVE: I really couldn't indicate what is
12 already in Reg Guides 1.83 and 121.

13 DR. SHEWMON: Criteria do exist on denting. Certain
14 amount of denting, you have to plug the tube. Is that one of
15 the criteria?

16 MR. NOTAFRANCESCO: It is Reg Guide 1.83, to some
17 degree. To some degree, it is addressed in Reg Guide 1.83,
18 but the thrust of this subissue was a separate SRP or reg
19 guide I believe, and the detail that's expected is not as
20 obvious versus integrated in the general inspection guidelines
21 1.83.

22 DR. SHEWMON: Okay.

23 (Slide)

24 MR. NEVE: Well, the only remaining issue, subissue
25 that we haven't really, we have been kind of touching on but

1 we haven't gone into detail, and since we need to, is the
2 steam generator overfill issue.

3 Our approach toward reviewing this particular
4 subissue was to review the studies and analyses that were
5 available that had been done relative to the effects of
6 overfill on piping and other analyses that have been done
7 either by vendors or by EPRI or other groups, sponsored by the
8 Commission or elsewhere, by the staff, and also to review the
9 operating history relative to overfills, to get an idea of the
10 frequency of occurrence, and the consequence from actual
11 events, and the effect of overfill and what has actually
12 occurred to somehow get a feeling for the risks involved and
13 to determine whether this was a legitimate concern and
14 required corrective action or whether the, the event was
15 pretty much a, of little safety significance, so that was kind
16 of a two-fold approach, to look at operating history as well
17 as the analyses that were available.

18 One of the things we encountered especially when we
19 looked at the operating history is that there needs to be a
20 little bit of definition of terms.

21 We found that in many of the event reports we looked
22 at and so forth, the word overfill was bandied about somewhat
23 haphazardly. In other words, an operator would indicate that
24 you know, he overfed the steam generator higher than the level
25 that he was allowed to, his perspective, he overfilled it. We

1 wanted to clarify right up front that in terms of pursuing
2 this subissue, we consider overflow actually moving water in
3 the liquid state out through the top of the steam generator
4 into the steam line, and we found in actuality that many of
5 the events that were referred to as overfills, there was no
6 actual evidence that the water had ever left the steam
7 generator. just went basically out of sight or out of
8 indication high. It was then therefore referred to as an
9 overflow when perhaps more appropriately it should have been
10 referred to as an overfeed.

11 DR. CATTON: You didn't find any?

12 MR. NEVE: No. We found some, and we will get into
13 that.

14 DR. SHEWMON: The next slide says four or five.

15 (Slide)

16 DR. CATTON: You missed the one in Europe.

17 MR. NEVE: Are you talking about the overflowing or
18 the tube rupture?

19 DR. CATTON: The overflow.

20 MR. NEVE: We may have.

21 DR. CATTON: They actually had a bit of a water
22 hammer and some bent supports and a few other things.

23 MR. NEVE: Which plant was that?

24 DR. CATTON: I don't remember, but Tosiga has the
25 information on it.

1 MR. WARD: It was Gundremmingen in West Germany.

2 DR. CATTON: That's the second one.

3 MR. WARD: That was the big bad one. That was a
4 small plant, two, three hundred megawatt plant.

5 DR. SHEWMON: How long ago was it?

6 MR. WARD: In the early '70s, maybe '60s.

7 MR. NOTAFRANCESCO: I believe that's late '60s, and
8 it was some damage, and we have it documented in our report
9 which references a NUREG called 1218 which has to do with
10 A-47, which describes some of the damage, and so it is in the
11 report. The slide isn't that clear to say we have looked at
12 it.

13 DR. CATTON: So there were two? There was the other
14 one that was in Switzerland?

15 MR. NOTAFRANCESCO: There is two. There is two in
16 the late '60s I believe.

17 MR. CARROLL: And it is in this report we have?

18 MR. BAER: Could I comment that for those events
19 which I don't believe were steam generator tube rupture, but
20 were control system type failures, we have attempted to take
21 care of that with USI A-47 resolution, at least which ACRS
22 reviewed in great depth on many occasions where we have, now
23 have a generic letter out telling those licensees that do not
24 have some overfill protection for control system details to
25 install it, and for those--and also to have tech specs to

1 survey that system, and then also for those plants that
2 already have overflow protection, to have some requirements
3 for surveillance and periodic, periodic surveillance and
4 limiting conditions of operation when those systems are out of
5 service, so we tried to handle the, the overflow due to
6 control system type failures, or operator errors separate from
7 those through the steam generator tube ruptures.

8 MR. MICHELSON: Whatever mechanical problems might
9 have resulted from that overflow are valid experience for this
10 case?

11 MR. BAER: Yes. And that--

12 MR. MICHELSON: By rupture of a tube or overflowing
13 the generator control failure, what physical effect did it
14 have on the steam line?

15 DR. CATTON: Carl, there's a big difference
16 between--the water from the steam generator tube is going to
17 be hot whereas from the feed it is going to be cold, so that
18 subjects you to the possibility of water hammer whereas here,
19 you are not going to get the steam from that water hammer I
20 don't think.

21 MR. BAER: That point was made in the SCIENTECH
22 report.

23 DR. CATTON: This is just the steam generator tubes
24 that you are talking about?

25 MR. NEVE: Yes.

1 DR. CATTON: You use other words occasionally and
2 broaden that.

3 MR. NEVE: I'm glad that Bob pointed that out. In
4 terms of overfill, we stated at the beginning there are two
5 primary causes. One of them is the feed system, and either a
6 malfunction or operator error, whatever, that overfeeds the
7 steam generator, and then there is the tube rupture which is
8 if you will an accidental accident type overfeed, and we
9 focused primarily on that because USI A-47 addressed the
10 control system failures, but the point here is well taken in
11 terms of the water that would issue forth from the steam
12 generator and possible damage to piping and systems, and that
13 from a consequences standpoint, whether the water came from a
14 primarily to secondary leak or from an overfeed situation,
15 certainly that's useful data and some conclusions could be
16 drawn.

17 I personally think that in terms of a water
18 temperature consideration, unless it is a dramatic overfeed
19 that you know, the feedwater should come into the steam
20 generator, come through the downcomer region come up through
21 the rise, there should be adequate mixing and that water
22 should be at or near saturation by the time it leaves the
23 steam generator.

24 DR. SHEWMON: Why don't we agree this is marginally
25 complete and get on? We're running out of time here.

1 MR. NEVE: Okay.

2 (Slide)

3 MR. NEVE: Okay. Again, looking from the
4 consequences side, and we focused primarily on U.S. reactors
5 in terms of the overfill events, although we did include BWRs,
6 looking at several overfill events in BWRs, which of course
7 don't involve the steam generator but again water getting into
8 the piping system, has a similar effect and consequences, and
9 our position on this, that we in reviewing the reports of
10 operating history and looking at the various events that have
11 occurred, of the five overfill events we found on U.S.
12 reactors, four of them were due to overfeed. Only one at
13 Ginna even was due to an actual tube rupture which was the
14 primary focus of our investigation, and although in some cases
15 we had minor damage to supports, there was never any
16 indication that piping had ruptured or failed or any pressure
17 boundary had been breached from the overfill events of record.

18 MR. MICHELSON: How about the stuck open valve in
19 Ginna? What did you call it?

20 MR. NEVE: It was certainly failure of a component.

21 MR. MICHELSON: Damage.

22 MR. NEVE: It was damaged, and we believe it was
23 damaged due to slug, you know, because concentration of hammer
24 requires a--

25 MR. MICHELSON: It stuck open for a significant

1 period of time, and that your first bullet just leaves me cold
2 because little, if any damage to piping and valves you do
3 consider part of the piping system, just leaves me cold. I
4 don't think it is true.

5 MR. NEVE: Our intention in that bullet is we are
6 referring to the piping pressure boundary integrity.

7 MR. MICHELSON: Narrow the definition then.

8 MR. NEVE: Okay. I apologize for that.

9 MR. MICHELSON: It was a release at Ginna from the
10 pressure boundary, temporary failure.

11 MR. NEVE: From a failed safety valve, that is
12 correct, sir, and of course Westinghouse did considerable
13 investigation into that event and we have looked at their
14 WCAPs, that accident, the piping configuration and so forth,
15 and they certainly will recognize that obviously with Ginna as
16 an example, that that valve can be damaged by slug flow.

17 (Slide)

18 MR. NEVE: And these next couple of slides deal with
19 the other aspect of our approach to overfill which was to look
20 at the available analyses, and determine what, what had been
21 done and what the consensus of opinion was relative to the
22 amount of damage that might occur or could potentially occur
23 to steam lines and could affect their integrity as a result of
24 overfill.

25 We looked at several reports, some of them from

1 EPRI, one of them on, with NUREG 065, one which dealt with the
2 three steam generator tube rupture events before Ginna, the
3 TRAC analyses I alluded to earlier that were run by LANL for
4 the NRC, NUREG--the NUREG 1218 which was a reg analysis on USI
5 A-47 and et cetera, water hammer studies by Creary we
6 reviewed, as well as water hammer NUREGs by the staff, 0927
7 and 2059, let's see.

8 I guess we continue this, but again, the consensus
9 of opinion was that, in these analyses, was that the
10 probabilities of damage were very low, and certainly there
11 would be possibility for damage of supports, but in terms of
12 the actual integrity of the piping system, there was no
13 conclusions. There were no conclusions drawn from the
14 analyses, that supported that that would be a likely
15 occurrence from overflow.

16 MR. MICHELSON: You looked at dead weight loading of
17 main steam line? Did you account for the flexibility of the
18 attached piping to make sure you didn't rip any off by the
19 sagging of the main steam line?

20 MR. NEVE: Yes. We, the analysis, we reviewed,
21 looked at dead weight loading, and as we know, those steam
22 lines are filled with water for hydrostatic testing.

23 MR. MICHELSON: Pin for that--

24 MR. NEVE: They are pinned in those cases. What was
25 the consensus of the analyses we looked at--is that there

1 would be deformation, some possible bending of the steam lines
2 since the steam lines themselves would end up supporting
3 themselves as the hangars if that flexed and gave way, but no
4 indication that there would be any, anything other than
5 ductile behavior and the lines would maintain their pressure
6 boundary integrity.

7 MR. MICHELSON: I asked only about the attached
8 piping, not about the main steam line.

9 Did you look at that attached pipe?

10 MR. NEVE: Yes. We included the instrument lines
11 and the branch lines.

12 MR. MICHELSON: The branch lines got filled with
13 water also?

14 MR. NEVE: Yes.

15 MR. MICHELSON: Did you also see differential
16 movement relative to the main steam line due to the sag?

17 MR. NEVE: Yes, and they ended up supporting
18 themselves because the supports are not pinned.

19 MR. MICHELSON: There is another problem, and that
20 is with operability, certain components attached to that
21 piping, but I guess you could argue none of them should be
22 operating, and that is correct, so operability of components,
23 you could lose operability from putting those nozzle loadings
24 on components.

25 MR. NEVE: None of the components are safety

1 related, would be necessary to mitigate the accident, and our
2 main concern is again main steam line break or some sort of
3 steam leak.

4 MR. MICHELSON: What happens to the steam traps when
5 you go to the the main steam line or water?

6 MR. NEVE: The traps also get filled with water.

7 MR. MICHELSON: Don't they want to keep venting
8 water?

9 MR. NEVE: They want to, but the traps are not
10 designed for that kind of flow rate. They are designed to
11 remove condensation, so the line basically fills up with
12 water, the trap fills up, and it relieves that at a much, its
13 maximum capacity, which is not enough to drain the water out
14 of the lines.

15 MR. MICHELSON: Draining water out of lines?

16 MR. NEVE: I mean account for what is in there; the
17 trap is set for normal condensation.

18 MR. MICHELSON: I was thinking what happens to the
19 water that comes from the traps in terms of where it goes to
20 or whether or not the traps will fail under these little more
21 catastrophic fashion or they will handle it.

22 You have looked at the traps and they do handle the
23 water and they just release some?

24 MR. NEVE: We didn't look at the traps as an
25 isolated component. We looked at the traps in terms, s of

1 maintaining pressure boundary integrity. There was no
2 evidence.

3 MR. MICHELSON: I just wondered where it went to.

4 MR. NEVE: Well, the drainage path for the trap
5 would be in tact and there would be a pressure drop across the
6 trap, but it wouldn't be able to accommodate the kind of
7 liquid we are talking about in an overflow event.

8 MR. MICHELSON: I didn't think it would drain the
9 pipes adequately with. I wonder how much water you drained,
10 where it went to, what physical effect it had on the traps
11 themselves, for instance.

12 MR. NEVE: Our only concern is whether they maintain
13 their pressure boundary integrity and the ones we looked at as
14 we--and the operating data confirmed that they would and they
15 did.

16 MR. CARROLL: Your last slide suggests that a lot of
17 your basis for concluding that none of these bad things are
18 going to happen during an overflow transient is a Westinghouse
19 study for quote, typical piping configurations.

20 Did you look at the B&W and Combustion piping?

21 MR. NEVE: Are you talking about preceding slides?
22 I'm not following you.

23 MR. CARROLL: Yes.

24 MR. NEVE: There is a last slide. Perhaps I should
25 put up the slide that showed the accidents that we looked at.

1 MR. CARROLL: I just want to know have you looked at
2 were there differences? I know Westinghouse plants fairly
3 well, but I don't know how similar they are to the other PWRs.

4 MR. NEVE: The big difference is with the B&W plants
5 and the different steam generators, the once-through versus
6 the U2, and to be honest with you, we did not look at vender
7 reports from CE or B&W. No. There was one from B&W, but the
8 primary, the primary source of information was from the
9 Westinghouse reports, which were prompted by the Ginna event
10 that occurred at their plant, and but I think some of the, you
11 know, the Westinghouse analyses in particular looking at this
12 one, this one on overfill due to tube rupture and also this
13 WCAP which dealt with margin to overfill, really took a hard
14 look at the configuration, and they indicated in there that
15 the configuration was fairly representative at least of the
16 Westinghouse plants. I personally--

17 MR. CARROLL: That's my question.

18 MR. NEVE: I personally did not verify that that
19 configuration was representative of B&W and CE plants, but the
20 other analyses did involve both sets of plants. In particular
21 the TRAC analyses that were run by LANL used all three types
22 of PWR vendors as examples in their TRAC modeling.

23 MR. MICHELSON: I think you have to look at B&W with
24 a fresh start. The rupture maybe be at the top header of the
25 steam generator and it is quite a bit--they have a

1 thermal-hydraulic situation immediately. In the Westinghouse
2 case, rupture is always under water initially.

3 MR. NEVE: There was a case, what was it, Surry I
4 believe?

5 MR. MICHELSON: I am saying the B&W case, there is a
6 high probability it will be in the steam space to begin with.
7 The thermal hydraulics is different and the overflow mechanism
8 is different on a B&W generator. It comes over the top of the
9 shroud, and the piping configuration is somewhat different
10 from the B&W also.

11 MR. NEVE: The other major distinction which we did,
12 of course, look at was the fact that the B&W Owners Group
13 actually advises in their mitigation strategy for tube
14 ruptures that they should continue teaming the damaged steam
15 generator and that's very different from CE and Westinghouse
16 in terms of isolation, but they are concerned about lowering
17 the reactor coolant pumps and initiating the cooldown. There
18 is offsetting effects. We did not generate any new report.
19 We looked at the available analyses and studies that we could
20 look at, and as I said, in terms of vendor reports, the only
21 ones that we were able to look at were primarily on the
22 Westinghouse plant.

23 MR. MICHELSON: The role of the auxiliary feedwater
24 pump is quite a bit different in the B&W. If it hasn't been
25 looked at, I'm not, I guess I'm not convinced that you are

1 finished looking at the issue.

2 MR. NEVE: Your concern as I understand it then is
3 that we don't have detailed vendor reports and analyzing the
4 piping configuration and overfilling at other than
5 Westinghouse PWRs.

6 MR. MICHELSON: That's right.

7 MR. NEVE: I would agree that unless we very much
8 missed them, and we did a pretty exhaustive search, those
9 reports are not out there. That would involve further studies
10 that those vendors for whatever reasons have not, if they have
11 done those studies, they haven't released them to us.

12 MR. MICHELSON: Absence of information is not a base
13 upon which to assume the resolution is okay.

14 MR. NEVE: Okay.

15 CHAIRMAN REMICK: Can we proceed?

16 DR. CATTON: I mention that TRAC analysis, most code
17 analysis of this kind of problem is pretty weak. I took a
18 look at the Creary report, and it was inconclusive because the
19 codes just can't deal with it.

20 MR. NEVE: With all plant specifics.

21 DR. CATTON: Right, things like location of the
22 outflow and separators, and the steam generator modeling is
23 very weak, so you have to make, come to your conclusion based
24 on something else.

25 MR. NEVE: As this slide shows, the other aspect of

1 analysis that we have looked at is the risk side of analysis,
2 and predominantly we looked at NUREG 0844, again a major
3 reference on this topic, relative to risks of steam generator
4 tube rupture, and we found that although certainly the
5 frequency of occurrence of a tube rupture is reasonably high,
6 and by the way, that number 1 and a half times ten to the
7 minus second per reactor year was borne out by the operational
8 history search that we did on events and so forth, a number of
9 events--I did a rough calculation versus the number of PWR
10 reactor years involved and we came up with a number almost
11 identical to that that might have been more or less
12 coincidental. Our sample size was pretty small because the
13 risk of the tube rupture event itself, and then the actual
14 core melt probabilities is significantly lower and in fact a
15 small fraction, anywhere from, well, certainly less than 10
16 percent, but more like 3 to 5 percent of the total core melt
17 probability would be a core melt probability due to steam
18 generator tube rupture events.

19 MR. MICHELSON: Did any of those studies that you
20 looked up have errors of co-mission or omission included in
21 the analysis for this event?

22 MR. NEVE: I believe that they did. I may--

23 MR. MICHELSON: It is not commonly done, although it
24 can be done, and I just wondered if it was done.

25 MR. MINNERS: I would agree, Carl, that probably

1 errors of co-mission are not in there.

2 MR. MICHELSON: Wouldn't be any scenarios, that PRA
3 that dealt with the error of say opening up the auxiliary
4 feedwater turbine if there was water in the line. You just
5 don't know.

6 MR. MINNERS: Doesn't include sabotage, either.

7 MR. MICHELSON: That's another--sabotage, either.
8 That is error--

9 MR. MINNERS: That's your opinion.

10 DR. CATTON: This is an operator intensive sort of
11 action, isn't it?

12 MR. CARROLL: You better believe it.

13 MR. MINNERS: This is very dependent on operator
14 action.

15 DR. CATTON: We saw yesterday from Potaluka that the
16 numbers that are used for the human factors part of it look
17 like about as low as you could possibly make them.

18 MR. MINNERS: Yep.

19 DR. CATTON: They really should be increased a
20 factor of ten probably.

21 MR. MINNERS: I'm not sure. I don't think you can.
22 I mean this is also operator inexperience. Operators have
23 handled steam generator tube rupture events and have not been
24 in error.

25 MR. CARROLL: It's something they are well trained

1 on with the simulator.

2 DR. CATTON: I also saw a TV tape of an EPRI
3 exercise sometime ago. They ran four crews. One crew
4 couldn't figure out what it was.

5 MR. BAER: Remember the one point 5 times ten to the
6 minus 2 represents a tube rupture a year.

7 MR. MINNERS: They are getting a lot of practice.

8 MR. BAER: People talked about the North Anna and
9 the Surry, but they weren't, they certainly were handled
10 better than Ginna.

11 MR. MINNERS: I agree, Ivan, when you look at that,
12 the operator has to depressurize and balance the pressure and
13 it is dependent on that, and it is operator action, and you
14 have to consider that. No doubt about it.

15 MR. BAER: I do think the existing risk analyses
16 consider those operator actions; maybe not errors of
17 co-mission.

18 MR. CARROLL: I also believe, and I think you guys
19 agree, that this is something that is getting a lot of
20 attention in the simulator training, and I feel pretty
21 confident that PWR operators know what to the look for and
22 know how to handle it.

23 MR. WARD: How many PWRs have plant-specific
24 simulator?

25 MR. MINNERS: I thought everybody was going to go

1 that route?

2 MR. WARD: I don't think. I agree a lot do.

3 DR. SHEWMON: They must be coached by now--very
4 popular item.

5 MR. CARROLL: I don't think there are very many.
6 Some of them, some of them aren't very good, but some of them
7 are upgraded.

8 CHAIRMAN REMICK: There are still several being
9 constructed, too, in place next year.

10 DR. CATTON: Is anybody prepared in a simulator for
11 what actually happens?

12 MR. CARROLL: Yes.

13 DR. CATTON: My recollection also, that's a long
14 time ago, at Ginna was that the operators complained that what
15 they saw in the simulator didn't look anything like what
16 happened in their plant when the steam generator ruptured,
17 tube ruptured.

18 MR. CARROLL: I think there has been a lot that has
19 happened, Ivan, since the Ginna incident in terms of improving
20 simulators and their performance.

21 MR. MINNERS: But the accidents are always different
22 than the simulator anyway. Something else happens--the lights
23 go out, all those kind of things, so--

24 MR. CARROLL: Some NRC guy in he the control room
25 tells them how to run the project.

1 MR. MINNERS: Probably does that in the simulator.

2 DR. SHEWMON: Please go ahead.

3 MR. NEVE: I have some backup slides on the actual
4 core melt figures from 0844 and NUREG 1150, but unless someone
5 is interested in those, they are in basic agreement with those
6 numbers I put up.

7 DR. CATTON: It is the 1150 result that called
8 attention to the fact that the human factor numbers are way
9 too low. It could be way too low.

10 MR. NEVE: I see. Could be--

11 (Slide)

12 MR. NEVE: Okay. Relative to the overfill subissue,
13 again, this is reiterating our conclusions based on the review
14 of the operating experience, on the, specifically on U.S.
15 reactors, although we also included the BWRs from a
16 consequence viewpoint, not from a frequency of occurrence, of
17 course, but also looking at the available analyses, and yes,
18 it has been pointed out there may have been some other
19 analyses that would have been desirable by other vendors, that
20 were not available or have not been done or at least have not
21 been released, but based on both the operating experience
22 aspects as well as the available analyses, it is our
23 conclusion that overfill is a low frequency of occurrence
24 event.

25 The primary cause of overfill is overfeed situations

1 which as Bob pointed out, is primarily addressed by JSI A-47,
2 that tube rupture is a minor contributor to the overfill
3 events, and the frequency is low, and the consensus at least
4 observed and from the available analyses we looked at tend to
5 be minor consequences.

6 The core melt risk tends to be low in a small
7 fraction of the total core melt risks, so it is our opinion
8 that the steam generator overfill issue is of minor safety
9 concern, and we would like to consider it resolved for the
10 purposes of 135 at this point, that's not to say that
11 additional or new information may shed more light on it, might
12 be given a higher priority or resurrected at some future date,
13 but for the time-being, we see it as a low risk and low
14 priority issue.

15 DR. SHEWMON: Fine. Thank you. Is that the end,
16 Dan, or do you have one more?

17 MR. NEVE: There is actually one more slide which is
18 very much a summary and it just indicates the conclusions for
19 the various groups of subissues, the group of eight that have
20 been resolved either by TMI action plan items.

21 DR. SHEWMON: Go ahead. We don't have to evacuate

22 MR. NEVE: Oh, good. The others that are being
23 pursued independently within Research by other groups and
24 there is no reason to give them redundant coverage, and those
25 that are designated as regulatory impact issues of a low

1 safety benefit potential and therefore are going to be pursued
2 as time and resources permit, and therefore, it is our overall
3 conclusion that the integrated look that was intended by
4 GI-135, those purposes have been served. The remaining open
5 items are being pursued by others, and therefore it is prudent
6 to consider GI-135 resolved.

7 DR. SHEWMON: Thank you. Does that finish the
8 presentation?

9 MR. BAER: Yes.

10 DR. SHEWMON: I think that as the question for this,
11 maybe we should generate a letter saying we agree with the
12 staff action and this is resolved. My impression is that we
13 recommend that we do--open discussion, to coin a phrase.

14 CHAIRMAN REMICK: Any other comments?

15 DR. KERR: I have a question, yes. First, there is
16 a quarter for information, but I believe that I have read in
17 connection with Mr. Murley's concern about unisolated breaks
18 out of containment that he is having his staff undertake a
19 rather detailed study of this issue with the idea that there
20 could be a significant safety issue.

21 Now I wondered if that had been taken into account
22 in arriving at the conclusions that we have just heard?

23 DR. SHEWMON: Interfacing, interfacing LOCA or
24 whatever it is called?

25 DR. KERR: Yes.

1 MR. NEVE: Are you referring to like the results of
2 NUREG 1150 relative to the bypass?

3 MR. BAER: No.

4 DR. KERR: Mr. Murley specifically I believe is
5 asking for information that is not, either is not in 1150 or
6 perhaps is not in 1150 in sufficient detail.

7 DR. SHEWMON: You have done a good job. Let me
8 compliment you on that, and I think on this one you should let
9 the staff worry about what the answer is.

10 MR. NEVE: Sure. Okay.

11 DR. KERR: He knows--I think the answer from you is
12 no, you didn't take that additional study into account in
13 arriving at your recommendation?

14 MR. NEVE: Which additional study? I didn't catch
15 you on that point when you started.

16 DR. KERR: Mr. Murley, who is Director of the Office
17 of Nuclear Reactor Regulation, I believe is having a study
18 done to look at among other things, the interfacing system
19 LOCA as a source of more risk than current PRAs indicate.

20 MR. NEVE: And 1150 tends to beat that out as I
21 understand it. The interfacing system LOCA is a bypass
22 containment scenario that is significant in terms of public
23 risk.

24 DR. KERR: Well, I got the impression from this that
25 whatever contribution--I mean the steam generator tube rupture

1 is a bypass systems LOCA, but this is negligible. I am
2 missing something.

3 MR. MINNERS: you know something? Did you hear Dr.
4 Murley say that?

5 DR. KERR: I not only heard him say it, but I have
6 seen it in a written document.

7 MR. CARROLL: I think he says even more, Warren. I
8 think he says I just flat don't believe the results of the
9 1150. I think they are overly-optimistic about containment
10 bypass.

11 MR. MINNERS: I was asking the question of whether
12 you heard from Dr. Murley or other people who are running that
13 program that steam generator tube rupture is an intersystem
14 LOCA that is being considered as part of that program?

15 DR. KERR: I have not heard Murley say that
16 personally, but I've seen it written.

17 DR. SHEWMON: Not steam generator tube rupture; only
18 just that they are looking at.

19 MR. MINNERS: They are looking at intersystem LOCAs.

20 MR. CARROLL: Containment bypass is a broader item.

21 MR. MINNERS: But I don't think--I have to go back
22 to check that the steam generator tube rupture is one of the
23 sequences that they are looking at.

24 DR. KERR: The answer to my question is that study
25 has not been, the results of that study, existing results of

1 that study have not been factored into the conclusions here
2 reported?

3 MR. MINNERS: No, because I think that that study is
4 not going to address steam generator tube rupture.

5 DR. KERR: At least, okay. You have answered my
6 question.

7 MR. MICHELSON: That study is going to address the
8 problem of pipe breaks outside of containment, which the
9 interfacing system LOCA is resulting in, and my concern in
10 this case is the auxiliary feedwater system which if it
11 ruptures as a result of the tube rupture and overflow of the
12 generator is going to be releasing into the auxiliary building
13 some kind of problem ultimately.

14 MR. MINNERS: That's part of this issue.

15 MR. MICHELSON: Then the staff hasn't said yet and I
16 would like to hear before we leave, what if anything, you feel
17 will be done about the question of the auxiliary feedwater
18 system.

19 Are you satisfied it has been adequately analyzed
20 from the viewpoint of the potential rupture under these
21 circumstances?

22 MR. NOTAFRANCESCO: The staff's consensus is that
23 there is two to three valves in series that are called upon.
24 Again, if--

25 MR. MICHELSON: You miss the point. The valves are

1 what is going to open and start this thing going.

2 MR. MINNERS: You are talking about consequence. He
3 is talking about the probability.

4 MR. MICHELSON: Because they have now been slugged
5 with the same things that are slugging the pipes and so forth.
6 The rupture will be unisolateable. You will have a LOCA.

7 DR. SHEWMON: You have made your point. Why don't
8 you listen to his point?

9 MR. MICHELSON: All right.

10 MR. NOTAFRANCESCO: The bottom line is that
11 prevention of the situation of the slug of flow going down to
12 the aux feed turbine.

13 DR. SHEWMON: Why don't you give the two lines above
14 it?

15 MR. NOTAFRANCESCO: About isolation is a reliable
16 certainty, manually, from the control room, or manually valve.

17 MR. MICHELSON: You must not understand the problem
18 then is all I have to say.

19 MR. NEVE: Could I make a comment relative to that?
20 As I see it, in an overflow event whether it is from steam
21 generator or from overfeed, the primary release path of
22 concern is through a failed safety valve, and we have already
23 a documented event at Ginna that shows those valves are prone
24 to failure under slug flow conditions. There are obviously
25 many other release paths if one considers release portions of

1 piping that could fail downstream of isolation valves, and we
2 could look at multiple areas of piping that would be
3 additional release paths. Whether that should raise our
4 concern any above the already identified release path we have,
5 I don't, I don't particularly understand your question.

6 MR. MICHELSON: Maybe you are also missing the
7 point. The point is the adverse environment that you will get
8 in the auxiliary building as a result of rupturing a pipe in
9 the auxiliary building, and I don't care about the auxiliary
10 feedwater--it is lost anyway obviously, but your concern
11 becomes a blowdown of the reactor into the auxiliary building,
12 which ultimately will affect other equipment that will lead to
13 the core melt. That's the concern. Now once you got the core
14 melt going, then you have got, you are at the end of the game.

15 MR. NEVE: The premise for that discussion that you
16 have made is that the operator has to fail to isolate. That's
17 possible.

18 MR. MICHELSON: You have missed the point that the
19 rupture can be up steam of the isolation valves and in a
20 system, depending a lot on how the individual vendor designed
21 it,, that's part of the problem.

22 Another part of the problem is that same slug
23 flowing in the affected the pipe and breaking it is also
24 affecting the valves and their ability to close unless you can
25 demonstrate they can close having experienced this kind of

1 blowdown. If you can, that's fine. I would just like to see
2 that you have thought about it. I would like to read that you
3 have thought about it and put it to bed and I would like to
4 look at an SER and find out or the equivalent document for
5 generic issue and just feel warm that you have thought about
6 it and you are comfortable. I haven't seen anything written
7 on it.

8 MR. NEVE: Okay.

9 MR. MICHELSON: Maybe is and you tell me where to
10 read it and then I will be happy.

11 MR. CARROLL: I would add to the list the issue of
12 other vendors' piping configurations and what impact that may
13 have. I just don't know.

14 CHAIRMAN REMICK: Vendors other than Westinghouse?

15 MR. CARROLL: It sounds like the look was really
16 very specifically Westinghouse at Westinghouse.

17 DR. CATTON: Where are the other mechanisms for tube
18 rupture being dealt with? It was one of those many.

19 MR. MINNERS: Mechanisms are being dealt with.

20 DR. CATTO: Right--elastic instabilities, this kind
21 of thing.

22 MR. MINNERS: The general issue of steam generator
23 tube rupture is being, has been dealt with under A 3, 4 and 5.
24 The staff put out requirements, they put out guidance I guess
25 it is the best I can call it. It is not quite guidance, and

1 the licensees did something and that issue is now considered
2 resolved.

3 I think people have looked at the recent events in
4 that light and people have said we are still okay. The
5 frequency of steam generator tube events has not accelerated.
6 It is about the same as it was before, and it doesn't make a
7 lot of difference to the core melt frequency whether it
8 occurred through that mechanism or that mechanism.

9 Now what seems to be happening is that we fix one
10 mechanism and another comes up, but the frequency seems to be
11 constant, and so I think our conclusion is that the risk
12 remains low. Now if the frequency is getting greater, then
13 that conclusion may no longer hold.

14 DR. CATTON: I understood you. Okay.

15 MR. MINNERS: I think that's the basis of it. Now
16 and obviously if you are having different failure mechanisms,
17 people are going to question whether what you did before is
18 all right, and I think it is being questioned. People have
19 concluded we don't need to take any action.

20 DR. CATTON: I looked at the Westinghouse analysis
21 sometime ago. It was done to address the elastic
22 instabilities. The analysis was just inadequate. The staff
23 had felt--these potential flow, two-phased flow problem, and
24 that is just not right.

25 MR. MINNERS: What, which analysis are you--

1 DR. CATTON: I don't know.

2 MR. MINNERS: Vibration of the tubes that would
3 cause fatigues and failure?

4 DR. SHEWMON: This was after the Surry event. They
5 talked about the particular--once you got above some critical
6 level, then the amplitude went up a lot and their report came
7 back and said we understand that so well that we can now talk
8 about which plant should decrease flow or put in more spacers
9 or something.

10 MR. MINNERS: I don't know.

11 DR. SHEWMON: What he is calling into question is
12 how well they can predict that threshold.

13 MR. MINNERS: We are doing some work on 6752 about
14 the plugging that could cause multiple tube ruptures.

15 DR. CATTON: I think you have to take a look at this
16 other, too, because apparently if you seek--

17 CHAIRMAN REMICK: Any further information to Paul on
18 drafting the Committee letter?

19 MR. MICHELSON: Freudian slip!

20 CHAIRMAN REMICK: Any other input? Hearing none,
21 all right, let's break for lunch, returning at 1:30.

22 (Whereupon, at 12:30 p.m., the meeting was recessed,
23 to reconvene at 1:30 p.m. the same day.)

24

25

A F T E R N O O N S E S S I O N

1
2 MR. MICHELSON: We'll reconvene our meeting this
3 afternoon and would like to welcome Eric Beckjord, the
4 Director of the NRC Office of Nuclear Regulatory Research.

5 And Eric, I believe, has agreed to come down here
6 and chat with us about a number of items of mutual interest.
7 So with that introduction, Eric, it's all yours.

8 MR. BECKJORD: Thank you, Mr. Chairman.

9 I am going to talk first and primarily about the
10 budget. I believe you have for presentations a Vu-Graph
11 there which I'll get to in just a minute.

12 The budget may be a little confusing this year
13 because the blue book, the September blue book, is basically
14 at a level of \$108 million for research including the safety
15 research and the high-level waste budgets, which as you are
16 probably aware now are in two separate budgets. So this is
17 where we started from.

18 What I am going to present to you is the effects
19 of the \$20 million cut as a result of the Appropriations
20 Committee's action on the budget which was to reduce the
21 Agency by \$30 million. \$20 million of that came out of
22 research

23 I am going to talk about the impacts. I always
24 have an interest myself in what's left. I don't really have
25 time I think today to go into very much detail actually on

1 either side. But I am going to concentrate on the impacts.

2 What's left is basically in the revised Five-
3 Year Plan which will be coming out before very long.

4 Ray, when -- where is Ray? When does the revised
5 Five-Year Plan come out? In January.

6 Well, if you are really interested I have a mark
7 up and I could make that available to you. It shows you
8 what's left.

9 So with that I think I'll move into the--

10 On the left is the revised request and the total
11 at the bottom, as you can see down here, is \$108 million.
12 That's the sum of the safety research plus \$5 million for
13 high-level waste.

14 The middle column is the reduction taken totaling
15 \$20 million. And the right-hand column is what's left at
16 \$80 million for about an 18 percent reduction.

17 Now, it's shown here in the five categories of the
18 research budget, and I will go through those now. First,
19 the primary system integrity.

20 DR. SIESS: It seems to me that in varying what
21 you are getting with what you are asking for is one thing,
22 but can we get some idea of what you are getting versus what
23 you had this past year?

24 MR. BECKJORD: This past year was about \$96
25 million, the year just completed, \$96 million.

1 DR. SIESS: Okay. So this would be \$8 million--

2 MR. BECKJORD: An \$8 million reduction from there.

3 I was going to get into that a little bit later.

4 I thought I'd show you what the extent of this is and then
5 give you some observations on it.

6 The Vu-Graphs which you have, there are two sets
7 for the budget. The first gives the numbers and the
8 programmatic impacts. And that's through page 9. And then
9 beginning on page 9 I have some Vu-Graphs which give you the
10 impact in a little different cut. It's the effect on
11 regulation or another way to put it, the effect on user
12 needs. And I think I am going to follow the programmatic
13 ones and then I will comment briefly on the user need
14 aspect. As I say, it's a different way of saying the same
15 thing.

16 But to start now on the reactor vessel integrity,
17 there are some pluses and minuses in this column. The net
18 cut, as shown, is \$2,085,000. The consequence of that is
19 delaying the pressurized thermal shock experiments 3 and 4.
20 3 of which is the effect of clad on crack propagation.

21 And the second one is the lower upper shelf
22 condition. That's about \$1.1 million.

23 The second category, the cyclic crack growth rate
24 of vessel and piping steels is cut by \$600,000.

25 The Midlands, the next one, is the examining the

1 initial flaw distributions in the vessel for the Midland
2 plant which is available to us. That's just under \$300,000.

3 The inspection of shipping port components
4 including vessel specimens, a \$600,000 cut. That reduces
5 that program this year by about a half.

6 Then there's an increase here of \$500,000 for
7 review of the industry's reports for PWR and BWR vessels.

8 DR. SIESS: Eric, I can understand minuses. What
9 I don't understand is why the pluses. Were those--

10 MR. BECKJORD: We made changes. Our initial cut
11 we accomplished in July. As a result of comments from
12 users and in some case Commission direction, we added money
13 back in some programs which--

14 DR. SIESS: It's not strictly a plus? Something
15 was already in there.

16 MR. BECKJORD: That part is an augmentation of
17 something that was there. And the net cut, as I say, is the
18 \$2,085,000.

19 DR. SIESS: Augmented not because of OMB but
20 because of--

21 MR. BECKJORD: No, no. Within user needs and
22 Commission direction in some cases.

23 Reactor component--

24 MR. CARROLL: Your definition of user, Eric, is
25 some entity within the Agency

1 MR. BECKJORD: Yes. The user needs basically
2 come out of NRR and NMSS and in a few cases out of AEOD.

3 Moving to the reactor aging research, again, there
4 are pluses and minuses here. We have reduced the assessment
5 of aging degradation by \$1,700,000. That's about a 20
6 percent reduction in the program and it amounts to deferring
7 tests on about thirty components and systems, a total of
8 thirty components and systems.

9 Then there's an adder here. The second bullet
10 down is an adder to develop the impact and cost analysis for
11 the regulatory guides on license renewal issues, an
12 \$800,000--

13 DR. SIESS: Can you give us some idea as to why
14 particular things were cut? Do you have a set of
15 priorities?

16 MR. BECKJORD: Yes. In general we followed the
17 priorities in the priority ranking program document that we
18 do every year.

19 DR. SIESS: Oh. I know you had priorities.

20 MR. BECKJORD: Well, it does.

21 DR. SIESS: From the aging 20 percent, it meant
22 that something else had an even higher priority?

23 MR. BECKJORD: Yes.

24 DR. SIESS: Within this program element overall--

25 MR. BECKJORD: Overall, overall.

1 MR. CARROLL: And it was strictly that and not
2 rethinking of the definition of aging? What I'm getting at
3 is I have the feeling that you are looking into aging a lot
4 of things I would call routine maintenance that's going to
5 be done over the life of the plant.

6 MR. BECKJOPD: Well, certainly one of the
7 objectives of that work is to sort out components that
8 should be considered for periodic maintenance and/or
9 replacement, and the components for which that is
10 impractical. In which case you don't call that--

11 There is maintenance and there is aging. It's an
12 attempt to sort out those two categories.

13 Larry, do you want to comment on that sorting out
14 of these cuts?

15 MR. SHAO: All the money in my division, Division
16 of Engineers, in the area are reactor vessel, aging and in
17 the seismic areas. All the three have very high
18 priorities. So when a cut comes, somebody says cut \$5.5
19 million, we had to fund these three major programs, that's
20 where the money is.

21 MR. CARROLL: My question though, Larry, was in
22 making the cuts, did you tend to redefine what you meant by
23 aging? Pushing more of the things that are really going to
24 be routine maintenance items that kind of got into the grand
25 scheme of aging.

1 MR. SHAO: No. Many of the cuts are certain
2 components. Certain components we cannot test, that's all.

3 DR. SIESS: Reduce the scope?

4 MR. SHAO: We didn't reduce the scope. Mainly we
5 just cut out some components to be tested for this year.

6 MR. CARROLL: But it is your intention to test
7 them at a later time?

8 MR. SHAO: Right.

9 MR. CARROLL: Okay.

10 MR. BECKJORD: In general, we cut the last things
11 on our priority list. That was our general approach.

12 DR. SIESS: Did the priorities run top to bottom
13 through the whole program or are they one set of priorities
14 for integrity of reactor components and another set of
15 priorities for severe accidents?

16 MR. BECKJORD: That's right. That's right.

17 DR. SIESS: So a low priority severe accident--a
18 high priority severe accident would get money and a low
19 priority reactor wouldn't? You don't look at one versus the
20 other?

21 MR. BECKJORD: Well, we do. It's very difficult.
22 I would say that making a one to end priority list is
23 possible. There's going to be a lot of judgment involved.
24 And I guess my feeling is it's not worth spending a lot of
25 time on. We have presented it that way--we look at the five

1 programs and prioritize those five programs. In addition to
2 that, I can take the top ones and put that at the top of the
3 one to end category and so forth. I can go down through the
4 list.

5 But it really takes a lot of time and effort to do
6 that and I think that for practical purposes it's a better
7 approach to do it by the name program area.

8 I mean basically these programmatic areas follow
9 the lines of defense. And I think that these are all
10 necessary areas to work on.

11 Let me move on, I think.

12 Engineering standards, we are reducing that by
13 \$400,000. What that means is less involvement of our people
14 in the ASME standards work on boiler and pressure vessel
15 codes, Section 3.

16 Seismic and structural research. There's a cut of
17 \$2.1 million.

18 MR. CARROLL: How about Section 11? At recent
19 meetings we've heard need for improvements in a lot of
20 Section 11 stuff.

21 MR. BECKJORD: Well, there's going to be less
22 involvement.

23 MR. CARROLL: Okay. So this Section 3 and Section
24 11--

25 MR. BECKJORD: You are right.

1 MR. CARROLL: Okay.

2 MR. BECKJORD: In general, I would say the impacts
3 are first in pressure vessels that it will reduce our
4 ability to evaluate pressurized thermal shock on license
5 renewals. There are about 17 vessels with low upper-shelf
6 characteristics at this point.

7 In piping, an inability to validate accurately the
8 ASME code flaw evaluation rules for short cracks.

9 In the shipping port component work, the main
10 thing that is involved there is the evaluation of the effect
11 of the copper and nickel impurities on that program. That's
12 about, as I said, a 50 percent reduction this year. And it
13 will certainly delay our ability to do an accurate
14 evaluation of that. Licensee submittals for license
15 extension.

16 And finally the aging research. The main effect
17 there will be on the writing of the regulatory guides that
18 will follow the rule.

19 Okay. This is second category, damage prevention,
20 core damage prevention.

21 The total cut here was \$6 million. In the first
22 category of plant performance, there's a large item. The
23 first item there is \$1.6 million which was to have been
24 spent in cooperative research with the B&W owners group on
25 the once-through steam generator system performance. We are

1 not going to be doing that program. That, I would say,
2 really is a joint decision. The owners, about the time that
3 we were looking at our budget, decided that they would have
4 to reduce their commitment to that program. So that
5 accounts for a big part of this reduction.

6 The second one is experiments also related to the
7 once-through steam generators. The scaling work for some
8 transients. There was to be another \$1.15 million spent on
9 that, which has been cut.

10 The third item there is a \$600,000 cut for
11 analysis of the Rosa IV experiments in Japan.

12 In reactor applications--

13 MR. CARROLL: With respect to B&W steam
14 generators, Eric, does this say that we are done with the
15 subject?

16 MR. BECKJORD: That program is essentially done,
17 yeah. We've completed the mist tests. These were going to
18 be looking at more of the specifics. Originally there were
19 going to be more detailed tests, the sector test. That
20 dropped out already. And this essentially ends the final
21 phase of the B&W program.

22 MR. CARROLL: Ivan, do you want to say something?

23 MR. CATTON: I recollect a lot of rationalization
24 for spending the money. Is there now an equal amount of
25 rationalization for not needing it?

1 MR. BECKJORD: Our conclusion is that it just
2 isn't on the priority list for regulatory requirements. I
3 think that it would be desirable to have it. But in this
4 budget environment, we don't think it's necessary for making
5 safety judgments.

6 MR. CATTON: Well, if you recollect, I didn't
7 think you needed to spend the money at the outset, but it
8 seemed to me that there needed to be some low-level effort
9 in that area. And you are just wiping it out entirely?

10 MR. SHARON: Brian Sharon of the staff.

11 We are maintaining the University of Maryland
12 loop. Which is a B&W lower-loop facility. Which will be
13 maintained and run for the purpose of maintaining a
14 capability there.

15 If you remember, this research that we were
16 proposing we agonized with it, but the conclusion was is
17 that it was not considered necessary in order for the staff
18 to conclude on the safety of B&W reactors.

19 What we told them is that we thought it was
20 worthwhile to do while the facilities and the organizations
21 were in place; however, the major impact of not performing
22 this research would be that any future submittals by the B&W
23 owners to support, say, relaxation of any requirements, that
24 involved benefits they were claiming from better steam
25 generator modeling, they would probably have a lot of

1 difficulty with. They would have a lot of difficulty
2 convincing the staff because there would not be any
3 experimental data to support them.

4 I would also point out that the owners group
5 basically also at the same time we were cutting the budget,
6 sort of laid some rather unacceptable conditions on the
7 staff which is that they predicated going forward with this
8 program on the staff not charging them through the license
9 fee process. Which the Commission had already decided that
10 and we could not change anything there on that.

11 So they sort of made it impossible for themselves
12 to participate by putting some conditions the staff couldn't
13 meet. So based on the budget cut and what they were coming
14 up with, it was sort of mutual. We shook hands and parted
15 friends.

16 MR. WARD: I just wanted to say something.
17 Because that sort of puts one face on it. The other is that
18 the whole effort, the concentration of some effort on
19 research related to the B&W system, and the OTSG, began a
20 few years ago, was an attempt to bring--at least the
21 perception of the level of understanding of the B&W system,
22 thermal hydraulic behavior in transients and beyond design
23 basis events, to bring that level of understanding up to the
24 same level that existed for the plants.

25 MR. BECKJORD: Yes, that's right.

1 MR. WARD: And, you know, that was kind of
2 subjective. I don't think anybody was ever able to put any
3 numbers on it and show absolutely that there was a
4 discrepancy, but most of the early research on thermal
5 hydraulics with loft and semi-scale and everything was
6 really the U-tube type system. And there wasn't a body of
7 experimental data.

8 Now, that program to bring the level up really
9 hasn't been completed, so I don't think it's just a matter
10 of not being able to review ideas for future improvements.
11 But I think we are sitting here with one system that we
12 don't know as much about as we do the others. Maybe that's
13 okay.

14 MR. BECKJORD: Well, this budget, before it was
15 \$108 million, it was \$120 million. And that program was in
16 there at that time. In going from \$108 million to \$88
17 million, it involved considerations on both sides. And it
18 just didn't make it this time around.

19 And I know that the feeling is that that
20 information is not believed to be needed for fundamental
21 safety reasons. This point that you bring out has been
22 discussed a lot. And I think that's true. That the
23 knowledge of a B&W system is not complete as compared to
24 the knowledge of the fluid performance of the Westinghouse
25 system.

1 MR. CATTON: It was my view that you didn't need
2 to spend all that money on the once-through steam generator
3 from the outset. But I was convinced by the arguments that
4 you brought in that you needed to do something with your
5 ability to model what was in those steam generators.
6 Namely, your track models are inappropriate and so are the
7 models in relap.

8 It seems to me that's not an overwhelmingly
9 expensive kind of project. Are you going to do anything?

10 MR. BECKJORD: We presented to you this summer the
11 thermal hydraulic research program which is basically the
12 one that we intend to carry out, assuming, that is, that
13 there is funding to carry it out.

14 I'm going to get into that later.

15 MR. CATTON: Okay.

16 MR. CARROLL: Let me understand what you are
17 saying, Ivan. Do you believe the things you think need to
18 be done are important to the safety of the plant?

19 MR. CATTON: Well, I've never really been able to
20 get at it. Because the track code does not have the proper
21 kind of modeling of that steam generator. And the people
22 who work with the track code don't really understand that.
23 They just maintain it really doesn't matter. If it really
24 doesn't matter, then the research wasn't needed at the
25 outset.

1 Somewhere there was a rationalization for needing
2 it. Needing it to the tune that several million dollars
3 were going to be spent, which I didn't think that was
4 needed. It seems to me somebody should sit down and do the
5 modeling that's appropriate and incorporate it into the
6 code. And that's a few hundred thousand dollars. Not a few
7 million dollars. And now from a few million dollars,
8 they've gone to zero. And the reasons for doing it seem to
9 be gone. And I just don't understand that.

10 Well, there should be some level of effort to
11 address that question. It should appear somewhere, and
12 maybe it does.

13 MR. BECKJORD: Well, there is further work to be
14 completed on code validation in the thermal hydraulics
15 program.

16 MR. CATTON: Eric, this is more than code
17 validation. Because code validation just means number
18 crunching. What is needed is modeling of the vertical tube
19 of operator needs to be put into the code.

20 MR. SHARON: Ivan, we've been through this, okay.

21 MR. CATTON: I know we have.

22 MR. SHARON: And there's a disagreement between us
23 on it, okay. I haven't heard anything that says that the
24 way our codes calculate these plants is unacceptable and
25 would probably change our perception of safety. I also am

1 not aware that these same concerns have been leveled at the
2 utilities codes, okay. Which are obviously probably less
3 sophisticated than ours, and yet for some reason are still
4 being found acceptable for licensing purposes.

5 You know, when we went through the budget cuts,
6 okay, you have to ask yourself, where am I going to get the
7 biggest payoff in terms of risk reduction and better
8 understanding, okay.

9 And you know, spend a lot of money, okay, trying
10 to nail down how a once-through steam generator distributes
11 auxiliary feedwater was not considered that high compared
12 to, say, learning about other areas.

13 We recognized there may be some deficiencies in
14 those models out there and, you know, if we had a big fat
15 budget, yeah, we'd probably go after them. But I can't
16 chase those things forever. That's the problem. We've got
17 to nail down these codes. We've got to get on and work in
18 the other areas. And that's sort of where we are coming
19 from.

20 There still will be a low level of development and
21 we've said that, with these codes. If we can accommodate
22 those modeling concerns, okay, in that program, we'll be
23 glad to do it. And I think we want to discuss that with the
24 subcommittee in the coming months. As exactly what will
25 this longer-term thermal hydraulic program look like and

1 what areas will it focus on.

2 But if you remember, the first thing we started
3 out with looking at the B&W was we asked ourselves the
4 question, before we shut down the mist facility forever, is
5 there anything else we need to get out of it? And we asked
6 the B&W owners and they said, let's put together this
7 program management group to look at that. And they did.
8 And what they came back with is they said there's nothing
9 really in mist, but here are the areas where there is still
10 a desire to get some more data.

11 And it turned out that mist was not the right
12 place to do it. It was probably a separate effects
13 facility.

14 MR. CATTON: That's right.

15 MR. SHARON: And so we were sort of going in not
16 really where they were going to come out in terms of dollars
17 and cents. If you remember, the original recommendation
18 came out like at \$8.4 million and we kind of choked on that.

19 MR. CATTON: I bet.

20 MR. SHARON: And when we started to look at what
21 we could get for the \$2 million we had originally said we
22 were willing to pay for it, we really couldn't get that
23 much. And then with the other circumstances, the budget cut
24 and the owners' conditions, we just decided it was not
25 fruitful to pursue.

1 We still will pursue whatever difficulties there
2 are in those models consistent with the available budget in
3 thermal hydraulics. That's our plan.

4 MR. CATTON: Okay.

5 MR. BECKJORD: I want to move on.

6 In reactor applications, there's a reduction of
7 \$2,150,000 relating to the reduction of activities that's in
8 their Technical Support Center in Idaho.

9 Specifically, it relates to studies of small break
10 LOCA for the combustion engineering reactors and loss of
11 feedwater flow for the Westinghouse reactor.

12 It also will terminate the thermal hydraulic
13 analysis for the can-do reactor in regard to getting ready
14 to license it that we had put into the budget this spring.

15 Human factors. We took only \$200,000 out of that
16 program. It delays some of the work on the role of the
17 reactor technical advisor on the shift. And it also delays
18 some of the work to integrate human and hardware reliability
19 into assessments of advance reactors. So that's not a very
20 large impact. I think that is an indication that the human
21 factors work has very high priority.

22 Reliability assessment. We took \$300,000 out of
23 and it delays the development of--basically it's risk and
24 reliability-based methods for monitoring performance,
25 reactor performance. Accident management was not touched.

1 The user impacts are shown on page 17 of that. I
2 think we've already covered the once-through steam generator
3 part.

4 In terms of operating reactors, it's a general
5 reduction in the ability to respond to any new issues that
6 might come up during the year.

7 DR. SIESS: Excuse me, Eric.

8 MR. BECKJORD: Yeah.

9 DR. SIESS: When you say that a reduction delays
10 research, what is significant of delays? Does that mean
11 that you'll do it next year if you get more money?

12 MR. BECKJORD: I would say at this point we have
13 probably a bow wave of two to three years of work that has
14 been pushed in front by the reductions that we've taken over
15 the last couple of years. And every year we look at those
16 and we include the most important ones in our budget.

17 MR. CARROLL: So delay means--

18 DR. SIESS: Do you think that the budget next year
19 will be as big as it is this year?

20 MR. BECKJORD: Well, I'm going to get to that
21 later. I'm not at all optimistic about that right now. In
22 fact--let me come back to that.

23 I'll tell you, the funding picture is very bleak,
24 just to give you a preview of it, the views of the people
25 who watch this is there's about a fifty-fifty chance of a

1 Gramm-Rudman cut. That would be for NRC about \$24 million.

2 In addition, there's a couple of million dollars
3 to fund the President's Drug program, which is essentially a
4 1/2 percent budget all away around the government. So we
5 are looking at the next couple of weeks in cuts that could
6 be as high as \$24 million to \$26 million. I will comment on
7 that later.

8 As to next year, we had our meeting with OMB late
9 last week and the basic problem is there's no money. So the
10 real prospect for undertaking these projects again, or in
11 fact even carrying on what we are doing right now is pretty
12 bleak.

13 MR. CARROLL: But delays mean at least they still
14 are in that--they'll look at it next year.

15 MR. BECKJORD: Yeah.

16 MR. CARROLL: Whereas terminate means "this is
17 it."

18 MR. BECKJORD: Yes. We have had a few
19 terminations. I mean the B&W is an example of a
20 termination. I don't think there's any move to take that up
21 again.

22 Okay. This should be the containment performance,
23 which is largely related to--well, it's related to both
24 containment performance and the severe accident research.
25 The reductions in this program are just over \$6.5 million.

1 The \$950,000 reduction in core melt and reactor
2 coolant system failure. Let's see. This says cancellation.
3 Is this a cancellation or a deferral, Brian? It must be a
4 deferral on the failure as predicted of a surge line. This
5 one right here. I think that's a deferral.

6 MR. SHARON: I don't know.

7 MR. BECKJORD: It says cancel.

8 MR. SHARON: Confirmation test. It was not the
9 only test. It was to confirm it, so--

10 MR. CATTON: This was an experiment?

11 MR. SHARON: I can't remember whether it was an
12 experiment and/or analysis. Whether it was with the
13 Westinghouse 170 scale or not. I'd have to check and get
14 back with you.

15 MR. BECKJORD: Well, I think it was analysis based
16 on that work. My recollection.

17 The second part of that relates to fission product
18 revaporization within the primary system. And also in the
19 containment. It's about a little under a half million
20 dollar cut there.

21 Reactor containment safety, there's a reduction of
22 about \$1.2 million in the development of the core concrete
23 analysis. And also a reduction of some of those
24 experiments.

25 Second part relates to the matter of very high

1 temperature hydrogen combustion in containment. There are
2 some problems in the data there and we had planned to do
3 some more work on the very high temperature detonation and
4 burning effects. That's been cut.

5 Containment structural integrity. We have
6 completed--or I should say the British have completed their
7 work on the experiment for the pre-stress concrete vessel.
8 We are continuing to do analysis of the reinforced, and also
9 some work on the British results. And that will result in a
10 deferral.

11 There is a big reduction in the PRA work. It's a
12 combination of pluses and minuses. The first one is
13 actually an increase of \$300,000 for methods to quantify the
14 sources of risk from extended life. That's an increase.
15 The other two are reductions. \$1.4 million on development
16 of some advanced methods in PRA. And a reduction in the
17 number of plant-risk studies that we had intended to carry
18 out is the last category. That's about a \$1.8 million
19 reduction. The net, as I say, is \$2.9 million.

20 MR. CARROLL: The last item has nothing directly
21 to do with your evaluation of IPE results that are
22 submitted.

23 MR. BECKJORD: I don't know. I don't think so.

24 MR. SHARON: No. None of that money was budgeted
25 for IPE reviews. This was for PRAs that are submitted in

1 the normal course of the regulatory process.

2 For various reasons plants will submit PRAs to the
3 staff and the current division of work calls for the Office
4 of Research to review full scope PRAs. And what we are
5 saying is, we may not be able to get to all of them.

6 DR. SIESS: Now, is that a technical support
7 activity rather than a research activity?

8 MR. BECKJORD: I'm sorry. I didn't get the
9 question.

10 DR. SIESS: Well, in the past we always tried to
11 separate out, at least in my thinking, the program support
12 funds into the two categories. One is research and the
13 other is just technical support. It isn't research. It's
14 just doing the job that NRC didn't want the staff to do.

15 Is reviewing somebody else's PRA technical
16 support?

17 MR. BECKJORD: That's technical support.

18 DR. SIESS: That comes in this accident risk
19 analysis item?

20 MR. BECKJORD: Yes.

21 DR. SIESS: Okay.

22 MR. WARD: What about reviewing the IPES? That
23 won't be in your office--

24 MR. BECKJORD: No, that's funded under the last
25 program that I'm coming to, which is the safety issue

1 resolution.

2 The next category is the waste. Reductions there
3 in low level of \$480,000. Sets back, as indicated here, 20
4 percent of the planned tasks. It could effect licensability
5 of some sites.

6 Then the second one, the \$400,000 reduction in the
7 high-level waste, that's reduction in funding for the Center
8 at San Antonio at Southwest Research Institute.

9 That has largely to do with the fact that they are
10 not able to staff up sufficiently rapidly in this year to
11 use all of the money that was initially earmarked for them.

12 We are continuing work on the outside at core test
13 and the work at University of Arizona. I believe that is
14 fully funded according to the plan.

15 Now, I should say something at this point. You've
16 undoubtedly heard, or you may have heard the stories that
17 are coming out on the high-level waste program about some
18 fundamental changes in direction. And there was an article
19 in the Post yesterday about it.

20 The Office of Management and Budget has called a
21 meeting tomorrow at ten-thirty for several of the agencies
22 in government which are involved one way or another in the
23 high-level waste program. And DOE is going to make a
24 presentation there as to their expected change in plan.

25 There are about three of us that are--three people

1 from the Agency are going down. I will be there to hear
2 what they have to say.

3 Our Budget Officer at OMB said that it's going to
4 be a very major and dramatic change in the program that we
5 are going to be looking at.

6 MR. CARROLL: We are going to start recycling
7 plutonium?

8 MR. BECKJORD: She wasn't prepared to say what
9 they have in mind, but I think it changes the focus at Yucca
10 Mountain. So it could have a very significant effect on
11 what we do even this year on high-level waste. But I'll
12 know more about that tomorrow.

13 These programs were effected--let's see. Oh,
14 there is one that I think I passed by here. On the
15 radiation protection. No, I guess I'm--yeah, that's the
16 next one in line. I'll come to that.

17 The resolution of safety issues was effected less
18 than any of the other programs. That's a consequence of
19 user needs, commitments in a number of areas, commitments on
20 license extension on the IPE and so forth.

21 The reductions are shown here. A small reduction
22 on controller unhabitability. A \$200,000 reduction in
23 rulemaking and petition evaluation in the fuel cycle area.
24 \$150,000 reduction in development and improvement of
25 regulations.

1 And I should point out that that is also a
2 combination of pluses and minuses. The last

3 The last item is for a generic environmental
4 impact statement for license renewal. And that was a \$1.5
5 million adder. So the impacts are considerable in the other
6 areas to wind up with \$150 million net. That means that the
7 other programs were reduced by \$1,350,000 to come up with
8 that net.

9 And finally, a \$350,000 cut on severe accident
10 implementation. It in effect limits technical support
11 related to the containment performance improvement program.
12 But that's not a major cut.

13 DR. SIESS: Am I correct that almost everything on
14 page 7, except possibly the SBIR program, is not research?

15 MR. BECKJORD: That is correct. You said not the
16 SBIR? You said not the SBIR?

17 DR. SIESS: Is the SBIR research?

18 MR. BECKJORD: No. SBIR is a commitment related
19 to small business innovation which relates more to product
20 development and our support of it.

21 DR. SIESS: That page 7 is support?

22 MR. BECKJORD: That's right, that's right. That
23 is the least impacted.

24 The radiation protection was reduced by \$400,000.
25 I would say in regard to the research that we are doing,

1 that's a pretty light impact. There were two effects
2 there. We've reduced the effort on the analysis of
3 Hiroshima and Nagasaki by \$200,000. And there was an item
4 in there for the evaluation of radiation considerations for
5 advanced reactors. That's being cut by \$200,000.

6 The only thing that I know of specifically there
7 is looking at nitrogen, activated nitrogen, in the gas
8 cooled reactor. I don't think that's a major problem.

9 Since time is running on here and there are other
10 things to talk about, I wanted to just comment more
11 generally on the budget now.

12 At a level of \$88 million for the research and for
13 technical support and rulemaking, of that level, as you've
14 just seen, the issue resolution is \$15.7 million.

15 Now, if there is a Gramm-Rudman cut, and we know
16 there will be a drug program-related cut of \$2 million, but
17 if in addition there is a Gramm-Rudman cut, the situation,
18 as I see it, is the following. Given the user needs and the
19 Commission's interest in the issue resolution part of the
20 program, that \$15.7 million is going to stay pretty much in
21 tact. That leaves three programs, the three areas totaling
22 about \$66 million are the targets for cuts. Namely, the
23 primary system integrity at \$27.7 million. The core damage
24 prevention at \$16.1 million. And the reactor containment
25 severe accident part at \$22.3 million.

1 Now, as I see the priorities there in the
2 integrity of reactor components, I would go for them in the
3 order of piping. First piping and then seismic, and then
4 last, pressure vessel. Deep cuts in the pressure vessel
5 program.

6 In other words, the pressure vessel is the last
7 thing that I would cut in that program.

8 In core damage prevention, I guess my order would
9 be the reliability assessment, reactor applications, and
10 finally, human factors and accident management. In other
11 words, I would cut human factors and accident management
12 last.

13 In the reactor containment performance, the list
14 would be risk analysis, severe accidents effects on
15 containment, core melt, and finally structural integrity.
16 That would be the last one I would go for.

17 But I just point out that if there were something
18 like a \$25 million cut, it would fall mostly on the three
19 major areas that I've indicated, which are now today stand
20 at \$66 million. So you can see that that's a big cut.

21 I think it's a devastating cut. And I don't think
22 that's too strong a word. And there are several reasons for
23 saying that. First of all, if it were to happen, if we did
24 no research next year at all, there are severance costs. We
25 have talked about that a bit. From what I can determine,

1 severance cost--there's no way that could be less than \$10
2 million. More like they are something in the order of \$20
3 million. That is to say, if we did no research, we would
4 still have bill to pay of somewhere in that region.

5 So that's why I say that a cut so large as the
6 Gramm-Rudman numbers which are being tossed around is
7 devastating to this program.

8 The consequences, losses of people to other
9 activities, which would not be recoverable in the short
10 term. Extremely costly in the long term to try to get back
11 into these programs. Some experience that I'm aware of
12 indicates it's difficult to get people back. So you really
13 have to undertake training a new generation of people in
14 this area. And that would be very expensive.

15 Loss of the capability to respond to unusual
16 events which have in the past taken great advantage of the
17 skills at the laboratories which have been built up over a
18 long period of time.

19 Can't provide for the user needs. These are
20 important to Tom Murley and Bob Bernero and they've said so.
21 It means in terms of making safety judgments, greater use of
22 opinion, which I don't think is a very good idea.

23 It could mean in the case of critical reactor
24 vessel issues plant shutdowns for perhaps some of the
25 vessels that are in the category of 17 that I mentioned.

1 And the list goes on from there.

2 I think that prospect for license extension, which
3 is important to the nuclear plant operators, and ultimately
4 to the users in this country, a matter of great importance.
5 It certainly makes that a pretty cloudy thing to see
6 through, where we would really wind up on license extension.

7 I think it drops the severe accident resolution
8 after the completion of the IPE. And there's nothing in
9 this program--there is very little in this program for
10 advance reactors. They are not in the picture very much.
11 We are doing a little bit of safety evaluation reports and
12 that type of thing.

13 I guess finally I know if this happened the
14 Commission would be in an uncomfortable position because it
15 would not be able to take the position that research is
16 underway on certain key issues.

17 So I am certainly not looking forward to a Gramm-
18 Rudman with any enthusiasm whatsoever.

19 I think that it is true, at the same time, that we
20 could run for several years on stored energy, so to speak.
21 The accumulation of what's been done. There is still a lot
22 of interpreting of available knowledge of severe accidents
23 which could be applied. If there was a de facto phase out
24 of research. And we could probably run for a couple of
25 years applying those results.

1 Beyond that, I think it would mean that the
2 research activities would become essentially consulting
3 engineering--the kind of consulting engineering that's gone
4 in a job shop on completing the IPE, completing containment
5 performance, completing work on generic safety issues, and
6 writing of rules and that type of thing.

7 So, as I say, as of the moment, the budget
8 prospect is not a very good one. And as I mentioned, our
9 discussions with the OMB on the fiscal '91 are not hopeful
10 for a major restoration.

11 MR. WARD: Eric, could I ask you a question? The
12 \$24 million Gramm-Rudman possible reduction, is that the
13 total for the Agency?

14 MR. BECKJORD: Yes.

15 MR. WARD: But you see the Research Office is
16 taking the bulk of that or all of it?

17 MR. BECKJORD: I don't know what we would take.
18 My guess is that based on the numbers I've seen, that we
19 would probably take not less than \$20 million out of that.

20 MR. WARD: So the bulk of it. And you have taken
21 the bulk of this first--

22 MR. BECKJORD: Yes. We took the first cuts too of
23 the--we took \$20 million out of the \$30 million.

24 MR. WARD: Is that reviewed with the Commissioners
25 and--

1 MR. BECKJORD: Oh, yes.

2 MR. WARD: Where do they stand on that? Is that
3 just what you are proposing to them or--

4 MR. BECKJORD: No, no. I am telling you I am
5 anticipating--there is serious talk about a Gramm-Pudman cut
6 which would be triggered on the 15th of October. I am just
7 trying to tell you now what the consequence of that would
8 be. That's not a fact at this point.

9 MR. WARD: Yeah. But your perception is that what
10 the Commissioners would want in that case is to have the
11 Research Office take the bulk of the cut?

12 MR. BECKJORD: Well, we took two thirds of the \$30
13 million cut, and I think we would take more of an additional
14 cut, simply because what you are looking at are essentially
15 committed expenses for mostly people. And a little bit of
16 technical support in the other offices. And there isn't
17 frankly anywhere else to go. The Agency is down by 500
18 people from a few years ago.

19 DR. SIESS: The Gramm-Rudman cut would apply only
20 to program support dollars and not to--

21 MR. BECKJORD: No. Gramm-Rudman applies to the
22 Agency as a whole. So the Agency would then have to decide
23 how to take it.

24 MR. WARD: But the direction the Agency has been
25 taking--I mean, you know, Eric is making some--

1 DR. SIESS: Yeah, but this cut, for example, the
2 \$20 some odd million is in program support. And he's
3 always taken a major share of it because the other program
4 support haven't got that much swap--

5 MR. WARD: Supposedly I guess. But it seems to be
6 the general strategy of the Commission to move inexorably
7 toward ending research. And I just wondered if that's in
8 the best interest of nuclear reactor regulation.

9 DR. SIESS: Research runs usually about 60
10 percent, 50 percent, of the program support funds.

11 DR. ROSS: That's a good number, Dr. Siess. About
12 \$50 million or \$60 million from the other offices.

13 DR. SIESS: I was thinking more than that share of
14 the cuts.

15 MR. WARD: Year after year, yes.

16 DR. SIESS: Year and after. Yes.

17 MR. WARD: Well, I'm saying, that is an adopted--
18 that isn't inevitable because of some accounting thing.
19 That's the strategy of--

20 DR. SIESS: I don't think it's inevitable--

21 MR. WARD: That's the strategy of the Commission,
22 yes.

23 DR. SIESS: It happens and I think it's inevitable
24 period. Because you look at the other places of the program
25 support money--

1 MR. WARD: Well, maybe we should have fewer
2 resident inspectors.

3 DR. SIESS: That's not under program support.

4 MR. WARD: I don't seem to be able to make my
5 point. I don't know--

6 DR. SIESS: ---

7 MR. WARD: I understand that. But it could still
8 be cut. The Agency has a responsibility for cutting what I
9 guess OMB dictates. It's choosing to cut in the research
10 area. It's easier to do it administratively. I agree it's
11 easier to cut research administratively. That doesn't mean
12 it's the right thing to do.

13 DR. SIESS: Well, that's not the point. You are
14 saying that salaries and wages--

15 MR. WARD: That's my point. I admit it's not your
16 point. But that's my point.

17 DR. SIESS: I'm not sure I get your point. Do you
18 want salaries and wages reduced. And MTE to be added to
19 research?

20 MR. WARD: Sure.

21 DR. SIESS: Okay.

22 MR. WARD: I mean at least that ought to be on the
23 table for a decision. I guess I'm afraid the decision is
24 being made on the basis of what's administratively feasible
25 rather than on what's needed.

1 MR. BECKJORD: I was just going to tell you what
2 the program support numbers are for NMSS. It's just under
3 \$8 million before the cut. I don't happen to have in my
4 head what the cut in program support there was.

5 DR. SIESS: NSMM was \$8.7 million.

6 MR. BECKJORD: NRR took, as I recall, about a \$10
7 million--about an \$8 million reduction.

8 DR. SIESS: I think NRR comes on this list under
9 about three items. Reactor safety, safeguard regulations,
10 one. Somebody doesn't think research is important. And
11 Dave Ward is suggesting that maybe the Commission doesn't
12 think research is important.

13 MR. WARD: Well, I would have a better feeling
14 about whether they really have made that decision explicitly
15 or whether they are kind of drifting into it because it's
16 easier to make the cuts in research.

17 DR. SIESS: It could be a subject for one of our
18 meetings with the Commissioners.

19 MR. WARD: It might be.

20 MR. CARROLL: How does the movement towards
21 collecting more and more of the money that the Agency uses
22 from the users, from the utilities? How does that--

23 MR. BECKJORD: That has no effect on us, because
24 all of the money that we spend is appropriated. Almost all
25 of the money that we spend is appropriated.

1 MR. CARROLL: Whereas a lot of money that NRR
2 spends--

3 MR. BECKJORD: No, no. All of the money for the
4 Agency is appropriated. The fees go to the Treasury.

5 MR. CARROLL: Ah.

6 MR. BECKJORD: Directly. So they don't come to
7 the Agency. Now, I say almost all, because we get about \$3
8 million or \$4 million from international partners overseas
9 in connection with various programs, piping and severe
10 accidents mostly. But our money is appropriated. So the
11 fee doesn't really have any impact on us.

12 MR. WARD: What's the trend?

13 MR. BECKJORD: What's the what?

14 MR. WARD: What's the trend?

15 MR. BECKJORD: Well, it stands at 40 percent now
16 of the expenditures related to licensing, advance reactors.
17 It's 40 percent, but it's also in respect to future
18 licensing of standard plants, that money is deferred. It's
19 not paid as expended. It would be paid some years after,
20 when people actually started to build new plants.

21 The trend--it's moved up. There has been talk of
22 100 percent fee. But I think there's very strong opposition
23 in Congress to that.

24 DR. SIESS: That's percent of what you allocate to
25 licensing. Not percent of your total budget.

1 MR. BECKJORD: That's right. That's right.

2 DR. SIESS: Do you count research as part of the
3 cost?

4 MR. BECKJORD: If it's research that is plant
5 specific or owner-group specific, then it would be subject
6 to fee.

7 MR. CARROLL: So even though if it went up to 100
8 percent and you brought all the money back, Congress would
9 still say--

10 MR. BECKJORD: It has no effect on us, except we
11 have to keep the books and there is a case now or there was
12 a case earlier this summer related to--

13 DR. SIESS: Congress treats that just like taxes,
14 Jay.

15 MR. CARROLL: Yeah, I gotcha.

16 MR. BECKJORD: The E&W owners group issue that we
17 talked about, the fees are charged on the basis of not of
18 expenditure but a budget for the year. And the owners group
19 objected in court to the allocation of them to a fee that
20 was budgeted but which would not be spent. And the
21 Commission altered that. I mean the rule as written says
22 it's to be charged according to budget. But in this case,
23 since we knew it wasn't going to be spent, they made a
24 decision not to do that.

25 Well, I don't know what more I can tell you--

1 DR. SIESS: Would it be fair to ask you why in
2 your opinion has the amount of dollars provided research as
3 well as the proportion of the Commission's budget provided
4 for research gone down so steadily over the past several
5 years?

6 MR. BECKJORD: Well, in the last two years, it's
7 the direct result of Appropriation Committee actions. This
8 year and last year, in both years, there was a \$30 million
9 reduction on the President's Budget in the House
10 Appropriations Subcommittee for Water and Energy. And the
11 Senate in conference agreed with those numbers. That's the
12 specific cause.

13 DR. SIESS: Yes, that's how it was done. That's
14 not why it was done.

15 MR. BECKJORD: Well, I can quote you the language.

16 DR. SIESS: I don't know how far back I have to
17 go. At one time I had a curve plotted of the research
18 budget and it was headed for zero in about 1993. And I
19 think it's still on course. And it was 200 and some odd
20 million dollars a few years ago. And \$72 million now. And
21 I know Congress has cut it, but what's the thinking in terms
22 of the national public health and safety and the national
23 welfare of these continual cuts?

24 MR. BECKJORD: Well, in most of the budget
25 statements that have appeared, there's also a statement that

1 says that the Committee is particularly concerned with the
2 safety research budget.

3 MR. WARD: Who is concerned?

4 MR. BECKJORD: The Committee in Congress is
5 concerned with the safety research budget. That statement
6 has appeared--I don't think it appeared this year, but it's
7 appeared in previous years. But I think the Committee is
8 aware of what the situation is and they know--

9 MR. WARD: Concerned it is too small or too big?

10 MR. BECKJORD: No, no. Concerned that it would--
11 in passing the budget, what they were saying was they felt
12 that the safety research was very important and it should be
13 continued.

14 But what's happened is that the Agency is smaller
15 in people. There are 500 fewer people than there were four
16 years ago. And I think the Committee is well aware of what
17 the financial makeup is.

18 And so I think my conclusion is that they are
19 pretty well aware that a cut is going to fall heavily on
20 research.

21 MR. WARD: I guess it isn't clear to me to what
22 extent cuts are going where they are. It's the will of the
23 Commission or the will of the Congress?

24 MR. BECKJORD: Well, I told you what I know about
25 Congressional action.

1 DR. SIESS: Has the Commission's overall budget--
2 how much it changed in the last seven or eight years?

3 MR. BECKJORD: Well, this budget was what, \$475
4 million. It started at \$490 million. So that in actual
5 dollars--I think there's never been a higher budget, has
6 there?

7 DR. SIESS: According to the figures I've got, the
8 FY 89 total was \$428 million and the FY 90 revised is \$45
9 million. So the Commission budget has gone up. Now, that's
10 not real. There's inflation in there, and salary increases
11 in there. But with the turnover--

12 MR. BECKJORD: There's salary and benefits and
13 communications--but by far the biggest part is salaries.

14 DR. SIESS: But I think if you looked at budgets
15 over the past few years, you'll find that a larger
16 proportion of the budget is going for salaries and benefits.

17 MR. BECKJORD: Yeah.

18 DR. SIESS: Salaries and benefits have been going
19 up faster than anything else. Faster than the budget. And
20 the program support has been going down. And then the NRC
21 or some years the Congress has said take it out of research,
22 but mostly it's the NRC that takes it out of research.

23 That's the mechanism. But it still doesn't really
24 answer my question of what's the root cause of failure to
25 support research? Does somebody not think research is

1 important? That's one possibility. Do they think it's
2 important but don't think we're doing the right things?

3 MR. BECKJORD: Well, I think the user offices have
4 been strongly supportive of the research budget for the last
5 couple of years. I get annual letters from Murley and
6 Bernero.

7 DR. SIESS: But they never gave you any money.

8 MR. BECKJORD: Well, no. They don't give me
9 money. They give me their user needs and I respond to
10 those.

11 DR. SIESS: They wouldn't surrender--they've never
12 complained because you got cut more than they did.

13 MR. BECKJORD: Well, no. But that's not--the way
14 the budget has been decided is on the basis of so much for
15 this office and so much for this office and so much for this
16 office. They have supported the allocations that the
17 Commission made. And they have given us their evaluation of
18 the research and they've given us their user needs. And I
19 think it's fair to say that they are very supportive.

20 DR. SIESS: Are they happy with what they are
21 getting at this level of dollars?

22 MR. BECKJORD: Yes. The last I had their report
23 as of March of this year for last year's work. They give me
24 a report card on a yearly basis.

25 DR. SIESS: So your users are satisfied?

1 MR. BECKJORD: Yes.

2 DR. SIESS: Is that with the recognition that
3 you've got only a finite amount of money to spend?

4 MR. BECKJORD: Yes, yes. Well, we haven't
5 conferred about the budget in the facts that I've described
6 to you today.

7 DR. SIESS: Well, that answers one of my questions
8 I guess. You would expect Research to complain that they
9 don't have enough money, but when the users say, oh, we are
10 satisfied, then -- could say, oh, the research people always
11 want more, but the users are happy.

12 MR. BECKJORD: Well, no, let me specific. We
13 have user support for the work that we did last year and we
14 had user support for the budget that was submitted to the
15 Commission this year. What was it originally? \$120 million
16 level. Which was then cut to the \$108 million and which
17 has now been cut to the \$88 million level. So there was user
18 support, strong user support, at a level of \$120 million for
19 the fiscal '90 budget.

20 MR. WARD: Murley hasn't offered to give you \$10
21 million out of his budget though.

22 MR. BECKJORD: No.

23 MR. WARD: Just asking.

24 MR. BECKJORD: I wouldn't expect him to.

25 MR. WARD: Figuratively.

1 DR. SIESS: I could make a distinction in my
2 thinking between what a user office would support--what they
3 want you to do and you tell them how much it would cost and
4 they say yes. Distinguish that from whether there is user
5 satisfaction with what they've gotten in the past. Because
6 they've never gotten what they supported. The budget has
7 gone down every year. And each year with a reduced budget,
8 with this deferred and that eliminated, will they remain
9 satisfied with what they've got? If they do, then they are
10 not going to complain.

11 MR. BECKJORD: Well, the user reviews are new. I
12 mean in the last three years in specific terms. I don't
13 think I can speak to it prior to that because I don't think
14 there was an annual review of user--at least there wasn't a
15 letter that was written.

16 MR. CARROLL: It's really two different--I mean
17 the statement can have two different meanings. It can say,
18 yes, Beckjord, you did a hell of a job with the money you
19 had.

20 MR. BECKJORD: And I am saying in general they did
21 that. Not everybody was happy in every area.

22 MR. CARROLL: Or they can say, you did that, but
23 we really could have used a lot more research in this area
24 and that area. We recognize why we didn't get it. You
25 didn't have the money.

1 MR. BECKJORD: I haven't actually heard that
2 statement. Their comment has been addressed at the budget
3 level that we submitted actually. And they weren't
4 advocating much higher expenditures because they know what
5 the practical consequence of that would be.

6 MR. CARROLL: It really gives the Commissioners an
7 excuse for saying, well, let's cut them some more and see
8 what people start yelling.

9 MR. BECKJORD: Well, as I say, in the past two
10 years the cuts have come from the Agency cuts which resulted
11 in the research cuts came from Congress.

12 DR. SIESS: How does your Nuclear Research Review
13 Committee feel about the budget? Do they comment on it at
14 all?

15 MR. BECKJORD: Yes. Let me get on to that. By
16 the way, just in passing, we won't have time to go over
17 them, but in these slides which you will see on the user
18 need impact, there are also some logic diagrams in the
19 primary system area which spell them out I think in a very
20 graphic way. I won't comment on them.

21 Yes, this is a summary. The Todrias Committee
22 supported the increase from \$96 million in fiscal '89 to
23 \$108 million in fiscal '90, which was the starting level.
24 And the basis for doing that were these five programs.
25 Aging, accident management, and severe accident research,

1 also in that category. The human factors were including the
2 work on organization and management, high and low-level
3 waste disposal, and also they have been encouraging us to
4 increase the contribution of universities to the research
5 program. And it was on that basis that they strongly
6 supported that.

7 The Committee's view is that the budget has
8 reached a critical limit at the \$88 million. That's their
9 view.

10 DR. SIESS: But what did they think about the
11 proposed cuts you've made?

12 MR. BECKJORD: I haven't discussed that with them.

13 DR. SIESS: Just offhand, I wonder if the cuts are
14 in line with these five items as priorities. I assume those
15 are the top priorities in their minds. Were there cuts made
16 in human factors?

17 MR. BECKJORD: No, no. Those were practically
18 free of cuts. The statement that Kennedy made was that they
19 supported the budget and they felt that particularly on the
20 basis that there would be aggressive programs in these
21 areas, that was the rationale for their support of the \$108
22 million budget.

23 MR. MICHELSON: Eric, we have about ten minutes
24 remaining.

25 MR. BECKJORD: Well, that was one of the subjects

1 that you asked me to comment on. That's the Committee's
2 position on the budget. I have told Professor Todrias that
3 what might be in prospect over the Gramm-Rudman, so he's
4 aware of it. But they have not made any--and I don't think
5 it's appropriate since it isn't a fact yet.

6 You asked also about the research--let's see. In
7 greater diversity of research providers.

8 DR. SIESS: That was one of the National Research
9 Council recommendation, as I recall.

10 MR. BECKJORD: Yeah.

11 DR. SIESS: In fact, the last three.

12 MR. BECKJORD: This is the fiscal '88, '89 and '90
13 program support. It shows that this is the total budget
14 down here and how it's divided upon the national
15 laboratories, educational contracts, grants, money going
16 overseas for our research programs, other government, which
17 would include things like--let's see. Other government is
18 what National Bureau of Standards. How about SBIR? Is that
19 in here? Work in industry and in not-for-profit
20 organizations. That would include Betel, for example.

21 These are the contracting goals. I don't know if
22 you can see those.

23 Educational contracts in '89 and '89 and '90.
24 This is our plan. It's going up slightly.

25 Work in industry, going up from \$8 million to

1 \$10.8 million. And in the not-for-profit, it's about the
2 same.

3 Educational grants and the SBIR. In terms of
4 percentages. this total here is going up slowly. I think
5 that's about the level that I would expect to maintain, 20
6 percent.

7 DR. SIESS: Why would you consider 20 percent? Is
8 that what you think is practical?

9 MR. BECKJORD: Well, I think that we are going to
10 continue to have major programs underway at the National
11 Laboratories in severe accidents, in the heavy section
12 pressure vessel work. And I guess given that, I don't see
13 that this number is going to get much larger. I think that
14 we are bringing it up there in fiscal '90 and I think that's
15 a reasonable partition.

16 If you have no other questions on that, I will go
17 to the--there were two other questions here. Let's see.
18 Contribution made by the NRC Safety and Research Review--no.
19 Contributions made by implementation of the National
20 Research Council recommendations.

21 I would say the main ones there that I would
22 comment on in Nuclear Safety Research Philosophy which
23 you've seen which is essentially the same as it was a year
24 ago. I think that was an important statement. I think that
25 has been very useful to the office in defining the work that

1 we should do.

2 Secondly, the research program planning process
3 with other offices, it's out of that recommendation that the
4 user need reviews and the user need letters that I mentioned
5 to you have come. I think that has greatly strengthened
6 the planning process. We have research review committees
7 with members from the other offices. These meet regularly
8 during the development of the future research programs and
9 the budget as well. I think that has strength in that
10 process.

11 The next one I'd mention is the Todrias Committee.
12 That has been underway now--it had its first meeting two
13 years ago this February. That proceeds on the basis of one
14 annual meeting committee, and then the way it's developed,
15 subcommittee meetings. This fall and early winter we will
16 have four meetings of the subcommittees on severe accidents,
17 ion waste, on human factors, and primary systems.

18 I think that Committee has been very helpful to
19 us. I think you have the letters from them. I think you
20 have the responses. I am about to send out the response to
21 their August letter. You wouldn't have that yet.

22 DR. SIESS: We are not getting those, Eric.

23 MR. BECKJORD: You are not?

24 DR. SIESS: No. We are not getting the comments
25 right here. I think it would be interesting for us to read

1 it.

2 MR. BECKJORD: We'll get you copies of those
3 letters. The subcommittee meetings start in about two
4 weeks. The first one is on actually containment and seismic
5 research out in Albuquerque.

6 The committee has by now reviewed all of the areas
7 that we are working in. They've taken a great deal of
8 interest in--special interest I would say--in human factors,
9 in the high-level waste research, in accident management and
10 severe accident research. And also the reactor aging.

11 They I think now are looking to get into some more
12 general matters relating to the training programs in the
13 office. They talked with them--there's one other item on
14 your list. You asked me for a status of and progress being
15 made to bring outside expertise on board as recommended by
16 the National Research Council.

17 I've talked at some length with the Todrias
18 Committee. I've made them aware of the actions that have
19 been underway to bring outside people in. In general, it is
20 very difficult to bring outside people in. I have very
21 little new to report to that. I think I gave you a full
22 report on that a year ago.

23 I did talk with one person during the year about
24 joining the research organization and the answer that I gave
25 fell within the answers that I'd given before when I made

1 eleven job offers at one point. This was two and a half
2 years ago and got no acceptances. And the problem is either
3 money or housing costs or two-spouse jobs or problems with
4 high school teenagers. There's generally been a high level
5 of interest in the scope of the job. And money is not
6 always the controlling problem. There's very little new to
7 report to that.

8 Although I will say that we did this year--we have
9 recruited one researcher in the human factors area. A very
10 highly qualified person who's worked on shift scheduling and
11 human performance. That was a very pleasing result.

12 DR. SIESS: Any questions?

13 Thanks a lot, Eric. We are glad to meet with you.
14 Appreciate it.

15 MR. MICHELSON: We'll adjourn until twenty after.

16 (Recess.)

17 MR. MICHELSON: At the last full committee meeting
18 there was a discussion of the maintenance program and a
19 reading of a first letter concerning a proposed--that was a
20 proposed Policy Statement on maintenance.

21 The letter, however, did not go out so today we
22 are going to re-entertain it. And first of all though, the
23 staff has some more words that they want to give to us, more
24 thoughts and so we'll start with the staff's presentation.
25 And when it's finished, then I would suggest the committee

1 ask the staff any further questions that might have been
2 prompted by the letter or whatever. And then we will go off
3 the record for the rest of the day.

4 Ray, with the items we now think we might fit into
5 the schedule, can all of those be off the record? Okay. So
6 we will go off the record after any comments or questions to
7 the staff following the presentation on maintenance.

8 So Tom King is here to make a short presentation
9 and it's yours, Tom.

10 This material, by the way, is in Tab 5 of the
11 book.

12 MR. KING: I'm Tom King from the Office of
13 Research. My branch has the lead for the maintenance rule
14 and reg guide work.

15 What I wanted to do today is, we had sent you a
16 revised Policy Statement on September 28th. It was a markup
17 of the one we had sent you originally back in August.

18 And all I wanted to do today was summarize what's
19 happened since we gave you the presentation at your
20 September full committee and then to summarize the changes
21 that are reflected in the markup you have. I am not here--
22 we don't have any more markups on top of that markup. So
23 it's just really to summarize where we are.

24 The only other thing I want to mention is the
25 changes in that markup really result from discussions with

1 the full committee last September as well as the results of
2 our meeting with CRGR on September 13th. Those are the two
3 major sources of the changes.

4 Status of the revised Policy Statement. Right now
5 that version you are looking at has been incurred in by all
6 the affected offices. Research, NRR, AEOD, Office of
7 Enforcement, and OGC. It's been reviewed by CRGR. And the
8 plan right now is to send it to the Commission after we
9 receive your letter. Right now we have a target date to get
10 it to the Commission by October 20th. That anticipates a
11 letter from the full committee early next week to meet that
12 date.

13 The other thing I might want to mention is that in
14 the package that is to transmit the revised Policy Statement
15 to the Commission is also being supplemented to add an item
16 that the Office of Enforcement is preparing. As you recall,
17 the original staff requirements memo asked the staff to do a
18 number of things, prepare a revised Policy Statement and OE
19 was tasked with preparing a set of enforcement criteria that
20 they would use over this eighteen-month period. Originally
21 we were talking about two separate papers to do that, but
22 with the delay in our paper, we are now merging the two
23 together so that the SECY will address both of those. But I
24 am just going to talk about the revised Policy Statement
25 today.

1 I'll talk a little bit about the OE part because
2 it does impact some of the words in the revised Policy
3 Statement. You'll sort of get an overview of what that is
4 going to say.

5 Just to refresh your memory quickly, the revised
6 Policy Statement basically has the purpose to state what the
7 Commission intends to do over the next eighteen months in
8 the maintenance area and to state what we encourage
9 licensees to do. And Commission actions that are discussed,
10 notes that we are going to hold the rulemaking in abeyance.
11 We are going to monitor industry performance. And
12 commitments over the next eighteen months, and that would
13 include completing the maintenance team inspection work.

14 We are going to continue to enforce existing
15 requirements related to maintenance. We are going to
16 continue to work on a standard. Apparently our reg guide
17 is out for comment.

18 We are going to continue to work on and use
19 maintenance performance indicators. And at the end of the
20 eighteen-month period assess the need for any additional
21 regulatory action.

22 MR. CARROLL: Is there any intention, Tom, with
23 respect to the maintenance team inspections to go back and
24 do a full-blown maintenance team inspection on some of the
25 earlier plants that seem to have problems in this eighteen

1 months?

2 MR. KING: At the end, sort of around the last six
3 months of that eighteen-month period, we are planning to
4 revisit some of the sites that have been inspected. Whether
5 that will be a full-blown repeat of everything we did at the
6 first time through or some selected portion I think is up in
7 the air right now. And exactly which sites those will be is
8 up in the air right now.

9 MR. CARROLL: But it will give you some
10 calibration on whether people are really continuing their
11 improvement programs.

12 MR. KING: Yes. I think it's clear we would go
13 back to ones that have gotten a poor evaluation the first
14 time around and see what's changed, what they get the second
15 time around. Maybe we'd even want to hit somebody that was
16 good the first time around and see if they are still--

17 DR. KERR: Where would one go to find the rules or
18 regulations or reg guides or whatever that are going to be
19 enforced?

20 MR. KING: Things that are existing today?

21 DR. KERR: Yes. I mean is there some easy place
22 to find those things? Or does one have to look--

23 MR. KING: There's no one place you can go to that
24 says these are the requirements for maintenance. That's
25 part of--

1 DR. KERR: Well, what the Commission is doing is
2 asking you to put all those together so that they will know
3 what the rules are that refer to maintenance so that you
4 will know what they are also?

5 MR. KING: That's part of the benefit of a rule is
6 putting down in one place--

7 DR. KERR: No. But I thought even before a rule
8 you were asked to draw plans for enforcement of existing
9 rules. Did I misunderstand the requirements document?

10 MR. KING: There are some existing rules that--

11 DR. KERR: No. That's what I--

12 MR. KING: That's on the maintenance area.
13 Appendix B, for example.

14 MR. CARROLL: No. I think what Bill is asking is
15 what is the Office of Enforcement supposed to be doing. Is
16 that it?

17 DR. KERR: Well, if you are going to enforce
18 something, they must exist somewhere in the rules. I just
19 wondered where I would look to find those things that are
20 going to be enforced. Appendix B would be the place?

21 MR. KING: Appendix B deals with some aspects that
22 are related to maintenance. Procedures, for example.

23 DR. KERR: Any other place I'd look to find it?
24 Or will I wait and see what the staff comes up with.

25 MR. KING: Well, let me ask your representative

1 from the Office of Enforcement to respond to that.

2 VOICE: Basically if I had to summarize it,
3 Appendix B of 10CFR 50 has a number of the requirements in
4 there touch on maintenance. But more plant specific, final
5 safety analysis report does contain a number of commitments
6 licensees have made that also touch on maintenance. And
7 through the technical specifications, primarily through
8 Appendix A to Reg Guide 133, which many of the licensees are
9 committed to through their technical specifications, that
10 requires procedures for maintenance of many of the systems
11 in the plant.

12 So I would say that the SFAR Reg Guide 133,
13 Appendix A, 10CFR 50 Appendix B, are primarily the three
14 areas that you would find most of the existing requirements.
15 There are some others. And some of the other areas are
16 plant specific, depending upon the licensee's commitments.

17 DR. KERR: Is the implication that the staff has
18 not been paying much attention to enforcing these things in
19 the past and this is going to be a new approach? Or why
20 the specific attention to this?

21 MR. KING: No, it shouldn't be read as implying
22 that the staff hasn't been paying attention to that in the
23 past. We say continue to enforce existing requirements
24 related to maintenance. It doesn't mean we haven't been
25 doing it in the past.

1 DR. SIESS: That's a strange statement to put in
2 a Policy Statement. To issue a Policy Statement saying they
3 are going to continue to enforce existing requirements
4 relating to just about anything, couldn't they? Why do they
5 need a Policy Statement?

6 MR. KING: Well, we are proposing to go a little
7 beyond that. And maybe if you'll wait a couple of pages
8 we'll come back to that subject.

9 DR. KERR: You are going a little beyond what?

10 MR. KING: Beyond just saying continue to enforce
11 existing requirements.

12 DR. KERR: You are going to start enforcing things
13 that don't exist?

14 MR. KING: No. We are going to recommend a change
15 to the Commission's enforcement policy. And on the last
16 page I've got an item that talks about that.

17 DR. SIESS: But even if you are going to go way
18 beyond it, why do you have to state it to begin with? It
19 just seems a very peculiar thing for the Commission to say.

20 MR. KING: Well, perhaps you wouldn't even need to
21 say it.

22 DR. SIESS: But why are you saying it?

23 MR. KING: I think it's really a lead in to the
24 additional words that we are adding in on--

25 DR. SIESS: It's not a good lead in.

1 MR. KING: Recommending a change in the
2 Commission's enforcement policy.

3 DR. KERR: So if you recommend a change in the
4 enforcement policy, in effect you are recommending a change
5 in the rules.

6 MR. KING: No. Not in this particular case, no.

7 DR. KERR: No? Well, at least in the
8 interpretation of it. Because you've always enforced the
9 Commission's rules. Haven't you? I mean--

10 DR. SIESS: That's one sentence you don't need,
11 Tom.

12 MR. KING: It's not a question of whether we're
13 changing the way we enforce the rule. I think it's really a
14 question of when you assess a civil penalty, basically what
15 we are going to recommend to the Commission is that if that
16 particular violation has as its root cause a maintenance
17 problem, that we can consider an escalation factor in the
18 amount of the civil penalty.

19 DR. KERR: Then that is certainly a change in
20 interpretation of the rule.

21 MR. KING: The rule is the same.

22 DR. KERR: But the interpretation is different
23 because you are going to set up a different standard for
24 enforcement. You are not interpreting it as more serious
25 than you did before apparently.

1 MR. KING: Let me ask OE to respond.

2 VOICE: I guess what the intent of the statement
3 in the Policy Statement is is simply that right now as I
4 think I tried to express in my earlier statement is that
5 there is no one particular area in the regulations now that
6 has as its title "Maintenance."

7 And when we assess violations against areas that
8 are related to maintenance, even though they are not called
9 that, we may not emphasize the root cause of why that
10 particular rule or regulation was violated. We just state
11 that this was the rule or regulation that was violated.

12 So really what the sentence up there is that when we
13 take actions under the existing regulations, we intend to
14 emphasize to the licensee through the transmission of the
15 violation and the attending cover letter, the issues
16 involved there that relate to maintenance. In other words,
17 to highlight our concerns in the maintenance area that led
18 to this violation.

19 DR. KERR: So if there is a violation, it'll be a
20 more serious violation if it's because of maintenance than
21 it would be if it's because of something else.

22 VOICE: No. That is not the intent.

23 DR. KERR: Well, that is just what I heard. That
24 you were going to escalate the enforcement if the root cause
25 were maintenance.

1 VOICE: There are two different issues here. First
2 there is--in the enforcement area--there's two things that
3 are done. One is the assignment of severity level, which is
4 based on the significance of the violation. And the second
5 one is the assessment of a civil penalty should a violation
6 reach a certain severity level.

7 The proposed change that we are going to make to
8 the enforcement policy will only deal with escalating the
9 civil penalty for violations that have been assessed at a
10 certain severity level. The maintenance will not
11 necessarily--whether the root cause is maintenance or
12 whether the violation was caused because of maintenance will
13 not be used in determining the severity level. It will only
14 be used that once we have a violation that reaches the
15 severity level that you would normally assess a civil
16 penalty, there will be added emphasis to the civil penalty
17 base if the root cause is maintenance.

18 So it really won't apply to the second factor and
19 not the first. Not the assignment of severity level. But
20 the assignment of the--

21 DR. KERR: Okay. But what you are telling me is
22 that the judgment on the penalty would be determined not
23 only by what happened but on the root cause, and if the root
24 cause is maintenance, it's going to be worrisome if the root
25 cause is something else.

1 DR. SIESS: That is not what is says, Bill. I
2 don't know why they can't tell you that.

3 VOICE: Well, to answer the question, the answer
4 is that the enforcement policy is exactly that. It's a
5 policy. And the change that we are proposing is a change in
6 an area of emphasis in the policy. But it is a policy
7 statement. It's not interpreting a rule or regulation any
8 different than they are interpreted now.

9 We will have to determine first whether there is a
10 violation of the requirements before we get to assignment of
11 severity level and clearly after assignment of severity
12 level, then you get to whether you are going to have a civil
13 penalty. And that's the only place that this factor will
14 come into play.

15 DR. SIESS: Now I am very concerned. Because
16 somebody from Enforcement is making a statement that's not
17 in agreement with the Policy Statement. I am now concerned
18 about people in the field interpreting the Policy Statement
19 wrong.

20 The Policy Statement says that the violation could
21 have been prevented if an adequate maintenance program had
22 been implemented. Presumably if the violation was the
23 result of maintenance but you had an adequate maintenance
24 program, there would be no escalation in severity.

25 But only if the root cause was not just

1 maintenance, but the root cause is an inadequate maintenance
2 program. Now, that's what it says here.

3 Is that what it means?

4 MR. KING: Yes. I think if we find--

5 DR. SIESS: It's a big difference. Because if you
6 are going to escalate the penalty for any incident that had
7 maintenance as a root cause, that's going to cover an awful
8 lot of things.

9 VOICE: I think that the statement made in the
10 Policy Statement is a statement of fact. It says that the
11 Commission considers that a violation of license conditions
12 or regulations may be a significant regulatory concern when
13 the violation could have been prevented if an adequate
14 maintenance program had been implemented.

15 DR. SIESS: Adequate is the word I'm talking
16 about.

17 VOICE: Yes. But I guess my point is that this is
18 now and has been the Commission's position that that
19 statement is not a change to any Commission position. That
20 has been the Commission's position--

21 DR. SIESS: But you didn't use the word "adequate"
22 when you were responding to Dr. Kerr. Are you going to
23 escalate the find on any--

24 DR. KERR: Maintenance related--

25 DR. SIESS: Anything that happens that you can go

1 back to maintenance as the root cause, whether they've got a
2 good maintenance program or a bad one. Because a perfect
3 maintenance program is not going to eliminate some
4 maintenance-induced things.

5 VOICE: I think again the application--I think
6 Tom's got the words that--he'll address that in the
7 presentation, but clearly there's the factor that we are
8 going to propose, a change to the policy, is going to allow
9 discretion. There's going to be an escalation of the
10 maximum--

11 DR. SIESS: I don't trust the discretion if you
12 can't tell me now what the Policy Statement means.

13 Do you understand what I'm saying, Tom?

14 MR. KING: Yes, I understand what you are saying.
15 I think it's a distinction that needs to be made. You can't
16 go back and do this every time maintenance causes a problem
17 because there are always going to be things that come out of
18 the maintenance program that may cause it.

19 DR. SIESS: Now, if you are going to define
20 adequate as a maintenance programs that never leads to an
21 instant where maintenance is the root cause, I think we'd
22 like to know that.

23 VOICE: I think by definition, when we talk about
24 where this is going to come into play, it's going to come
25 into play with a significant regulatory concern. And if a

1 maintenance program has significant regulatory concerns in
2 it, you know, then you are bordering--you are getting to the
3 point where I don't know whether the staff would consider
4 the program adequate.

5 MR. CARROLL: Let's suppose that I've had an AIT
6 very recently at my plant. And you guys thought I was doing
7 a very good job, everything is satisfactory. And something
8 comes up in my maintenance program that's a violation, but
9 sort of an aberration, you know. I haven't done this very
10 many times or whatever. But it certainly the root cause was
11 maintenance and arguably for the particular instance I
12 hadn't done it adequately.

13 Would that lead to escalated enforcement?
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1 MR. LUEHMAN: Well I think that you have to--
2 clearly the intent of the policy--we have the application--
3 we would include this factor and I think in the conditions
4 that you posed, in a strict application of that factor, you
5 could escalate the penalty.

6 Now, there are other portions in the--there are
7 other sections in the enforcement policy that allows for the
8 staff to exercise discretion. And, in other words, if we
9 apply the factors of the enforcement policy to a certain
10 case and arrive to a civil penalty for a certain severity
11 level violation and then we look back at it and say, you
12 know, they have a good program and this is really an
13 aberration. This is the only problem they have ever had.

14 The staff can exercise discretion and not
15 consider--and not propose the civil penalty that the factors
16 would bring you out to. If that was the case, we would
17 consider something like that. That, hey, this plant has a
18 good program, this is an isolated incident. Even though it
19 rises to severity level III, we look at their overall
20 performance and so a civil penalty may not be applied in
21 that case.

22 DR. REMICK: I would like to go back though.

23 Chet, I think, to go back to what you said, I
24 don't think you read the most important sentence. I think
25 the most important is the next one to what you read and let

1 me read that because I think it is consistent with what they
2 were saying: "The Commission, by separate action is
3 modifying its enforcement policy to provide that where a
4 civil penalty is appropriate for a maintenance related
5 violation, the amount of the penalty for such a violation
6 may be escalated to reflect the maintenance root cause."

7 That doesn't say anything about adequate
8 maintenance, it just says if it is a maintenance root cause,
9 you can escalate it.

10 DR. KERR: For the life of me--

11 MR. SIESS: There are two things in there, you
12 see. They need a lawyer on it.

13 I read that where it said, "A maintenance related
14 violation." A maintenance related violation then was the
15 violation that could have been prevented if an adequate
16 maintenance program had been implemented.

17 DR. REMICK: I didn't read it that way or I don't
18 read it that way.

19 MR. SIESS: I read it with those two sentences
20 together.

21 DR. REMICK: Right.

22 MR. SIESS: But now it goes on to say,
23 "Maintenance Root Cause--

24 DR. REMICK: Right.

25 MR. SIESS: Which would not be covered under my

1 definition of a maintenance related violation.

2 There are 3 different terms used in there.

3 Whether they are supposed to be the same, I don't know.

4 DR. KERR: For the life of me, I do not see what
5 difference it makes as to what the root cause was in
6 assessing a penalty. I can't believe what I am hearing.

7 DR. REMICK: Does that mean that somebody else on
8 the staff should feel that if it is a training related
9 violation, there should be a special escalation or if we're
10 putting pressure on training at the time.

11 Are we using enforcement here to put added
12 pressure on?

13 MR. LUEHMAN: Sure. I think it is clear--

14 DR. REMICK: How does the Agency justify that?

15 MR. LUEHMAN: I think that, you know--you're right
16 in saying that proposing an escalation factor for root cause
17 is something that we have not done in the policy, to this
18 point.

19 And, you're right, it could be applied in any
20 particular area that the Commission deems appropriate. And I
21 think that we, the staff, would have to say that based on
22 some sort of inspection effort. In this case, the
23 Maintenance Team Inspections, that there are certain
24 licensees that would necessitate this type of change.

25 MR. SIESS: I wonder if--I'm really very confused,

1 but that is normal.

2 Directly, if there is an event at a plant, two
3 possible events, which have exactly the same public
4 consequences.

5 One has as its root cause, an error in operation.
6 The other has, as its root cause, an error in maintenance.

7 The error in maintenance, one, with the same
8 public consequences, would produce a greater penalty, is
9 that correct?

10 MR. LUEHMAN: I think the answer is it could.

11 MR. SIESS: No, it says, "will".

12 MR. LUEHMAN: I'm saying--I said it may--I'm
13 saying we may escalate it.

14 MR. SIESS: Okay. I just wanted to understand.

15 So for the same public consequences, a sin in
16 maintenance is worse than a sin in operations, so the
17 encouraging factor is to encourage the licensee to take
18 resources away from operations and put them into
19 maintenance. If I understand, that is what is being
20 encouraged here, for some reason.

21 MR. LUEHMAN: It doesn't necessarily mean--

22 MR. SIESS: Is that a fair reading of what it
23 says.

24 MR. LUEHMAN: No. I don't think it encourages--it
25 has to come away from something else. IF the Commission

1 wants the licensee to apply resources in one area, given
2 that the licensee has finite resources, obviously those
3 resources are going to come from some other area.

4 MR. LEWIS: So you think it is a fair reading and
5 he thinks it's not a fair reading and I would like to know
6 whether it is a fair reading of what the words say.

7 MR. LUEHMAN: His words were a fair reading.

8 MR. LEWIS: Okay. So it is a fair reading.

9 DR. KERR: Is there anything--

10 MR. LUEHMAN: It's a fair reading as far as they
11 would have to take them from somewhere, not necessarily out
12 of operations.

13 MR. LEWIS: No, no, I understand. But I gave you
14 a case is operations versus--I could have given you
15 something else.

16 DR. KERR: Help me. Is there something in the
17 regulations that says that regulations should not be
18 capricious?

19 MR. LEWIS: I believe there is. There is certainly
20 a body of litigation that establishes that.

21 DR. KERR: We should look into that, I think.

22 DR. REMICK: Tom, your first bullet up there, you
23 indicate, "Rule making is to be held in abeyance..." but is
24 there anywhere in the policy statement that you're alerting
25 the public that the staff is continuing on the development

1 of a rule during this interim. And, if not, why not?

2 Because you are telling them the things that are
3 going to happen over the 18 months and I think somewhat
4 misleading.

5 I agree, rule making is being held in abeyance,
6 but I think you should tell them the staff is proceeding
7 with the development of a possible rule.

8 MR. KING: Well, at this point in time, we're not
9 proceeding with the development of a possible rule. We've
10 got a possible rule.

11 DR. KERR: Is that a change from--

12 MR. KING: It's on the shelf. That's no
13 different.

14 DR. REMICK: Well the last time we were told,
15 January 1991, you were going to have a draft rule to go to
16 the Commission.

17 DR. KERR: No. Forrest, what he says is they have
18 it, it's on the shelf. It doesn't have to be developed.

19 MR. KING: Perhaps we'll learn something and--

20 DR. REMICK: You mean the rule that we saw a few
21 months ago is a rule you're going to propose in January of
22 1991?

23 MR. KING: Unless we see something in the comment
24 process on the REG GUIDE or further interaction.

25 DR. REMICK: I thought there was general agreement

1 that was not a very good drafting job.

2 DR. KERR: Mr. Zech even said it wasn't a very
3 good rule.

4 DR. REMICK: And I think Mr. Carr also.

5 DR. KERR: You mean you're not--

6 MR. KING: At this point--

7 DR. KERR: You're not--

8 MR. KING: At this point in time until we get
9 comments on the REG GUIDE, until we have further inter
10 action actions with the industry, we are currently not doing
11 any work ont he rule.

12 DR. KERR: I see.

13 MR. KING: I think we're going to have to ask
14 ourselves the question a few months from now, do we want to
15 change that rule or not because, you're right, in January
16 1991, we are going to present a rule to the Commission.

17 They can have it in their back pockets and look at
18 it in case we recommend that course of action in April of
19 '91.

20 DR. REMICK: I just don't think you're going to
21 take that same rule in January of 1991 and--

22 MR. KING: May not, but at some point in time
23 we're going to have to decide do we want to--

24 DR. REMICK: So regardless if it's the same one or
25 not, I still think you ought to somehow put wording in there

1 to alert people to that because, "in abeyance," I think can
2 mean different things to different people and we're going
3 out for public comment, am I correct or no, we're not.

4 MR. KING: We're going out for public comment on
5 the REG GUIDE.

6 DR. REMICK: Not on the policy statement--excuse
7 me.

8 DR. KERR: Could I--

9 MR. MORRIS: This is Bill Morris of the staff.

10 The rule that we developed, both the one that went
11 out for comment and the one that we fine tuned and presented
12 to the Commission. It was a very general rule.

13 It was just the most general rule that we could
14 come up with that had essentially a few elements in it.

15 I think that the comments about the package that
16 we sent up were more directed to uncertainty about the
17 standard that would have been endorsed in the Regulatory
18 Guide.

19 There was a lot of concern about whether we had
20 the right standard or not. So it seems--what our strategy is
21 is to go back and work on that standard. Do the Public
22 Comment process on the Regulatory Guide and see if we can
23 develop a standard that either through the industry work or
24 through our own work, coupled with industry comments, will
25 better define what the standard would be and that would be

1 the way we're working to try to improve what the basic
2 requirements that come out of this package would be.

3 DR. REMICK: But there were comments--you know,
4 this Committee commented on several things about questioning
5 where that rule was taking one. If it was taking them
6 beyond regulation into management and things like that.
7 Those are not being addressed?

8 MR. KING: They're being addressed. But I think
9 your comments were more resulting from the discussion on the
10 REG GUIDE. As Bill mentioned, I think the rule is very
11 general. I think the REG GUIDE raised the questions on
12 whether we were getting into management or not.

13 DR. REMICK: Oh no. The REG GUIDE was very very
14 general, but the rule--in fact, I remember--I don't know
15 which one of the staff--I asked the question, with this
16 rule, why would a plant be exempt from the rule and the
17 answer came back from the staff with the flag pole and the
18 administration building.

19 And we addressed the scope. We were questioning
20 and I think that was in the proposed rule, not in the REG
21 GUIDE. Maybe I'm wrong.

22 MR. MORRIS: You may be thinking about the earlier
23 version of the rule that went out the first time, but the
24 later version, the one that we finally sent to the
25 Commission, I do not believe had that kind of a scope in it.

1 DR. REMICK: We mis-read it then because it was in
2 our letter.

3 MR. MORRIS: We'll do this. Before we go back to
4 the Commission with any proposed rule, we'll go back and
5 review the record, including the ACRS comments and we'll
6 determine whether we believe that there are places where we
7 need to change that rule to make it a better product. Even
8 assuming that it may be, at that point, a draft document, it
9 will be the best draft document we could put together.

10 It may be that the decision will be not to issue a
11 rule, but we will go back and review that record including
12 the comments of ACRS and we will come back here before we
13 would go forward to the Commission again.

14 Also to re-focus on the various kind of concerns
15 you are raising now with regard to any changes we might come
16 up with.

17 DR. REMICK: I would hope you would do that. I
18 expect you to do it. But, isn't that still really working
19 on a rule then?

20 I still go back to the question, if you plan to
21 put before the Commission, in January 1991, a proposed rule,
22 whether it's unchanged from what you currently have or with
23 some revisions after review, don't you think that that is a
24 legitimate type of thing that you should tell people if
25 you're going through this list of telling them what is going

1 to happen in the 18 months?

2 Otherwise, I think there can be a misunderstanding
3 about, "be held in abeyance."

4 MR. MORRIS: Is your point that we should simply
5 announce that we will not only hold the rule in abeyance,
6 but if we learn anything new in the time being, that if we
7 re-propose the rule that it would be--

8 DR. REMICK: No where in the policy statement do I
9 think is anything that tells them that in January 1991,
10 you're going to have a draft rule ready.

11 MR. MORRIS: I think the reason for that may be
12 that what this was intended to be was a way to announce the
13 deferral of rule making itself, and talk about factors that
14 could be involved in a decision as to whether to go forward
15 with the rule rather than the detailed process that the
16 staff will work through in presenting new information to the
17 Commission.

18 DR. REMICK: I don't think I'm getting across.
19 Let's go back.

20 A few minutes we were talking about continue to
21 enforce existing requirements related to maintenance and Dr.
22 Siess asked, well, why do you put that in there, don't you
23 do that all the time?

24 I expected that Tom might have said, well we want
25 to make sure that people know what is going to happen during

1 this 18 month monitoring period, that we are still going to
2 enforce and so forth so that they know all that and that
3 would be legitimate.

4 Then I say, well there are some other things that
5 we apparently are not telling them, that you have told us
6 and that is--I remember very vividly, January 1991, there is
7 going to be a draft rule proposed to the Commission for
8 their possible use.

9 And my only question is: If we know that now,
10 isn't it reasonable to alert the public to that, being the
11 licensees, of that fact?

12 Or do you just think it's not important? I'm
13 trying to understand.

14 MR. MORRIS: We have announced that other ways.
15 We announced it to you, we announced it in the Commission
16 briefing. It's public knowledge that we're going to do
17 that. We could certainly add it into the Policy Statement.

18 DR. REMICK: Otherwise, to the general reader, I
19 think, "abeyance" would have a different meaning. They
20 think you're not going to do anything. But, you are, I
21 think

22 MR. SIESS: Suppose it said, "hold it in abeyance
23 until January 1991," instead of, "for a period of 18
24 months", would that help you?

25 MR. CARROLL: What they're trying to get away from

1 is picking a day that is 18 months from the effective date
2 of the Policy Statement.

3 MR. KING: The January date was assuming the
4 Policy Statement was printed in October.

5 DR. REMICK: You're right--you're right, yes.

6 MR. KING: But to get the general thought across
7 that we're going to have--

8 MR. CARROLL: It seems to me the problem is rule
9 making is going to be held in abeyance for 18 months. Would
10 you like them to say, however, during that period here are
11 the things we are going to do.

12 DR. REMICK: Absolutely. That is that I thought
13 this list was.

14 MR. CARROLL: We're going to work on a standard.
15 We're going to work on the REG GUIDE and we're going to work
16 on the rule.

17 MR. SIESS: That's what it says in the second
18 paragraph there.

19 MR. CARROLL: I'll try to leave it in there.

20 MR. SIESS: If they are holding it in abeyance
21 for this reason, they issue the policy statement and it can
22 do a lot of things.

23 DR. REMICK: Where does it say that. I don't see
24 it.

25 MR. CARROLL: Page 9 of the tab on the lower right

1 hand corner.

2 DR. REMICK: Yes, but that just says, "in
3 abeyance", right. I read that earlier. Read it to me, I'm
4 not sure I'm with you.

5 MR. SIESS: "For this reason, the Commission is
6 issuing this revised Policy Statement. It restates the
7 major elements of the Commission's March 23, 1988 Policy
8 Statement on maintenance and includes additional elements
9 related to Commission actions and expectations in the
10 maintenance area." And that is what the Policy Statement is
11 dealing with.

12 For this reason, because it has been held in
13 abeyance until now, now we'll tell you what we're doing.

14 Does that help you

15 DR. REMICK: No, it doesn't, to me because its
16 seems to be that if there is going to be some kind of a
17 draft rule put to the Commission 18 months after that, it
18 should be listed.

19 It's as important as telling them you're going to
20 continue to enforce existing requirements.

21 MR. SIESS: Maybe I don't--when it says, "hold the
22 rule making in abeyance for 18 months, doesn't that mean at
23 the end of 18 months it's no longer in abeyance, that
24 they're going to go ahead?

25 DR. REMICK: Yes. But my impression was, although

1 maybe the staff is right, they're not going to do anything
2 on that existing draft rule and that is hard for me to
3 believe. I just can't imagine--

4 MR. SIESS: That's your judgment.

5 DP. REMICK: That's my judgment, that's right. I
6 can't imagine your management, with the criticism that has
7 been received on that draft rule a few months ago, would put
8 the same thing before the Commission.

9 MR. MORRIS: Well, I think I told you what our
10 approach would be. We would go back and determine whether
11 we needed to change it.

12 Admittedly we heard from you, we heard from the
13 Commission. What we probably are not planning to do with
14 this. The Commission gave us no direction to do this. For
15 instance, to go back out for another round of public
16 comments. They did not give us that instruction, and short
17 of that, we don't, right now, plan to do that.

18 At some point if we felt that was something
19 valuable to do we could, I suppose do that.

20 The best I think I can do now is to commit to
21 reexamine the record, the public comments we got, all the
22 information we will collect between now and when we will be
23 ready to put that back to the Commission in January and the
24 previous and subsequent comments of the ACRS and the CRDR,
25 to try and figure out what it is that we could do to improve

1 that in order to make it better.

2 DR. REMICK: That I understand and that sounds
3 very logical. My only question and I don't want to belabor
4 it beyond this. If it's worth telling us, isn't it worth
5 telling the licensees?

6 MR. CARROLL: That you're working on a package
7 which includes a rule, a standard, performance indicators,
8 blah, blah, blah.

9 MR. KING: I think you got a good point. I would
10 suggest that we look at the words and see if we can put that
11 in there.

12 MR. MICHELSON: Now that they're working on the
13 rule, now today, maybe they haven't changed anything yet,
14 but not in the 18 month terms and I think they were trying
15 to say, yeah, as soon as we see a reason for a change, we'll
16 make it. So, I think they are working on the rule in this
17 18 month period.

18

19 MR. SIESS: Tom, in Insert A on Page 4, can you
20 find that. It's a page all by itself.

21 MR. KING Yes.

22 MR. SIESS: You still think that first sentence is
23 necessary "In addition the Commission will continue to
24 enforce existing requirements related to management."

25 MR. KING: I made a note--

1 MR. SIESS: It would be a much stronger paragraph
2 if you simply started off with the next sentence.

3 MR. KING: I made a note here--we'll discuss that
4 after the meeting. It may not be necessary.

5 MR. SIESS: You want to say, "In addition to
6 continuing to enforce..." God forbid. "...we will go ahead
7 and do..." something.

8 MR. KING: It's probably a better way to state
9 that.

10 DR. REMICK: Moving right along.

11 MR. KING: My 10 minutes is up.

12 MR. CARROLL: I thought you had a short
13 presentation today.

14 MR. MICHELSON: Short presentation and 50 minutes
15 of questions.

16 MR. KING: The last page of the over view. The
17 licensees actions that are talked about in the Policy
18 Statement.

19 We expect them to continue improvement in the
20 maintenance area and, in particular, the implementation of
21 maintenance programs. That is the weak area that the
22 Maintenance Team Inspections are showing.

23 We encourage them to document their commitments
24 for improvement, encourage New Market INPO to exercise
25 leadership across the industry in affecting improvement.

1 We encourage them to participate in the
2 developments and voluntary adoption of the standard.
3 Whether that is working with us on our REG GUIDE or whether
4 it is proposing their own standard to be endorsed in a REG
5 GUIDE or proposing their own standard that they would just
6 voluntarily adopt without having it in a REG GUIDE.

7 All of those options are available under the
8 Policy Statement.

9 We encourage them to continue to develop and use
10 maintenance performance indicators, to improve their
11 participation in and the use of NPRDS, particularly the
12 timely reporting and use of the data.

13 And to insure that their maintenance programs
14 encompass all systems, structures and components whose
15 failure could significantly impact safety or security.

16 One of the wording changes we talk about on the
17 next page, is a little different set of wording when it
18 comes to scope.

19 And the last page is to just talk about the four
20 major changes that were made to the Policy Statement, from
21 the version you saw at the September full Committee meeting.

22 The first one is to add some words in to
23 acknowledge that the industry and licensees have improved,
24 the fact that there are some licensees with acceptable
25 programs. It came from discussions with you at the

1 September full committee meeting. It was a good idea and we
2 added some words in.

3 The second one deals with the enforcement question
4 that we already talked about. The paragraph has been
5 revised to talk about the escalating factor. That came from
6 OEN-CRGR Meeting.

7 The third one, it's a one word change on the
8 paragraph that deals with NPRDS. A change enhanced to
9 improve. The idea is that there are already existing
10 commitments from the industry to expand NPRDS, add some more
11 balance to the plant and so forth.

12 We wanted to make it clear that the policy
13 statement was talking about more timely reporting and use of
14 the data and not adding more stuff to it.

15 MR. CARROLL: You're satisfied with what they have
16 agreed to add

17 MR. KING: Perhaps AEOD wants to mention that, but
18 as I understand it, we're satisfied with their adding more
19 balance of plant equipment to NPRDS.

20 MR. CARROLL: That must be your definition of how
21 far one needs to go in the balance of plants.

22 MR. KING: Not my definition.

23 MR. CARROLL: Is it AEOD's?

24 Obviously if you want the scope of the program to
25 be this big, you ought to get NPRDS to be the same size.

1 MR. KING: NPRDS doesn't cover every piece of
2 equipment in the plant.

3 MR. CARROLL: I know that.

4 MR. KING: And even on a given system--on the
5 safety system, I don't believe it covers every piece of
6 equipment on that particular system. It's a selected set of
7 pre-set items.

8 MR. MORRIS: Tom, I don't know whether it would be
9 useful--I don't know whether this has been presented. I
10 thought that recently you heard a presentation from AEOD
11 about the performance indicators, but they have this program
12 to develop an improved indicator and I think that their
13 assessment has been that their pretty much on track. But
14 they're here to talk to that in more detail if you would
15 like to hear it to hear it.

16 MR. CARROLL: My understanding was that NPRDS and
17 INPO had agreed that they were going to put in main steam
18 and feedwater and drop it there.

19 If I read the scope in Insert B, it sounds like
20 instead of that, it's everything that I talked about in my
21 FSAR. That would be Page 15--

22 MR. MORRIS: Toward the Maintenance Program.

23 MR. CARROLL: Yes

24 MR. MORRIS: There are two different things. The
25 NPRDS data collection does not have to be as extensive as

1 you might envision the maintenance program.

2 MR. CARROLL: How are you going to judge how well
3 you're doing?

4 MR. MORRIS: You might make a judgment that some
5 parts of that plant would require little tracking of
6 component reliability data such as is coming out of the
7 NPRDS System because you can make a judgment about relative
8 significance that it would have on plant safety.

9 MR. CARROLL: I thought that one of the concepts
10 that you had was that I have to track the performance of all
11 these components or systems and feed that back into my
12 maintenance programs somehow or other.

13 MR. MORRIS: No. If you went back and looked at
14 the Regulatory Guide, what we said was that we would expect
15 the licensee to make a judgment about the importance of
16 equipment in his plant and make the selection of some of
17 that equipment for tracking, using NPRDS type data.

18 And we would not necessarily say that happens to
19 all the equipment in the plant. It is to be selected.

20 MR. CARROLL: Okay.

21 MR. MORRIS: I think, if AEOD would like to, they
22 can--they are making some judgments about relative
23 importance in the process of how they formulate that data.

24 MR. CARROLL: I think you have satisfied me.

25 MR. KING: And the last change was in the area of

1 scope. The policy statement you saw in September had a
2 general statement on systems structures and components whose
3 failure could significantly affect safety.

4 We have gone back to the Policy Statement and put
5 in the same definition that we have in the draft REG GUIDE
6 concerning the scope, tying it to what is in the plant,
7 system structures and components and the plant's licensing
8 basis as defined by the FSAR and the other documents
9 required by 5034.

10 DR. REMICK: What was in it before?

11 MR. KING: This is an attempt to be a little more
12 specific, to say it's the things that are in the FSAR that
13 we're talking about, not a general statement that I think
14 was broader in the older one.

15 DR. REMICK: So the only thing here limiting this
16 is significantly affecting safety or security, is that--

17 MR. KING: Yes and the "significantly" allows some
18 judgment factor on whether everything described in the FSAR
19 needs to go in or not.

20 Certainly things that are not described in the
21 FSAR would be excluded.

22 DR. REMICK: Would be excluded, you feel?

23 MR. KING: Yes.

24 DR. REMICK: What about the security system?

25 MR. KING: 5034 requires a security plan.

1 DR. REMICK: Right.

2 MR. KING: And then there is some miscellaneous
3 editorial changes which, although you will see some word
4 changes, the intent was just to say the same thing, but say
5 it in a better fashion. I wasn't going to go over all of
6 those. These were the four major areas where there were
7 changes.

8 DR. REMICK: I don't know how to better define it,
9 but it seems to be that is going to open up a lot of
10 differences, region to region, inspector to inspector on
11 what could significantly affect safety or security.

12 MR. KING: It certainly opens it up for some
13 judgment involved.

14 MR. MICHELSON: Tom, that licensing basis is more
15 than that described in the FSAR. At least another part of
16 the staff was in on October 3rd to explain some problems
17 with motor operated valves and their definition of the
18 licensing basis for a motor operated valve goes well beyond
19 FSAR content.

20 It is essentially, as I understood it, it's any
21 document in which a licensee made a commitment to the
22 Commission to do something or provide something and it isn't
23 always in the FSAR.

24 So, if I made a commitment to provide a fire
25 protection system for a plant, I guess that will be under

1 the maintenance program too?

2 MR. CARROLL: Except Carl, everybody now has the
3 requirement of updating their FSAR and--

4 MR. MICHELSON: Once we get it updated, maybe it
5 will again become the single document that I go to but
6 right now it appears one goes well beyond it and there are a
7 lot of systems that aren't described much in an FSAR, but
8 are described--commitments are made in letters and those
9 commitments are part of your licensing design basis, by
10 their definition, at least.

11 MR. KING: Yes, I think that's true.

12 I think, in the FSAR up grade process it's
13 supposed to take place every year.

14 MR. MICHELSON: Well sometimes it's even hard to
15 put your hands on the licensing design basis because it's in
16 so many different places.

17 MR. MORRIS: I believe that and I think we would
18 have to get back to you on this, but I believe that as those
19 commitments are made and they are formal commitments, and as
20 part of the license, I believe, they are essentially
21 considered as a part of the FSAR eventually.

22 MR. MICHELSON: Maybe they are, but they don't
23 appear in the document.

24 MR. MORRIS: They'll be referenced in there by
25 amendments in the back and held somewhere else.

1 MR. MICHELSON: They will all come in by reference
2 sooner or later.

3 We should expand that to say, what is covered in
4 license commitments, I think, in addition to the FSAR
5 perhaps.

6 It that would be a better term to capture what is
7 meant, but in the sense that you're talking about it--I
8 think what we had in mind here was that the FSARs have been
9 developed to consider, essentially the whole plant in some
10 way, to be sure that you have captured all the events that
11 could have an impact on safety.

12 You probably described the ones that are the most
13 significant in that regard and some of those that are
14 balance of plant systems that are not considered to be
15 safety related in the more legal concept of what that term
16 means, but they are there described.

17 And so that was our way of trying to get at this
18 without having a long laundry list of different kinds of
19 components.

20 MR. MICHELSON: Just as an example then, would the
21 fire protection system come under this maintenance program?

22 MR. KING: Yes. At least in the modern FSARs they
23 are described.

24 MR. MICHELSON: Well commitments are made in
25 several different places for providing fire protection and I

1 would assume that it comes under any requirements for a
2 maintenance program.

3 MR. CARROLL: Just out of curiosity, is the FSAR
4 annual update a requirement of all licensees or just fairly
5 recent plants? Does everybody have to--

6 MR. KING: It's all, isn't it?

7 MR. MICHELSON: Is that annual update considered
8 to be comprehensive then and if I just read the annual
9 update, I got everything I need to know about commitments
10 for the plant or do I still have to look anywhere else?

11 MR. LUEHMAN: As Mr. Morris said, I think one of
12 the things is that the licensees probably, in that annual
13 updating incorporate a lot of things by reference. You
14 would probably have to go and look at the reference

15 MR. MICHELSON: I assume the references become a
16 part of the FSAR you're saying.

17 So if it's in there, either in the body of the
18 FSAR or by reference, then I have seen the full spectrum of
19 the design basis commitment.

20 Is that the intention, at least?

21 MR. MORRIS: That's the intention. I don't think I
22 could be literal in affirming that that is exactly the way
23 it--

24 MR. MICHELSON: It may not have happened, but that
25 was--

1 MR. MORRIS: I would have to go back to see just
2 how the legality of it works.

3 DR. REMICK: Bill.

4 DR. KERR: On Page 3 of the REvised Policy
5 Statement, the marked up versicn, there appears, at the
6 beginning of the second paragraph, "In consideration of the
7 above, the Commission expects each licensee to assume
8 responsibility for improving maintenance at their facilities
9 such that an acceptable maintenance program is developed,
10 implemented and maintained.

11 One could draw two conclusions from that and I
12 wonder if either is warranted.

13 First that no licensee now has an acceptable
14 program and two - that there is some standard for judging
15 an acceptable maintenance program.

16 Is either of those conclusions warranted

17 MR. KING: The first one is not warranted. We
18 tried to say up above that, in an indirect way, that there
19 were some licensees with acceptable maintenance programs.
20 Maybe we ought to clarify that down here as well.

21 I think your second point, is there a standard to
22 judge an acceptable maintenance program. I think that's
23 what we're working on. I think that is one of the--

24 DR. KERR: So by the time this is released, there
25 will be a way of telling when a program is acceptable?

1 MR. KING: I'm not sure, by the time this is
2 released. But one of the actions that we talk about in here
3 is to work on such a standard.

4 DR. KERR: So, at this point, licensees who get
5 the policy statement won't know what their goal is, but each
6 will assume that he must improve.

7 MR. MORRIS: Maybe we could clarify that at this
8 time the licensees have what are called--I think they're in
9 the instructions for the Maintenance Team Inspections, and
10 the Maintenance Team Inspections have not all been carried
11 out yet, so we haven't yet gone through a complete cycle
12 with those instructions, but right now that is the closest
13 thing we have to a standard.

14 Our regulatory guide that we developed was derived
15 from those instructions. So it is intended to map those and
16 we also believe there are many common elements between those
17 elements between those instructions and the INPO guidelines.

18 The INPO guidelines have not been formally
19 presented as a referencable standard. They are the
20 proprietary property of INPO and so I think the closest
21 thing to a standard, that we have today, is the Maintenance
22 Team Inspection Instruction.

23 DR. KERR: Suppose I take the Maintenance Team
24 Instructions, which I have not seen and don't want to see,
25 but from that it would be easy to determine what are the

1 constituent or whether your maintenance program is adequate
2 or not. That's a conclusion that I should draw?

3 MR. GODI: Right. Tony Godi, NRR. Yes. That is
4 what we are inspecting utilities against right now. We have
5 prepared instructions. That is what the licensees are--

6 DR. KERR: And at the end of the inspection you
7 tell the utility, your maintenance is or is not acceptable?

8 MR. GODI: Right. You tell them whether it's
9 good, satisfactory or poor.

10 DR. KERR: But that is not--I didn't hear the term
11 acceptable in any of those. A poor one might be acceptable
12 for all I know.

13 Do you tell them that the program is or is not
14 acceptable?

15 MR. GODI: You telling them it's good or
16 satisfactory, implies that it's acceptable.

17 MR. LEWIS: The statement, as proposed, does not
18 include the possibility that it is acceptable because it
19 says that each licensee has to commit himself to timely
20 specific and measurable improvement.

21 It's very very clear that nothing presently
22 existing is acceptable for any licensee,

23 MR. GODI: And that is not what it's meant to say.

24 MR. LEWIS: That's what it says.

25 MR. GODI: I know that.

1 MR. LEWIS: Okay. But that will be changed.

2 MR. KING: We'll fix that up. There are some out
3 there that are considered acceptable on the Maintenance Team
4 Inspections.

5 DR. KERR: Of those that have been inspected, do
6 you remember how many were considered acceptable?

7 MR. KING: What was it--25 percent or something?

8 MR. GODI: 33 sites have been visited with 2 sites
9 not being acceptable, as far as their implementation of
10 their program in the plant. One site not having a--had a
11 poor plan.

12 So only 3 licensees did not meet up to the--

13 DR. KERR: So 30 of the 33 had acceptable
14 programs?

15 MR. GODI: Absolutely, yes.

16 DR. KERR: Without any Commission guidance?

17 MR. GODI: Oh, I wouldn't say that. It was the
18 usual closing statement.

19 DR. KERR: Okay.

20 MR. MICHELSON: They have the guidelines, if I
21 understand it, also--the inspection guidelines.

22 MR. MORRIS: And furthermore I think what you have
23 hit on is a word that we probably could improve upon, taking
24 out the word, "improving" might help. Because, in some
25 cases, they may simply need to maintain an existing

1 acceptable level.

2 So why don't we just take it as a recommendation
3 and we will change that wording.

4 MR. CARROLL: On that--if we're finished with that
5 subject, on that same page, I learned that the Commission is
6 concerned that some licensees still maintain a "run to
7 failure" philosophy where additional emphasis on preventive
8 and predictive maintenance would be more appropriate.

9 Does that tell me I should change light bulbs, for
10 example before they burn out?

11 MR. KING: No, that's not intended to say that.
12 There are certainly some things where corrective maintenance
13 is the appropriate maintenance. This isn't intended to make
14 that fine a distinction.

15 It's more of a looking at the broad picture of how
16 much preventive maintenance or corrective maintenance, how
17 many unplanned outages and so forth are taking place and
18 could you do better by changing that balance.

19 MR. SIESS: Tom, it says some plants or some
20 licensees. Do you know which ones they are?

21 MR. KING: I imagine if we went back with a Team
22 Inspection, we could make a cut as to who those are.

23 MR. SIESS: Do you know how many there are?

24 MR. KING: Do you know off hand, Tony?

25 MR. GODI: No, not off hand. As I said, 3

1 licensees did not do too well with the inspections.

2 MR. SIESS: Three licensees out of how many?

3 MR. GODI: 33.

4 MR. SIESS: Why don't you go beat on them?

5 You're tarring the whole cock-eyed bunch with the
6 same brush

7 MR. MORRIS: We are, by the way.

8 MR. LEWIS: Good.

9 MR. MICHELSON: But they're still going to tar the
10 rest of them.

11 MR. LEWIS: Fair regulation.

12 DR. REMICK: Tom, anything more from the staff?

13 MR. KING: No. That's all I have.

14 DR. REMICK: Where do we stand, Carl?

15 MR. MICHELSON: Well, I hoped that we would go
16 back to doing another reading which would be Draft 5 of the
17 letter, if there are no other questions.

18 But, I believe we have run out of the time
19 allotted for this subject, so we probably should defer
20 reading until sometime later.

21 DR. REMICK: Any further questions of the staff
22 before they leave?

23 (No response.)

24 DR. REMICK: Thank you Tom, you and your
25 associates, for coming down.

1 We have 20 more minutes, Carl. It's 4:45.

2 MR. MICHELSON: Oh, I thought it was 4:30. We got
3 until 4:45.

4 Then we can do one reading of Draft 5.

5 Just to remind the committee--

6 DR. REMICK: This does not need to be recorded and
7 so we will go off the record.

8 (Whereupon, at 4:30 p.m., the subcommittee
9 went off the record, to reconvene at 8:30
10 a.m., Friday, September 6, 1989.)

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CERTIFICATE

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

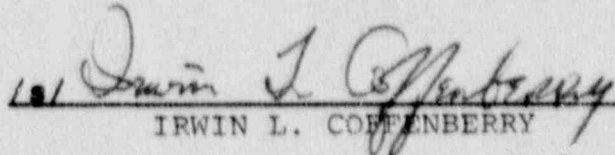
Name: 354th ACRS

Docket Number:

Place: Bethesda, Md.

Date: Thursday, October 5, 1989

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


IRWIN L. COFFENBERRY

(Signature typed):

Official Reporter

Heritage Reporting Corporation

CERTIFICATE

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

Name: Advisory Committee on Reactor Safeguards, 354th General Meeting

Docket Number:

Place: Bethesda, Maryland

Date: October 5, 1989

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

Catherine S. Boyd

(Signature typed): Catherine S. Boyd

Official Reporter

Heritage Reporting Corporation

GENERIC ISSUE 135

STEAM GENERATOR & STEAM LINE OVERFILL ISSUES

PRESENTATION

TO

ACRS

OCTOBER 5, 1989

NRC STAFF - RES/DSIR/EIB

A. NOTAFRANCESCO, TASK MANAGER

R. BAER, CHIEF

D. THATCHER, SECTION LEADER

(20x) CONTRACTOR STAFF

R. NEVE, SCIENTECH, INC.

G. VAN SICLEN, SCIENTECH, INC.

BACKGROUND OF GI-135

- o TO INTEGRATE VARIOUS ACTIVITIES
RELATED TO STEAM GENERATOR ISSUES

- o EMPHASIS ON SGTR EVENTS

- o USI A-3, 4, 5 (STEAM GENERATOR
TUBE INTEGRITY); NUREG-0844
GI-66 INDUSTRY ACTIONS
GI-67 STAFF ACTIONS

- o GI-135 - ADDRESSES 14 SUB-ISSUES
DERIVED FROM GI-67

OBJECTIVE OF GI-135

- o TO PROVIDE BASES FOR STAFF TO DEVELOP A POSITION ON OFFSITE DOSES, OPERATOR ACTION TIME, AND SG TUBE INTEGRITY

- o WORKSCOPE DIVIDED INTO 4 TASKS:

TASK 1. REVIEW CURRENT INDUSTRY PROCEDURES AND ASME CODE REQUIREMENTS FOR EDDY CURRENT TESTING, DEVELOP REGULATORY GUIDANCE (67.7.0)

TASK 2. PROPOSE CHANGES TO SRP SECTION 15.6.3, IF WARRANTED (67.5.1, 67.5.2)

TASK 3. REASSESS REMAINING ISSUES OF GI-67

TASK 4. REVIEW EFFECTS OF WATER IN STEAM LINES (INCLUDING WATER HAMMER, SAGGING) AND DEVELOP PROPOSAL FOR MITIGATING THE CONSEQUENCES

- o SCIENTECH WAS AWARDED TECHNICAL CONTRACT

RESOLUTION OF GI-135

- o SCIENTECH PRODUCED A TECHNICAL FINDINGS REPORT
 - NO NEW SAFETY REQUIREMENTS ARE WARRANTED
 - SOME SUB-ISSUES ARE BEING PURSUED, RESULTS MAY AFFECT SRP 15.6.3 AND R.G.s 1.83 AND 1.121
- o CLOSE-OUT GI-135 WITH TECHNICAL FINDING REPORT



**ACRS PRESENTATION ON THE
TECHNICAL FINDINGS REPORT
FOR GENERIC ISSUE 135
STEAM GENERATOR AND STEAM LINE OVERFILL ISSUES**

**PREPARED FOR THE
U.S. NUCLEAR REGULATORY COMMISSION**

SCIENTECH, INC.

OCTOBER 1989



BACKGROUND

GI 135 was initiated in 1986 to integrate current generic issue activities on steam generator and steam line integrity.

Four tasks were defined to determine the actions required to resolve GI 135:

- 1. Assess the adequacy of eddy current testing.**
- 2. Review studies on steam generator tube rupture; propose mods to SRP Section 15.6.3; develop reg. analysis supporting SRP changes.**
- 3. Reassess pending, low priority subissues formerly handled in GI 67.**
- 4. Review effects of water hammer, overflow, and water carryover in secondary and connecting systems; develop a proposal for mitigating strategies.**



GI 135 SCOPE

<u>GI 135 Task #</u>	<u>GI 67 Subissue #</u>	<u>Staff Action</u>	<u>Report Section</u>
1	67.7.0	Improved Eddy Current Tests	6.1
2	67.5.1	Reassessment of Radiological Consequences	3.
	67.5.2	Reevaluation of SGTR Design Basis	3.
3	67.2.1	Integrity of Steam Generator Tube Sleeves	6.3
	67.3.3	Improved Accident Monitoring	4.1
	67.3.4	Reactor Vessel Inventory Measurement	4.2
	67.4.1	Reactor Coolant Pump Trip	4.3
	67.4.2	Control Room Design Review	4.4
	67.4.3	Emergency Operating Procedures	4.5
	67.6.0	Organizational Responses	4.6
	67.8.0	Denting Criteria	6.4
	67.9.0	RCS Pressure Control	4.7
	67.10.0	Supplemental Tube Inspections	6.2
4	67.3.1	Steam Generator Overfill	5.



METHODOLOGY

Each subissue was evaluated using the following guidelines:

- **Reassess whether the identified scope of work adequately addresses the subissue.**
- **Determine whether sufficient work has been done on the subissue to consider it resolved.**
- **Determine whether the subissue has been or should be incorporated into another generic or unresolved safety issue for resolution.**



DETAILED RESULTS

Resolution of GI 135 Subissues

<u>Subissue</u>	<u>Resolution</u>
Integrity of Steam Generator Tube Sleeves (67.2.1)	Regulatory Impact Issue (Inactive)
Steam Generator Overfill (67.3.1)	RESOLVED, small risk
Improved Accident Monitoring (67.3.3)	RESOLVED, MPA A-17
Reactor Vessel Inventory Measurement (67.3.4)	RESOLVED, MPA F-26
Reactor Coolant Pump Trip (67.4.1)	RESOLVED, MPA G-01
Control Room Design Review (67.4.2)	RESOLVED, MPA F-08
Emergency Operating Procedures (67.4.3)	RESOLVED, MPA F-05
Reassessment of Radiological Consequences (67.5.1)	Licensing Issue (Active) ¹
Reevaluation of SGTR Design Basis (67.5.2)	Licensing Issue (Active) ¹
Organizational Responses (67.6.0)	TMI Action Plan Item III.A.3
Improved Eddy Current Tests (67.7.0)	Pursued Independently ²
Denting Criteria (67.8.0)	Regulatory Impact Issue (Inactive)
Reactor Coolant System Pressure Control (67.9.0)	RESOLVED, MPAs F-04, F-05, and F-14
Supplemental Tube Inspections (67.10.0)	Licensing Issue (Active) ²

Notes: 1. Being investigated outside of GI 135 under numbers 67.5.1 and 67.5.2.

2. Being pursued outside of GI 135 under new draft Regulatory Guides 1.83 and 1.121.



SUMMARY OF RESULTS

EIGHT OF THE 14 SUBISSUES ARE CONSIDERED RESOLVED.

FOUR ARE BEING PURSUED WITHIN THE NRC AS SEPARATE SUBISSUES.

TWO ARE OF LITTLE SAFETY SIGNIFICANCE AND HAVE BEEN DESIGNATED AS REGULATORY IMPACT ISSUES.



SUBISSUES OF GI 135 THAT ARE CONSIDERED RESOLVED

- 67.3.3 Improved Accident Monitoring**
MPA A-17: (Instrumentation to Follow the Course of an Accident)
- 67.3.4 Reactor Vessel Inventory Measurement**
MPA F-26: (TMI Action Plan Item II.F.2, Instrumentation for Detection of Inadequate Core Cooling)
- 67.4.1 Reactor Coolant Pump Trip**
MPA G-01: (TMI Action Plan Item II.K.3.5, Automatic Trip of Reactor Coolant Pumps)
- 67.4.2 Control Room Design Review**
MPA F-08: (TMI Action Plan Item I.D.1, Control Room Design Reviews)
- 67.4.3 Emergency Operating Procedures**
MPA F-05: (TMI Action Plan Item I.C.1, Short Term Accident Analysis and Procedures Revision)

(continued)



SUBISSUES OF GI 135 THAT ARE CONSIDERED RESOLVED

(continued)

- 67.6.0 Organizational Responses
TMI Action Plan Item III.A.3, Improving NRC Emergency
Preparedness**

- 67.9.0 Reactor Coolant System Pressure Control
MPA F-04, MPA F-05: (TMI Action Plan Item I.C.1 Short Term
Accident Analysis and Procedures Revision)
MPA F-14: (TMI Action Plan II.D.1, RCS Relief and Safety Valve
Testing Requirements)**

- 67.3.1 Steam Generator Overfill
[to be discussed later]**



SUBISSUES OF GI 135 THAT ARE BEING INVESTIGATED INDEPENDENTLY

Two subissues are being pursued independently and are no longer considered part of GI 135:

67.5.1 Reassessment of Radiological Consequences

67.5.2 Reevaluation of SGTR Design Basis

Two subissues are being addressed as part of the effort to develop revisions of Regulatory Guides 1.83 and 1.121. They are no longer considered part of GI 135:

67.7.0 Improved Eddy Current Tests

67.10.0 Supplemental Tube Inspections



SUBISSUES OF GI 135 THAT ARE PRIORITIZED AS REGULATORY IMPACT ISSUES

Two subissues of GI 135 are of little safety significance and have been designated as regulatory impact issues. They are no longer considered part of GI 135:

- 67.2.1 Integrity of Steam Generator Tube Sleeves**
- 67.8.0 Bending Criteria**



STEAM GENERATOR OVERFILL

(67.3.1)

DEFINITION:

Steam generator overfill occurs when the steam generator is overfed (addressed by USI A-47) or otherwise filled with water (e.g., tube rupture) to the extent that water (in the liquid state) enters the main steam line.

SAFETY SIGNIFICANCE:

Overfill was considered a safety concern since water entering the main steam line could potentially lead to steam safety valve or relief valve failure as well as steam line breaks and associated mechanical and thermal shock leading to tube ruptures and radiological releases.



OPERATIONAL EXPERIENCE

FREQUENCY

- **Overfills have occurred infrequently (4 events in U.S. PWRs during 1980-88, 1 in the 1970's).**
- **Tube ruptures are infrequent because tubes generally leak before breaking, and the leaks are detected and repaired before the problem is serious.**
- **The overfill at Ginna of 1/25/82 was caused by a tube rupture. There was only minor damage to supports, and no significant radiological consequences.**

(continued)



OPERATIONAL EXPERIENCE

(continued)

CONSEQUENCES

- **Overfills have resulted in little if any damage to systems or piping.**
- **Overfills have been of only minor safety concern.**



ANALYSIS

STEAM SYSTEM INTEGRITY

- **Analysis indicates that some spring hangers may be loaded beyond specification due to deadweight loading but that they will not fail.**
- **Because the water in the steam lines is at saturation temperature and pressure, the potential for failure due to condensation-induced water hammer is small.**
- **Westinghouse reactor studies indicated that for typical piping configurations there is no potential for water hammer to occur in the damaged steam generator and associated steam line, and that loading on the safety relief valve would not be excessive during an overfill transient.**

(continued)



ANALYSIS

(continued)

RISK ANALYSIS

- The tube rupture event has a frequency of occurrence of $1.5E-2/RY$.
- Risk assessment studies indicate that the frequency of core melt due to steam generator tube rupture ranges from $2E-6/RY$ to $5E-6/RY$ (a small fraction of the overall frequency of core melt).



CONCLUSIONS ON OVERFILL

- **Although overflow is possible anytime in recovery from a tube rupture, recovery from the tube rupture can be managed to minimize overflow and its consequences. Prevention and mitigation of overflow are largely a factor of how well the operator is trained to recognize the potential for overflow and how well he follows normal and emergency procedures.**
- **Tube ruptures and associated overfills have occurred infrequently; tubes tend to leak before breaking.**
- **Operational experience and plant-specific analyses show that static effects of steam line flooding can cause displacement and minor damage to supports. This is of little safety significance and therefore does not represent a steam line integrity concern.**
- **Examination of operational experience and associated data bases has established that little or no steam line damage has occurred as a result of steam line flooding. There is recorded evidence of steam line movement but without significant resultant damage to the steam system.**



CONCLUSIONS AND RECOMMENDATIONS

BECAUSE ALL SUBISSUES OF GI 135 EITHER:

- **ARE RESOLVED,**
- **ARE BEING PURSUED INDEPENDENTLY OF GI 135,
OR**
- **HAVE BEEN DESIGNATED AS REGULATORY IMPACT
ISSUES,**

**IT IS RECOMMENDED THAT GI 135 BE CONSIDERED
RESOLVED.**

ADEQUATE PROTECTION

AND

SAFETY GOALS

R. W. HOUSTON, RES
OCTOBER 5, 1989
ACRS MEETING

CURRENT STATUS - CASE BY CASE FINDING - NO DEFINITION

IMPLICATIONS FROM THE SAFETY GOAL POLICY STATEMENT

STAFF POSITION - REQUEST FOR COMMISSION DIRECTION

STAFF UNDERSTANDING OF ACRS VIEW

CHARACTERIZATION IN SECY-89-102

CURRENT UNDERSTANDING

DIFFERING VIEWS ON USE OF COST-BENEFIT

STAFF

ACRS

NEED FOR HARMONIZING SAFETY GOAL POLICY

WITH BACKFIT POLICY

OTHER ATTRIBUTES FOR IMPLEMENTING SAFETY GOAL POLICY

HIERARCHY OF OBJECTIVES

LARGE RELEASE DEFINITIONS

CONTAINMENT PERFORMANCE

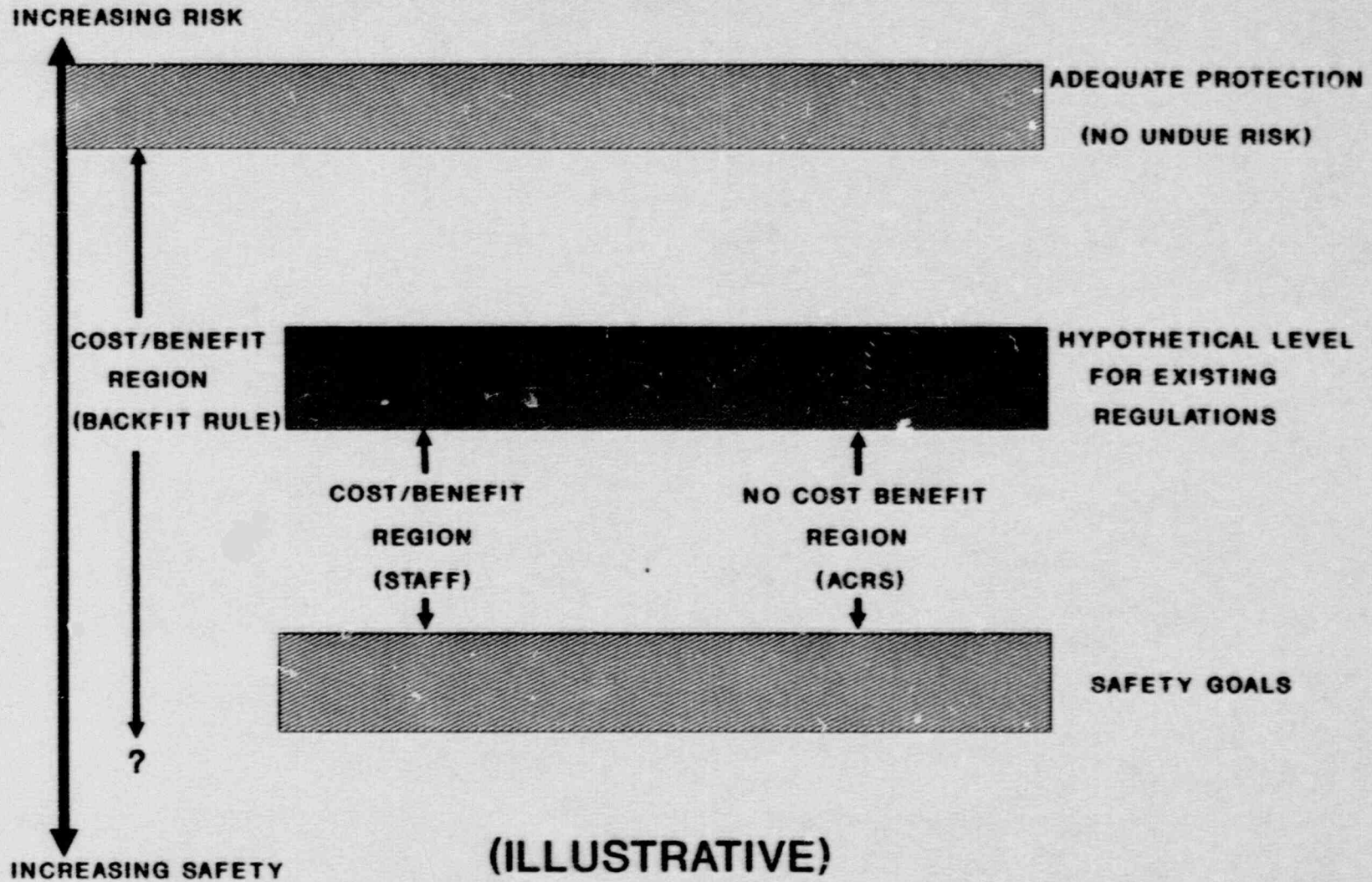
HOW WELL A PLANT IS OPERATED

APPLICATION OF SAFETY GOAL POLICY

PRESENT PLANTS

FUTURE PLANTS

ACRS AND STAFF VIEWS ON ADEQUATE PROTECTION IN RELATION TO SAFETY GOALS



ACRS PRESENTATION ON
IMPACT OF FY90
BUDGET REDUCTION
OCTOBER 5, 1989

By Beckford
#1

RES FY1990 APPROPRIATIONS REDUCTION
(DOLLARS IN THOUSANDS)

MISSION AREA: NUCLEAR SAFETY RESEARCH

<u>PROGRAM</u>	<u>FY1990 REQUEST</u>	<u>REDUCTION</u>	<u>FY1990 REVISED</u>
INTEGRITY OF REACTOR COMPONENTS	\$33,125	- \$5,470	\$27,655
PREVENTING DAMAGE TO REACTOR CORES	\$22,050	- \$6,000	\$16,050
REACTOR CONTAINMENT PERFORMANCE	\$28,875	- \$6,550	\$22,325
CONFIRMING THE SAFETY OF LOW LEVEL WASTE DISPOSAL	\$2,150	- \$480	\$1,670
RESOLVING SAFETY ISSUES AND DEVELOPING REGULATIONS	\$16,800	- \$1,100	\$15,700
SUBTOTAL	\$103,000	\$19,600	\$83,400

MISSION AREA: HIGH LEVEL NUCLEAR WASTE
REGULATION

<u>PROGRAM</u>	<u>FY1990. REQUEST</u>	<u>REDUCTION</u>	<u>FY1990 REVISED</u>
CONFIRMING THE SAFETY OF HIGH LEVEL WASTE DISPOSAL	\$5,000	- \$400	\$4,600
TOTAL	\$108,000	\$20,000	\$88,000

* THIS ACCOMMODATES \$3.3M FOR RESEARCH AND TECHNICAL ASSISTANCE
TO DEVELOP REACTOR LICENSE RENEWAL REGULATIONS PURSUANT TO SECY-89-275.

RES IMPACTS OF FY1990 APPROXIMATIONS REDUCTION
(DOLLARS IN THOUSANDS)

<u>PROGRAM/PROGRAM ELEMENT</u>	<u>FY1990 REQUEST</u>	<u>REDUCTION AMOUNT</u>	<u>IMPACT</u>
<u>INTEGRITY OF REACTOR COMPONENTS</u>	\$33,125	- \$5,470	
- REACTOR VESSEL AND PIPING INTEGRITY	\$15,600	- \$2,085	(THIS IS A COMBINATION OF PLUSES AND MINUSES) O DELAYS PTSE-3 AND PTSE-4 O DEFERS RESEARCH OF CYCLIC CRACK GROWTH RATE OF VESSEL AND PIPING STEELS O ELIMINATES MOST FUNDING FOR RESEARCH ON INITIAL FLAW DISTRIBUTION IN PRESSURE VESSELS O REDUCES EVALUATION OF SHIPPINGPORT COMPONENTS AND MATERIALS O REVIEW INDUSTRY REPORTS ON PWR AND BWR RPV'S RPV INTERVALS AND NDE ISSUES. PREPARE RG'S FOR REVIEW OF LICENSE RENEWALS
- AGING OF REACTOR COMPONENTS	\$8,375	- \$885	(THIS IS A COMBINATION OF PLUSES AND MINUSES) O REDUCES BY 20% AGING DEGRADATION ASSESSMENTS FOR ELECTRICAL-MECHANICAL COMPONENTS AND SYSTEMS O START DEVELOPING THE REGULATORY IMPACT AND COST ANALYSES PORTIONS OF RG'S ON AGING RELATED ISSUES THAT MUST BE ADDRESSED IN LICENSE RENEWAL APPLICATIONS
- ENGINEERING STANDARDS DEVELOPMENT	\$1,000	- \$400	O REDUCES CONTRACTOR ASSISTANCE IN STDS DEVELOPMENT TO ASME BOILER AND PRESSURE VESSEL CODE, SECTION III
- SEISMIC AND STRUCTURAL RESEARCH	\$8,150	- \$2,100	O DELAYS FOR ONE YEAR STUDIES ON EARTHQUAKE CAUSAL MECHANISMS AND PREHISTORIC EARTHQUAKE OCCURRENCES O ELIMINATES RESEARCH FOR REVIEW OF ASME PIPING DESIGN CRITERIA CHANGES O DELAYS COOPERATIVE EFFORT WITH JAPAN ON SEISMIC RESPONSE OF STRUCTURES ON SOIL SITES

RES IMPACTS OF FY1990 APPROPRIATIONS REDUCTION (CONT.)
(DOLLARS IN THOUSANDS)

<u>PROGRAM/PROGRAM ELEMENT</u>	<u>FY1990 REQUEST</u>	<u>REDUCTION AMOUNT</u>	<u>IMPACT</u>
<u>PREVENTING DAMAGE TO REACTOR CORES</u>	\$22,050	- \$6,000	
- PLANT PERFORMANCE	\$5,200	- \$3,350	<ul style="list-style-type: none"> o \$1,600 CAN BE REDUCED WITH NO IMPACT BECAUSE NRC WILL NOT ENTER INTO A COOPERATIVE RESEARCH PROJECT WITH B&WOG o TERMINATES EXPERIMENTS TO CONFIRM OTSG SCALING ASSUMPTIONS FOR CERTAIN TRANSIENTS o TERMINATES TECHNICAL ANALYSIS FOR SUGGESTED TESTS ON ACCIDENT MGMT IN ROSA IV
- REACTOR APPLICATIONS	\$5,300	- \$2,150	<ul style="list-style-type: none"> o ELIMINATES HALF OF THE BASELINE ACTIVITIES AT THE THERMALHYDRAULICS TECHNICAL SUPPORT CENTER o TERMINATES WORK ON THERMALHYDRAULIC ANALYSIS OF CANDU REACTORS FROM POINT OF VIEW OF NRC LICENSING CRITERIA
- HUMAN FACTORS	\$4,710	- \$200	<ul style="list-style-type: none"> o DELAYS RESEARCH ON ROLE OF SHIFT TECHNICAL ADVISOR o DELAYS RESEARCH TO INTEGRATE HUMAN AND HARDWARE RELIABILITY INTO ASSESSMENTS OF ADVANCED REACTOR DESIGNS
- RELIABILITY ASSESSMENT	\$2,840	- \$300	<ul style="list-style-type: none"> o DELAYS DEVELOPMENT OF AN OBJECTIVE BASIS FOR REGULATORY REQUIREMENTS TO MONITOR PERFORMANCE
- ACCIDENT MANAGEMENT	\$4,000	- \$0 -	

RES IMPACTS OF FY1990 APPROPRIATIONS REDUCTION (CONT.)
(DOLLARS IN THOUSANDS)

<u>PROGRAM/PROGRAM ELEMENT</u>	<u>FY1990 REQUEST</u>	<u>REDUCTION AMOUNT</u>	<u>IMPACT</u>
<u>REACTOR CONTAINMENT PERFORMANCE</u>	\$28,875	- \$6,550	
- CORE MELT AND REACTOR COOLANT SYSTEM FAILURE	\$7,677	- \$950	<ul style="list-style-type: none"> o CANCELS PLANNED CONFIRMATION OF PREDICTED NATURAL CIRCULATION INDUCED SURGE LINE FAILURE FOR STATION BLACKOUT o SLOWS WORK ON FISSION PRODUCT BEHAVIOR WITHIN THE RCS AND WITHIN CONTAINMENTS
- REACTOR CONTAINMENT SAFETY	\$11,060	- \$2,295	<ul style="list-style-type: none"> o SLOWS FURTHER DEVELOPMENT OF CORE/CONCRETE INTERACTION ANALYSIS TOOLS AND CURTAILS THE CONDUCT OF CORE/CONCRETE EXPERIMENTS o CANCELS PLANS FOR CONSTRUCTION OF THE EXPERIMENTAL FACILITY TO STUDY HIGH TEMPERATURE HYDROGEN COMBUSTION AND DETONATION IN CONTAINMENTS
- REACTOR CONTAINMENT STRUCTURAL INTEGRITY	\$2,200	- \$400	<ul style="list-style-type: none"> o DELAYS THE EXTENSION OF RESULTS OF TEST TO PRE STRESSED CONCRETE CONTAINMENTS AND DEFERS ACTIVITIES ON STRUCTURAL RESPONSE TO HYDROGEN-RELATED LOADINGS
- REACTOR ACCIDENT RISK ANALYSIS	\$7,938	- \$2,905	<p>(THIS IS A COMBINATION OF PLUSES AND MINUSES)</p> <ul style="list-style-type: none"> o DEVELOP METHODS TO QUANTIFY SOURCES OF RISK FROM EXTENDED LIFE AND RISK REDUCTION FROM FROM IMPOSITION OF REGULATORY REQUIREMENTS FOR LICENSE RENEWAL o DELAYS DEVELOPMENT AND USE OF ADVANCED PRA METHODS o REDUCES NUMBER OF PLANT RISK STUDIES AND LEVEL OF CONTRACTOR SUPPORT FOR PERFORMANCE OF THESE ANALYSES

RES IMPACTS OF FY1990 APPROPRIATIONS REDUCTION (CONT.)
(DOLLARS IN THOUSANDS)

<u>PROGRAM/PROGRAM ELEMENT</u>	<u>FY1990 REQUEST</u>	<u>REDUCTION AMOUNT</u>	<u>IMPACT</u>
<u>CONFIRMING THE SAFETY OF LOW LEVEL WASTE DISPOSAL</u>	\$2,150	- \$480	o DEFERS ABOUT 20% OF PLANNED TASKS. THIS MAY AFFECT LICENSABILITY OF SOME SITES
<u>CONFIRMING THE SAFETY OF HIGH LEVEL WASTE DISPOSAL</u>	\$5,000	- \$400	o REDUCES THE CNWRA PROGRAM. THIS IS A LIMITED IMPACT SINCE CNWRA STAFFING IS LAGGING BEHIND PROJECTED LEVELS

RES IMPACTS OF FY1990 APPROPRIATIONS REDUCTION (CONT.)
(DOLLARS IN THOUSANDS)

<u>PROGRAM/PROGRAM ELEMENT</u>	<u>FY1990 REQUEST</u>	<u>REDUCTION AMOUNT</u>	<u>IMPACT</u>
<u>RESOLVING SAFETY ISSUES AND DEVELOPING REGULATIONS</u>	\$16,800	- \$1,100	
- GENERIC AND UNRESOLVED SAFETY ISSUES	\$ 3,730	-\$50	0 RG ON CONTROL ROOM HABITABILITY WILL NOT BE ISSUED IN FY 90
- STANDARDIZED AND ADVANCED REACTORS	\$830	- \$0 -	
- FUEL CYCLE, MATERIALS, TRANSPORTATION AND SAFEGUARDS	\$725	- \$200	0 REDUCED RULEMAKING AND PETITION EVALUATION SUPPORT. SAFEGUARDS SUPPORT TERMINATED
- DEVELOPING AND IMPROVING REGULATIONS	\$6,065	- \$150	(THIS IS A COMBINATION OF PLUSES AND MINUSES) 0 LIMITS SYSTEMATIC REVIEW AND MODIFICATION OF REGULATIONS THAT ARE MARGINALLY IMPORTANT TO SAFETY 0 REDUCE SCOPE OF REVIEW OF RISK IMPORTANCE AND EFFECTIVENESS OF NRC REGULATIONS 0 REDUCE SBIR PROGRAM TO \$500K 0 PROVIDES RESOURCES FOR GEIS AND FOR REGULATORY ANALYSIS AND REGULATORY GUIDES FOR LICENSE RENEWAL
- SEVERE ACCIDENT IMPLEMENTATION	\$2,925	- \$300	0 LIMITS VALUE IMPACT ANALYSES FOR BACKFITTING REGULATORY REQUIREMENTS. IDENTIFIED IN THE CPT PROGRAM OTHER THAN BWR MK1'S 0 STUDIES OF CHANGES TO NRC POLICY AND REGULATIONS AS A RESULT OF SEVERE ACCIDENT RESEARCH WILL BE LIMITED TO SITING AND REVISION OF TECHNICAL INFORMATION DOCUMENT 148444.

RES IMPACTS OF FY1990 APPROPRIATIONS REDUCTION (CONT.)
(DOLLARS IN THOUSANDS)

<u>PROGRAM/PROGRAM ELEMENT</u>	<u>FY1990 REQUEST</u>	<u>REDUCTION AMOUNT</u>	<u>IMPACT</u>
- RADIATION PROTECTION AND HEALTH EFFECTS	\$2,525	- \$400	<ul style="list-style-type: none"> o LIMITS ABILITY TO ANALYZE NAGASAKI AND HIROSHIMA HEALTH EFFECTS DATA o TERMINATES WORK ON RADIATION PROTECTION ISSUES UNIQUE TO ADVANCED REACTOR DESIGNS

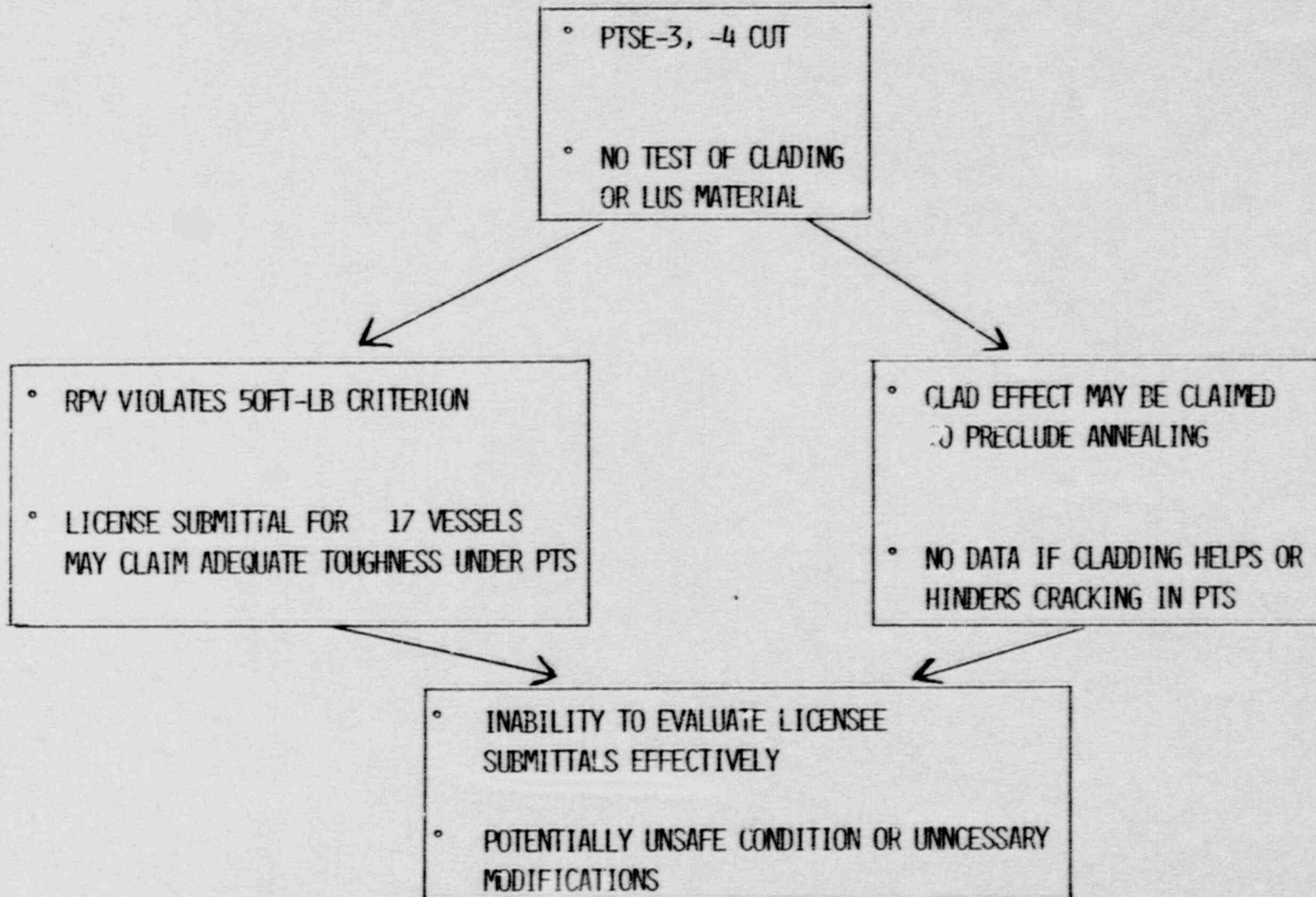
REGULATORY IMPACT OF BUDGET CUTS - FY 1990

<u>AREA</u>	<u>REGULATORY IMPACT</u>
PRESSURE VESSEL SAFETY	INABILITY TO EFFECTIVELY EVALUATE PTS LICENSE SUBMITTAL ON PTS EFFECT IN 17 LOW UPPER SHELF RPVs OR EFFECT OF CLADDING ON PTS.
PIPING INTEGRITY	INABILITY TO VALIDATE ASME CODE FLAW EVALUATION RULES FOR SHORT, REALISTIC CRACKS AND EFFECTIVELY EVALUATE LICENSEE LBB SUBMITTALS
CHEMICAL EFFECTS	ELIMINATES KEY DATA FROM DECOMMISSIONED REACTOR FOR VALIDATING RPV EMBRITTLEMENT AND REDUCES ABILITY TO EFFECTIVELY EVALUATE LICENSEE SUBMITTALS
AGING RESEARCH	- LOSS OF TIMELINESS IN DEVELOPING TECHNICAL CRITERIA FOR LICENSE RENEWAL RULEMAKING

REGULATORY IMPACT OF BUDGET CUTS - FY 1990 (CON'T)

<u>AREA</u>	<u>REGULATORY IMPACT</u>
AGING RESEARCH (CON'T)	<ul style="list-style-type: none">- INABILITY TO COMPLETELY EVALUATE LICENSE RENEWAL LEAD PLANT SUBMISSIONS- INABILITY TO MOVE TOWARD TIMELY RESOLUTION OF PENDING GENERIC SAFETY ISSUES
EARTH SCIENCES	DELAY THE REDUCTION OF SEISMIC HAZARD UNCERTAINTY THROUGH THE ACQUISITION OF PREHISTORIC EARTHQUAKE EVIDENCE (GEOLOGICAL & GEOPHYSICAL DATA)
PLANT RESPONSE TO GROUND MOTION	RETARDS EFFORT TO DEVELOP REALISTIC ESTIMATES OF SEISMIC SAFETY MARGINS FOR PLANTS ON SOIL SITES

PRESSURE VESSEL SAFETY



PIPING INTEGRITY

- CUT SHORT CRACK PIPE TESTS
- ALSO CUT TESTS IN BI-METALLIC WELDS AND GEOMETRY CHANGES

- ELASTIC-PLASTIC FRACTURE MECHANICS NOT DEVELOPED FOR SHORT CRACKS
- LEAK-BEFORE-BREAK APPLICATIONS COULD USE UNCONSERVATIVE DATA

- NO VALID DATA TO PROPERLY EVALUATE LICENSE SUBMITTALS
- POTENTIALLY UNSAFE APPLICATION OF LEAK-BEFORE-BREAK IN PIPES, BI-METALLIC WELDS AND GEOMETRY CHANGES

CHEMICAL EFFECTS

0 SHIPPINGPORT MATERIALS STUDY CUT

0 CUT EXTENDS TO OTHER REACTORS

0 BELGIAN BR-3, JAPAN JPDR

0 NO DATA ON SERVICE-AGED VESSELS OR SHIELD TANKS

0 NO LONG-TERM LOW DOSE RATE EMBRITTLEMENT DATA

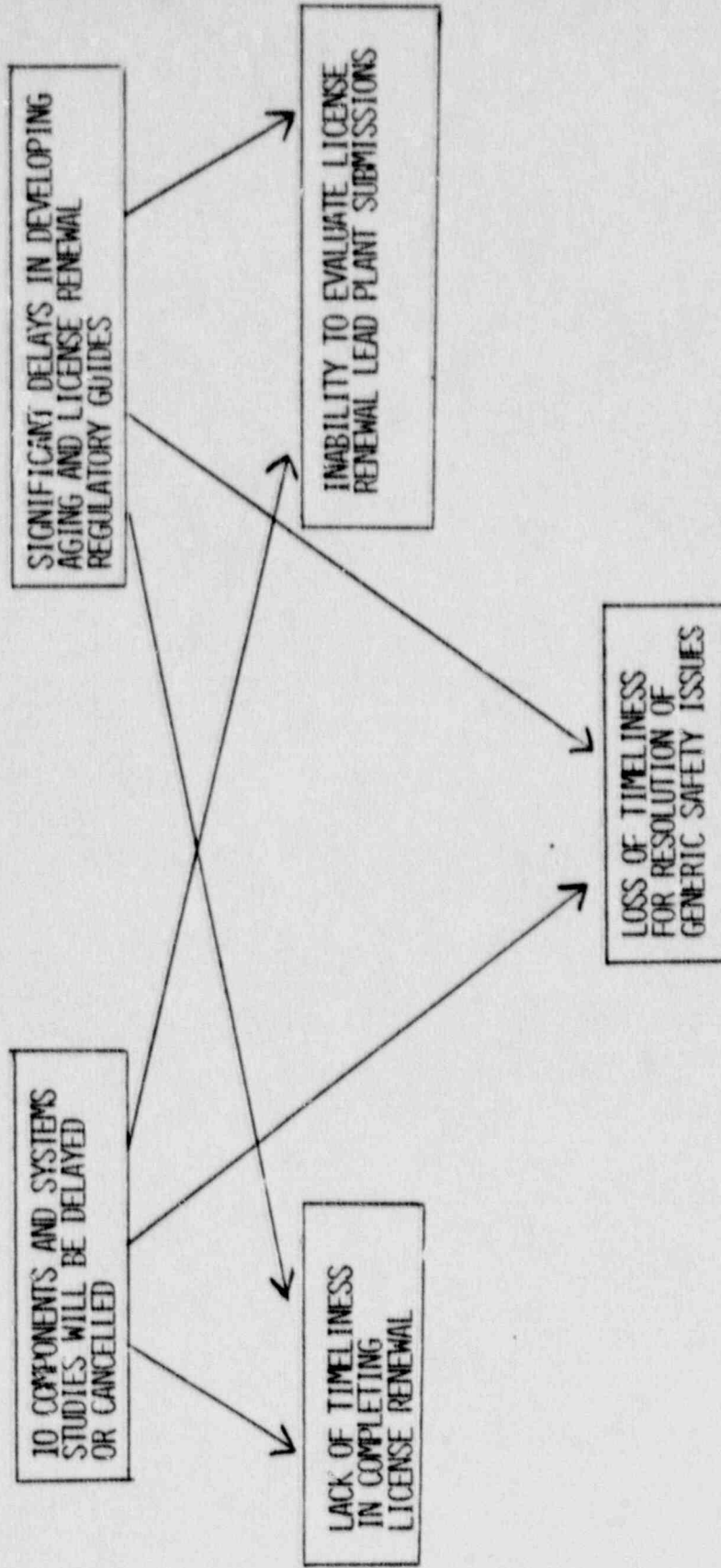
0 LAB STUDIES CANNOT BE VALIDATED

0 LICENSEE SUBMITTALS COULD BE UNCONSERVATIVE

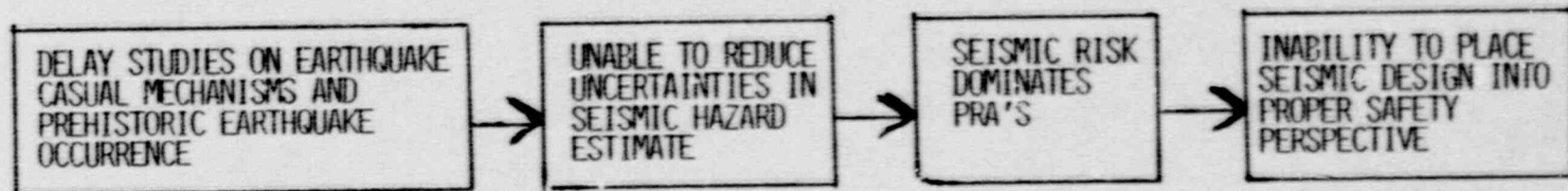
0 INABILITY TO PROPERLY EVALUATE LICENSEE SUBMITTALS

0 POTENTIALLY UNSAFE CONDITION OF MORE EMBRITTLEMENT THAN PREDICTED

AGING RESEARCH



EARTH SCIENCES



PLANT RESPONSE TO GROUND MOTION



REGULATORY IMPACT OF BUDGET CUTS - FY1990

AREA

REGULATORY IMPACT

PREVENTING DAMAGE TO REACTOR CORES

- PLANT PERFORMANCE
- o B&W TESTING

- o EXPERIMENTS AND ANALYSIS

- REACTOR APPLICATIONS

- o OPERATING REACTORS

- o LWR SYSTEMS STUDIES

- o OTSG PERFORMANCE CALCULATIONS WILL BE BIASED CONSERVATIVELY
- o REDUCED ABILITY TO RESPOND TO NEW LOCA AND TRANSIENT-RELATED ISSUES WITH SPECIFIC EXPERIMENTAL RESULTS
- o THE DELAY IN INITIATION OF UNIVERSITY EXPERIMENTS WILL RESULT IN A LACK OF ALWR-SPECIFIC EXPERIMENTAL DATA
- o GENERAL REDUCTION IN ABILITY TO RESPOND TO NEW ISSUES THAT MAY ARISE FROM OPERATING EXPERIENCE DURING THE COMING YEAR
- o THE DEFERRAL OF WORK ON REVIEW OF 600 MW ABWR FOR PURPOSE OF DETERMINING WHETHER EXISTING NRC CODES CAN ACCURATELY SIMULATE SAFETY SYSTEMS WILL RESULT IN A LACK OF AUDIT CAPABILITY

REGULATORY INPUT OF BUDGET CUTS - FY 1990

AREA

REGULATORY IMPACT

REACTOR CONTAINMENT PERFORMANCE

- CORE MELT AND RCS FAILURE
- o NATURAL CIRCULATION IN RCS

- o NO CONFIRMATION OF NUREG 1150 CONCLUSION THAT NATURAL CIRCULATION WILL INDUCE SURGE LINE FAILURE DEPRESSURIZING RCS AND THEREBY PREVENTING DCH
- o BEST ESTIMATE MODELS FOR ASSESSING NATURAL CIRCULATION ACCIDENT SEQUENCES WILL NOT BE AVAILABLE TO NRC STAFF FOR IPE REVIEW UNTIL THE REVIEW IS IN THE SECOND OR THIRD YEAR

- o FISSION PRODUCT BEHAVIOR AND CHEMICAL FORM

- o IMPROVED SOURCE TERM (MORE ACCURATE, MORE PRECISE, MORE REALISTIC THEN TID 14844) WILL NOT BE AVAILABLE TO THE CONTAINMENT PERFORMANCE IMPROVEMENT PROGRAM. OVERDESIGN AND OTHER CONSERVATISM WILL CONTINUE TO BE USED TO ASSURE SAFETY (E.G., ARTIFICIALLY LOW CONTAINMENT LEAK RATES WILL CONTINUE TO BE NEEDED)

- REACTOR CONTAINMENT SAFETY
- o CORE/CONCRETE INTERACTION

- o NO SIGNIFICANT IMPROVEMENT IN THE ABILITY TO PREDICT CORE-CONCRETE INTERACTION BEYOND THAT EXHIBITED IN THE ISP-24 SURC-4 TEST EXERCISE WILL BE AVAILABLE TO THE CPI PROGRAM. IN THIS AREA, THE CPI WILL BE FIXED AT THE 1988 LEVEL OF TECHNOLOGY

REGULATORY IMPACT OF BUDGET CUTS - FY 1990

AREA

REGULATORY IMPACT

- REACTOR CONTAINMENT SAFETY
- o HYDROGEN TRANSPORT AND COMBUSTION

- o HYDROGEN DEFLAGRATIONS/ DETONATION IN CONTAINMENT COMPARTMENTS WITH HIGH CONCENTRATIONS OF STEAM PRESENT WILL NOT BE TREATED ANALYTICALLY, FOR EITHER EXISTING CONTAINMENTS OR ALWR'S. AT BEST, BOUNDARY ESTIMATES WILL BE MADE, TYPICALLY RESULTING IN OVER-DESIGN AS THE ONLY ALTERNATIVE FOR ASSURING ADEQUATE SAFETY.

- RELIABILITY ASSESSMENT
- o HRA/PRA RESULTS APPLICATION

- o DELAY DEVELOPMENT OF OBJECTIVE BASIS FOR REGULATORY REQUIREMENTS TO MONITOR PERFORMANCE RATHER THAN DESIGN MARGINS

- REACTOR CONTAINMENT STRUCTURAL INTEGRITY
- o STRUCTURAL TESTS

- o THIS REDUCTION WILL CAUSE A DELAY IN THE EXTENSION OF RESULTS TO PRESTRESSED CONCRETE CONTAINMENTS AND DEFER ACTIVITIES ON STRUCTURAL RESPONSE TO HYDROGEN-RELATED LOADINGS. THIS EFFORT IS CRUCIAL TO HAVING A BASIS FOR REVIEWING IPES BY 1992

- REACTOR ACCIDENT RISK ANALYSIS
- o RISK MODEL DEVELOPMENT, QA, AND MAINTENANCE

- o DELAYS IN DEVELOPMENT OF ADVANCED PRA MODELS MAY REQUIRE STAFF TO MAKE MORE CONSERVATIVE DECISIONS ON NEED FOR MODIFICATIONS TO PRESENT AND ADVANCED PLANTS

- o RISK MODEL APPLICATIONS

- o LEVEL OF SUPPORT TO NRR IN RISK ANALYSIS DECREASED, PREVENTING USE OF PRA TO SUPPORT RESOLUTIONS OF SOME ISSUES

NSRRC RESPONSE TO REDUCTION

- SUPPORTED INCREASE:

FY 89

TO

FY 90

\$ 96M

\$108M

- BASIS:

AGGRESSIVE PROGRAMS IN

AGING

ACCIDENT MANAGEMENT

HUMAN FACTORS

WASTE DISPOSAL

UNIVERSITY RESEARCH

- BUDGET HAS REACHED A CRITICAL LIMIT: CUT TO \$88M IN FY 90

IMPLEMENTATION OF NAS RECOMMENDATIONS

- RESEARCH PHILOSOPHY

USER NEEDS:

PLANNING WITH NRR, NWSS, AEOD

- COMPETITIVE CONTRACTING

- ANNUAL REVIEW OF PROGRAM

- UNIVERSITY WORK

BREAKDOWN OF RES FUNDING
FY 1988 - FY 1990
(DOLLARS IN MILLIONS)

<u>PROGRAM SUPPORT</u>	<u>FY 88</u>	<u>FY 89</u>	<u>FY 90</u>
DOE	\$ 70.6	\$ 74.6	\$ 64.1
EDUC CONTRACTS	2.5	3.1	3.2
EDUC GRANTS	1.1	1.2	1.1
FOREIGN	1.1	2.2	2.1
OTHER GOVT	2.7	3.2	3.8
NOT-FOR-PROFIT GRANTS	0.2	0.5	0.2
INDUSTRIALS	8.4	7.9	10.8
NOT-FOR-PROFIT	2.1	1.3	2.2
SBIR	<u>0.5</u>	<u>1.3</u>	<u>0.5</u>
TOTAL	\$ 89.2	\$ 95.3	\$ 88.0

CONTRACTING GOALS - NON-GOVERNMENT

<u>PROGRAM SUPPORT</u>	<u>FY 88</u>	<u>FY 89</u>	<u>FY 90</u>
EDUC CONTRACTS	\$ 2.5	\$ 3.1	\$ 3.2
INDUSTRIALS	8.4	7.9	10.8
NOT-FOR-PROFIT	<u>2.1</u>	<u>1.3</u>	<u>2.2</u>
SUBTOTAL	\$13.0	\$12.3	\$16.2
EDUC GRANTS	1.1	1.2	1.1
SBIR	<u>0.5</u>	<u>1.3</u>	<u>0.5</u>
SUBTOTAL	\$1.6	\$2.5	*1.6
TOTAL	\$14.6	\$14.8 ^x	\$17.8
RES PROGRAM SUPPORT	\$89.2	\$95.3	\$88.0
% OF TOTAL	16%	16%	20%

*ADDITIONAL \$1M UNABLE TO BE OBLIGATED BY DIVISION OF CONTRACTS BY FISCAL YEAR END. WOULD HAVE INCREASED PERCENT TO 17%.

EXPANDING RESEARCH CONTRACTOR BASE

STEPS:

- BROAD AGENCY ANNOUNCEMENT (BAA)
- EDUCATIONAL GRANT PROGRAM IMPROVEMENTS AND EXPANSION:
 - o NEDHO INTERACTION
 - o HBCU INITIATIVE

RES STAFF PRESENTATION TO THE ACRS

SUBJECT: REVISED POLICY STATEMENT ON THE MAINTENANCE OF NUCLEAR
POWER PLANTS

DATE: OCTOBER 5, 1989

PRESENTER: THOMAS L. KING

PRESENTER'S TITLE/BRANCH/DIV: CHIEF, ADVANCED REACTORS AND
GENERIC ISSUES BRANCH
DIVISION OF REGULATORY
APPLICATIONS

PRESENTER'S NRC TEL. NO.: (301) 492-3765

SUBCOMMITTEE: FULL COMMITTEE

*By King
#2*

PURPOSE OF BRIEFING

- ° TO SUMMARIZE CHANGES MADE IN THE DRAFT REVISED POLICY STATEMENT ON MAINTENANCE SINCE THE SEPTEMBER 1989 FULL COMMITTEE MEETING.

- ° CHANGES RESULTED FROM:
 - DISCUSSION WITH ACRS AT THE SEPTEMBER 1989 FULL COMMITTEE MEETING

 - CRGR REVIEW

STATUS OF REVISED POLICY STATEMENT

- ° CONCURRED IN BY ALL AFFECTED OFFICES (RES, NRR, AEOD, OE, OGC)
- ° REVIEWED BY CRGR
- ° TO BE SENT TO COMMISSION AFTER ACRS LETTER RECEIVED AND CONSIDERED (TARGET DATE OF OCTOBER 20, 1989 TO COMMISSION)

OVERVIEW OF REVISED POLICY STATEMENT

PURPOSE IS TO STATE:

- WHAT THE COMMISSION INTENDS TO DO IN THE MAINTENANCE AREA OVER THE NEXT 18 MONTHS
- WHAT WE ENCOURAGE LICENSEES TO DO

COMMISSION ACTIONS:

- IN RECOGNITION OF INDUSTRY IMPROVEMENT, RULEMAKING TO BE HELD IN ABEYANCE
- MONITOR PERFORMANCE OVER THE NEXT 18 MONTHS, INCLUDING COMPLETION OF MAINTENANCE TEAM INSPECTIONS
- CONTINUE TO ENFORCE EXISTING REQUIREMENTS RELATED TO MAINTENANCE
- CONTINUE TO WORK ON A STANDARD
- CONTINUE TO WORK ON AND USE MAINTENANCE PERFORMANCE INDICATORS
- AT THE END OF THE 18 MONTH PERIOD, ASSESS THE NEED FOR ANY ADDITIONAL REGULATORY ACTION

OVERVIEW (CONT'D)

LICENSEE ACTIONS:

- CONTINUE IMPROVEMENT, PARTICULARLY IN THE AREA OF IMPLEMENTATION OF MAINTENANCE PROGRAMS
- DOCUMENT COMMITMENTS FOR IMPROVEMENT
- NUMARC AND INPO LEADERSHIP EXPECTED
- PARTICIPATE IN THE DEVELOPMENT AND VOLUNTARY ADOPTION OF A STANDARD
- CONTINUE TO DEVELOP AND USE MAINTENANCE PERFORMANCE INDICATORS
- IMPROVE PARTICIPATION IN AND USE OF NPRDS
- ENSURE MAINTENANCE PROGRAMS ENCOMPASS ALL SYSTEMS, STRUCTURES AND COMPONENTS WHOSE FAILURE COULD SIGNIFICANTLY IMPACT SAFETY OR SECURITY

SUMMARY OF CHANGES SINCE 9/7/89

- ° ADDED ADDITIONAL WORDS ACKNOWLEDGING INDUSTRY/LICENSEE IMPROVEMENT AND THE FACT THAT THERE ARE SOME LICENSEES WITH ACCEPTABLE PROGRAMS. (PAGES 2 AND 3)

- ° REVISED PARAGRAPH ON ENFORCEMENT TO STATE THAT THE COMMISSION'S ENFORCEMENT POLICY IS BEING REVISED TO INCLUDE MAINTENANCE AS AN ESCALATING FACTOR IN ASSESSING A CIVIL PENALTY IF THE VIOLATION WAS DETERMINED TO HAVE A MAINTENANCE ROOT CAUSE. (PAGE 4)

- ° REVISED PARAGRAPH ON THE USE OF NPRDS TO CLARIFY THAT WHAT IS DESIRED IS IMPROVED USE OF THE EXISTING SYSTEM (TIMELY AND COMPLETE REPORTING AND USE OF DATA). (PAGE 5)

- ° REVISED PARAGRAPH ON SCOPE OF SSCs COVERED TO BE CONSISTENT WITH DRAFT REGULATORY GUIDE (ALL SSC'S IN PLANT'S LICENSING BASIS WHOSE FAILURE COULD SIGNIFICANTLY AFFECT SAFETY OR SECURITY). (PAGE 6)

- ° MISCELLANEOUS EDITORIAL CHANGES.