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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ADVISORY COMMITTEE ON REACTOR SAFEGUARDS

SUBCOMMITTEE ON REGULATORY ACTIVITIES

Nuclear Regulatory Commission
Room 1046
1717 H Street, N.W.
Washington, D.C.

Tuesday, January 6, 1981

The Subcommittee met, pursuant to notice, at 8:45 a.m.

Subcommittee Members Present:

- C. P. SIESS, Chairman
- M. BENDER
- MAX W. CARBON
- DAVID A. WARD

NRC Staff:

- WILLIAM ANDERSON
- WILBUR MORRISON
- LARRY PORSE
- JOEL PAGE
- SAM DURAISWAMY
- HAROLD GREGG

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P R O C E E D I N G S

1
2 MR. SIESS: The meeting will come to order. This is a
3 meeting of the Advisory Committee on Reactor Safeguards,
4 Subcommittee on Regulatory Activities. My name is Chester Siess,
5 I'm Subcommittee Chairman and the other members of the ACRS that
6 are present this morning on my immediate left, Mr. Max Carbon,
7 Mr. David Ward. Other members may show up a little bit later.

8 The purpose of the meeting today is to review three
9 proposed regulatory guides which I will identify in more detail
10 as we get to them. This meeting is being conducted in accordance
11 with the provisions of the Federal Advisory Committee Act and
12 the Sunshine Act, and Mr. Sam Duraiswamy on my right is the
13 designated federal employee for the meeting.

14 The rules of participation have been published in the
15 Federal Register notice and I'm sure you're all familiar with them.
16 A transcript of the meeting is being kept and I'll ask each person
17 that speaks to please identify himself or herself for the record,
18 and use a microphone. I think there are microphones available
19 for everybody.

20 We've received no written statements and no requests
21 for oral statements prior to this time. We'll make arrangements
22 for those if necessary if they come in later.

23 The order of business proposed by the staff and agreed
24 to by me is to take up first the proposed Regulatory Guide on
25 valve assemblies, and next the one on simulators and last, the

1 QA program requirements for design and construction. Is that
2 agreeable?

3 When we take up an item, I'd appreciate it if you
4 would identify the people that are going to be discussing it and
5 whether they're from Office of Standards Development or Nuclear
6 Reactor Regulation, and if you have people here from the licensing
7 staff, so indicate. We're ready to go with valves. This is
8 regulatory guide unnumbered at the time being, Task Number SC704-5,
9 title, "Functional Specification for Active Valve Assemblies in
10 Systems Important to Safety in Nuclear Power Plants."

11 MR. MORRISON: On my right is Mr. Porse from ST. He
12 will make the presentation on this guide. Also with him is Mr.
13 Anderson, head of the Structures and Components Branch. On my
14 left is Mr. Page who has also participated in the development of
15 this guide. He is from the Office of Nuclear Reactor Regulation.

16 MR. SIESS: One thing on this guide, there's been some
17 discussion within the Subcommittee prior to the meeting by phone,
18 and I guess in addition to addressing the specifics of the guide
19 and of the standard that it addresses, it would be helpful if you
20 could try to explain the overall function of this thing as to how
21 it affects what people do, and particularly how it affects safety
22 and whether it's related directly to licensing problems.

23 The reason I'm asking is that I've had some difficulty
24 understanding the relation of all this. I've read the public
25 comments and they say is what we're already doing; why do we have

1 to have it, et cetera. And I'd like to mention a concern that
2 hit me as I read the thing. This is a guide that endorses with
3 exceptions, and I use that word loosely, an ANSI standard. And
4 some of the guides that endorse standards really endorse the
5 standard with what I'd call a few exceptions. Some should's
6 should be shall's, a little difference here, a little difference
7 there, the kind of things that you get as disagreements in writing
8 the standards and you don't get your way so you can say, all
9 right, for safety we think it ought to be this way, and we put
10 that exception in. The standard is acceptable to us.

11 But this one seems to expand the standard by a very
12 considerable amount. It almost comes out looking like another
13 standard. Now, I may be proper but that's the impression I get.

14 It extends the scope of the standard and in some places, if I
15 understood it and there's a good chance that I didn't, it seemed
16 to change the intent of the standard or the purpose for which it
17 was to be used. And this sort of thing bothers me; when I see
18 this many exceptions to a standard I'm trying to figure how in
19 the devil somebody is going to take the two documents and work
20 with them, because I've got to take this thing and this thing and
21 in some way merge them together and cross check them. And I've
22 worked with standards enough myself to know that just finding your
23 way through them is a God awful job, and the guy that's following
24 it and the guy that's checking him don't always agree.

25 So, one impression was that this is a major revision to

1 the standard that's being put out in the form of a guide. Now,
2 there are two questions. One is, is it needed. If the answer
3 to that is clearly yes, the other is, is there a better way to do
4 it?

5 MR. ANDERSON: I'd like to respond to that. This guide
6 is endorsing an ANSI standard. The standard was developed by the
7 ANSI group that was originally set up as project valves, starting
8 back in 1972. The request from the old AEC to the valve industry
9 was, try to do something about the large numbers of valve failures
10 that were being reported.

11 At a public meeting that kicked off the effort, one of
12 the major conclusions that was drawn was that the various parts
13 of the industry weren't talking to each other enough. The valve
14 manufacturers were claiming that we produce very good valves;
15 people misuse them and misapply them, they try to use them for
16 things that they were never intended for. And, of course, people
17 who were buying them and using them were claiming that there were
18 inherent problems in the valves.

19 So the project set up under ANSI, originally under
20 N45, concluded that they needed a series of standards, and one of
21 the first standards to be written would be the necessary communi-
22 cation between the people who were buying valves and people who
23 were making and qualifying and developing valves. And this
24 standard is an outgrowth of that first effort. And it's being
5 endorsed because it's considered a first step and increment in

1 that program.

2 The second standard, which is on the qualification of
3 valve assemblies, is in the final stages of balloting and would
4 be that standard which this is directed at. This provides the
5 information to the people who have to qualify the valves as to
6 what they have to be qualified to.

7 It was produced quite some time ago, and to get on to
8 your second question, if I've answered your first adequately -- .

9 MR. CARBON: Let me quote from actually I think it's a
10 Westinghouse letter because I'm not sure how you're answering
11 this last question. In the Westinghouse public comment letter
12 on page 3 in Value Impact Statement Comments it says, "The back-
13 ground statement identifies the need to include valve operability
14 requirements and specifications to valve manufacturers. With the
15 requirements in REG GUIDE 1.70 for valve operability, such require-
16 ments have been implemented and included in manufacturing speci-
17 fications where applicable. Therefore, the need for an additional
18 Regulatory Guide to reiterate such requirements may have been
19 necessary in 1972, but is not necessary in light of 1979 licensing
20 requirements."

21 Now, I don't think, or at least I didn't understand if
22 you were answering that question which I thought was one of those
23 that Mr. Siess was raising.

24 MR. SIESS: Before you try to answer that, in your
25 value impact statement, you make the statement that there are

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indications that this has never been extensively used. You know, this standard has been around for either 5 or 10 years, depending on how you count, and you're just getting around to endorsing it and to making exceptions to it. Has it been used? Has it worked? Have we had any reduction in the number of LER's on valves?

MR. ANDERSON: Originally, we didn't intend to endorse it in a reg guide. It was concluded that we probably should, so we started a year late. I believe the standard came out in 1975, actually in 1976 and we started on it about 1977.

We don't have any assurance, since we don't review -- and probably I'm speaking for NRR -- we don't review all of the valve specifications that manufacturers apply to the purchase of valves as part of the review.

Issuing this and having conformance with this assured would provide a commitment and give some assurance that there was adequate communication. The statement from one manufacturer of valves, Westinghouse is also a valve manufacturer, that this is being done doesn't assure us that all applicants, all A&E's, all purchasers of valves are providing adequate information. Now, maybe somebody in NRR could speak further to that.

MR. SIESS: This standard tells the purchaser of a valve what he should specify regarding the functions the valve must perform and the conditions under which it must perform those functions. Is that latter in there? Well, its design pressure and temperature.

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1 MR. ANDERSON: Yes.

2 MR. SIESS: Now, then this is a functional specification
3 against which he can check the valve that's supplied. That is,
4 the manufacturer then must certify that this valve will perform
5 these functions in accordance with the criteria that were set
6 down. And he must demonstrate that by test presumably or something
7 else.

8 Now, does this mean that they haven't been doing this?
9 The purchasers have not been specifying functions?

10 MR. ANDERSON: We have to assume that the standards
11 writing committee, which consisted of a lot of people from both
12 ends of this valve purchasing and furnishing business, felt that
13 there wasn't enough communication or they wouldn't have written
14 this standard. They wouldn't have placed the emphasis and put it
15 out first. So we assumed that there has been inadequate communi-
16 cation.

17 MR. SIESS: But you've got a statement, as I said before,
18 in the value impact statement, that this standard was published
19 five years ago and there are indications that it has not been
20 extensively used. Does this mean that the people that wrote it
21 really were out of touch with the industry or the industry's
22 practice and that's why it wasn't used?

23 As far as you're concerned, use of this standard would
24 mean that somebody said in their FSAR that the valves would be
25 purchased in accordance with this standard, right? As far as

1 NRC is concerned, that's what use of it would mean?

2 MR. ANDERSON: Yes. They might be referring to the
3 draft guide or to the standard itself.

4 MR. SIESS: Yes. Now this statement that there are
5 indications that it has not been extensively used, what's that
6 based on? Some survey of -- who's the purchaser; the utility
7 basically? Could be the NSSS supplier, right?

8 MR. ANDERSON: Our tech engineer, generally.

9 MR. SIESS: Or the AE, depending on what part of the
10 system. The NSSS supplier has valves; if he doesn't manufacture
11 them he buys them from another division and he's a purchaser,
12 right?

13 MR. ANDERSON: Right.

14 MR. SIESS: What's the basis for the statement that
15 it's not been extensively used? And does use there mean
16 referenced or used? Do you understand the distinction?

17 MR. ANDERSON: We changed task leaders a couple of
18 times and the original drafter of this standard isn't with us.
19 I assume it's based on the fact that it doesn't appear in
20 license applications; FSAR's or PSAR's.

21 MR. SIESS: We're going through a stage now of a great
22 deal of emphasis on qualification, and I assume that includes
23 valves. Certainly, the valve operators and things of that sort.
24 Is that something that's done independently of a functional
25 specification, or would proof of a qualification of a valve be

1 that it was ordered in accordance with a functional specification
2 and a manufacturer certified that it met that or had the data
3 that showed that it met it?

4 MR. ANDERSON: No, this actually intended to be the
5 first step in this overall qualification of valves program. The
6 ANSI committee that was set up planned on writing about five
7 standards. The first one to be the functional specification which
8 is, you must provide the information which serves a basis for
9 qualifying a valve.

10 The second standard which I mentioned which the same group
11 has written is on qualification of valve assemblies. They also
12 have other standards on qualification of valve operators, qualifi-
13 cation of safety valves I believe that's about to get started;
14 there will be qualification of valve bodies by itself as another
15 standard.

16 MR. BENDER: Bill, isn't your job to say something about
17 what the qualifications should consist of?

18 MR. ANDERSON: That comes in the next step.

19 MR. BENDER: I guess I'm maybe quibbling on it but I
20 sense Dr. Siess' questions parallel mine. Isn't the cart coming
21 before the horse? Shouldn't you be talking about the qualifica-
22 tion business before you put out this thing, which seems to be a
23 problem on that.

24 MR. ANDERSON: I don't see that the cart is before the
25 horse. Before you can qualify anything you have to know what to

1 qualify it against. You have to specify what the requirements
2 are before you can determine what the requirements are that have
3 to be qualified.

4 MR. BENDER: I was going the other way and I was saying
5 let's look at the question of what kind of functions valves have
6 to perform. There's first, the safety relief function; secondly,
7 there's the opening and closure function; and thirdly, there's
8 the ability to seal. Now, it seems to me that until the NRC
9 takes some position about what kind of verification it needs of
10 these capabilities, it would be hard to write a functional speci-
11 fication for a valve. And I guess there might even --

12 MR. SIESS: Let me interrupt a minute. It seems to me
13 that what this standard says is simply that there shall be a
14 functional specification and it shall cover certain things; not
15 what the numbers are on those things. And I guess that's what
16 bothered me; it implied that gee, there wasn't such a thing as
17 a functional specification.

18 MR. ANDERSON: That's why it was written; because
19 apparently, to the valve manufacturers, they were not getting
20 adequate information, and they felt such a specification should
21 be provided telling them all of the things that the people who
22 buy their good valves, all of the things they'll be doing to them,
23 and they felt they weren't getting that information.

24 MR. SIESS: It's a performance criterion type thing.
25 You order by performance. I assume if you were an NSSS supplier

1 and you needed relief valves, you could take something off the
2 shelf and run tests on it or analyses yourself to find out whether
3 it worked. Or you could go out and tell somebody I want a valve
4 that will do certain things and then they supply it and the burden
5 of proof is on them. It's a paper-type item.

6 MR. BENDER: There are very few valves bought by
7 functional specs; most of them are bought Model Number such-and-
8 such with operator number such-and-such. And the buyer accepts
9 responsibility for whether that valve will perform in the system
10 he's specifying. And I suppose I could accept the argument that
11 says the manufacturers want more than that, but I think they're
12 not capable of dealing with more than that. So unless you
13 want to -- I'm not being facetious about it, but I think it's
14 true. If you want more than that, the onus has to be on either
15 the engineering organization that buys the valve or the owner of
16 the plant to do the qualifying actions, unless you're going to
17 have a class of valves that they automatically use, and I didn't
18 see that in here.

19 MR. SIESS: The task force that wrote this had represen-
20 tatives of the valve companies on it.

21 MR. ANDERSON: Right, it was a consensus group.

22 MR. SIESS: So at this stage, there's some interest in
23 the industry which apparently is not universal because Westinghouse
24 doesn't see any need for this and they're on both sides of the
25 fence. I don't know which side of the fence the letter came from,

1 the purchaser or the supplier.

2 MR. CARBON: And by the same token, one of the users
3 at least -- there's a letter here from Wisconsin Electric Power
4 Company which seems to question whether the guide is needed, and
5 you've made the statement that apparently the valve manufacturers
6 want this, and I'm just interrupting for a second to say it's
7 not clear to me that the valve manufacturers do want it.

8 MR. SIESS: Did you get any comments from the valve
9 manufacturers? I don't think you listed who they are so we ought
10 to run through it.

11 MR. ANDERSON: The comments from Westinghouse came from
12 the Nuclear Department.

13 MR. SIESS: Who is Carotest? Are they valve manufacturers

14 MR. PORSE: Yes, they're valve manufacturers.

15 MR. SIESS: Who is S.G. Williams and Associates?

16 MR. ANDERSON: FSG Williams is an independent consultant
17 who also serves as a consultant to EB Valve Company, which is a
18 part of Gulf and Western.

19 MR. SIESS: But you've accepted the industry idea that
20 there's -- a functional specification is the way to go, and that
21 eventually there will be some acceptance standards, right, to go
22 along with that?

23 MR. ANDERSON: Some statements of qualification require-
24 ments in standards.

25 MR. SIESS: Okay, you've accepted that idea, and

1 apparently some aspects of the industry don't think it's necessary.

2 Now, what you have supplemented the standard by is
3 saying to include -- you've extended the scope to include manually
4 operated valves, which I guess didn't seem unreasonable. The
5 valves are valves and they have certain functions. I guess
6 manually operated valves have to be included somewhere. Do you
7 have any idea why they were left out of this thing originally?

8 MR. PORSE: Originally they only thought that all valves
9 of this category would be remotely operated, and therefore,
10 motor operated valves. However, later systems have shown that
11 yes, there is indeed time to walk over there.

12 MR. SIESS: They thought that there'd be no manually
13 operated valves in systems important to safety, and you found
14 instances where they are. Okay, that was your answer, I remember.
15 It wasn't that there were no manually operated valves, but there
16 were none in systems important to safety. Whatever that means.

17 MR. PORSE: That's correct.

18 MR. ANDERSON: That in itself introduces what appears
19 to be a major expansion of the guide and it's merely because NRR
20 has accepted some manually operated valves in some limited
21 occasions.

22 MR. SIESS: As I understand it, what you're proposing
23 is that there be included manually operated valves in systems
24 important to safety, and some people have interpreted that as
25 manually operated valves in general. You don't think there'd be

1 many manually operated valves in systems important to safety.

2 MR. ANDERSON: My understanding is that it's a very
3 limited application.

4 MR. SIESS: And there'd be none in new plants, right?
5 There probably won't be any in new plants.

6 MR. ANDERSON: I'm not sure that there wouldn't be.
7 But it would be very limited.

8 MR. BENDER: That's your interpretation, but I could
9 easily make the interpretation that every valve that isolates an
10 instrument is important to safety, and that would make every
11 quarter-inch valve that connects to an instrument that's connected
12 to a primary system in this category. Is that what you intended?

13 MR. ANDERSON: That certainly wasn't the intantion.
14 As a matter of fact, I think we have requirements in positions
15 out which indicate that you can break off an instrument line
16 outside containment and --

17 MR. BENDER: I'm only trying to point out that the inter-
18 pretation can be almost anything that you want it to be and you'll
19 have to think about that aspect.

20 MR. ANDERSON: You're concerned about the application
21 of this standard.

22 MR. BENDER: Sure.

23 MR. ANDERSON: And the standard is somewhat unique,
24 in standards coming from my branch in that it does not specify
25 quite clearly just which valves this would be applied to. And we

1 have made that clear in the guide, that we aren't telling them
2 which valves it would be applied to and that we assume that it
3 will be applied on a limited scope initially. And that as we
4 gain experience with its use and with the use of the qualifica-
5 tions standard that's being developed, we will determine how
6 far to extend this. We are not saying apply it to everything in
7 the beginning and narrow it down; we're saying apply it to those
8 most important ones in the beginning and then we will expand it.

9 MR. SIESS: The basic question of when is a system
10 important to safety is being debated in another forum; we have
11 another subcommittee working on that and the chairman is present
12 today and he can take cognizance of it. But one extension is to
13 manually operated valves in systems important to safety, and by
14 manually operated you mean hand wheels, not punch a button -- .

15 MR. PORSE: No, there is a dual interpretation. It can
16 also mean a motor operated valve that's pushed by an operator
17 remotely.

18 MR. SIESS: Now you have a specific question on that and
19 I didn't see that as the answer. Somebody asked -- .

20 MR. PORSE: The footnote on page 5, line 3.

21 MR. SIESS: "Manually operated valves are those which
22 are operated physically by an operator." Now, physically can be
23 pushing a button, I guess, but if that's true, this is not a very
24 good explanation. Because you have a comment from somebody that
25 asks specifically whether you meant push button or not, and you

1 said you resolved that with the footnote. And if you really mean
2 that, why don't you -- do you remember the number of it? A
3 comment on page 4, "It's not clear if this paragraph refers to
4 manually operated valves or valves which are manually actuated
5 remotely." And it says, "A footnote has been added to clarify
6 this. There seems little reason for misunderstanding with the
7 valve where the manually operated mechanism is a simple hand wheel."

8 Now, I can't read that resolution as saying that remote
9 manual is what you mean by manual.

10 MR. ANDERSON: I think we'll stand by the footnote.

11 MR. SIESS: But the footnote is completely ambiguous.

12 MR. ANDERSON: It says, "Power operated valves may be
13 manually controlled." That means a man pushes a button and it
14 has a motor operating it. So that comes under power operated.

15 MR. SIESS: That's a definition of power-operated valve;
16 that's not a definition of manual -- .

17 MR. ANDERSON: Yes. So manually operated is a hand wheel
18 or whatever.

19 MR. MORRISON: But that's not what Mr. Porse just said;
20 that's the confusion.

21 MR. ANDERSON: That's why we're standing by the footnote.

22 MR. SIESS: Okay, then I understand it because that's
23 the way I understood it.

24 MR. ANDERSON: There's a difference between manually
25 operated and manually controlled; the footnote is intended to

1 show that.

2 MR. SIESS: I guess the timing is bothering me. This
3 thing is old. In your own words, there's no evidence it's ever
4 been used. The last comment you got on it was well over a year
5 ago. All these public comments are dated in early 1979; May 1979,
6 and we're 18 months past that now. Does anybody know what the
7 status of the situation is now? If it isn't being used by the
8 industry is it more likely to be used after you've endorsed it as
9 a Reg Guide?

10 MR. ANDERSON: This is the next standard, and as I say,
11 it's in the final stages of balloting. We originally intended not
12 even to endorse this functional specification standard until
13 this one was available, because we felt it probably wouldn't be
14 used until that one came out.

15 MR. BENDER: What's the name of this one, Bill?

16 MR. ANDERSON: This is "Functional Qualification
17 Requirements for Power Operated, Active Valve Assemblies for a
18 Nuclear Power Plant." B-16 41.

19 MR. SIESS: And does that depend on this one?

20 MR. ANDERSON: Yes.

21 MR. SIESS: Why?

22 MR. ANDERSON: This refers to the functional specifica-
23 tion one as where you get the information that you're going to use
24 as a basis for the qualification; input to the qualification
25 program.

1 MR. SIESS: It seems to me that the idea of the func-
2 tional specification was to tell somebody all the things they
3 should specify to be sure valves work.

4 MR. ANDERSON: Right.

5 MR. SIESS: Now, once you've got a qualification thing
6 where you list all the things that it has to be qualified to meet,
7 that automatically takes care of telling somebody what to put in
8 their functional specification.

9 MR. ANDERSON: No. I'm afraid the qualification require-
10 ments say, given the information from the functional specifica-
11 tions, you perform this test or that test to meet those require-
12 ments.

13 MR. SIESS: Yes, but --

14 MR. ANDERSON: To demonstrate that you can meet them.

15 MR. SIESS: But the qualification is going to say, here
16 is a qualification method for showing the seal leakage and valve
17 leakage. Now, that tells the specification writer that he damn
18 well better specify the leakage. If you list all of the things
19 that the valve has to be qualified for, that's the same as a
20 list of functional specifications, isn't it?

21 MR. ANDERSON: They don't have to qualify a valve for
22 seep leakage if it's not in the specifications. If there is no
23 specified seat leakage requirement, there'd be no qualification
24 test requirements for seat leakage. If there are, in the func-
25 tional specification requirement, then you qualify it for seat

1 leakage.

2 MR. SIESS: I'm going to get back to the original idea;
3 somebody thought that there was a lack of communication between
4 the purchasers and the suppliers on what valves were supposed to
5 do, and that was the reason why we were getting so many valve
6 problems. So the industry got together and said let's get the
7 purchasers and the suppliers together and write a consensus
8 standard, which is sort of a standard practice in the industry.
9 If you're buying something you try to get together and work out
10 a standard that's going to say, this is how we specify, these are
11 the things we ought to tell you we want and later on we'll tell
12 you how you meet it.

13 That sounds like a good idea, but this was six years
14 ago, and as somebody has said in the value impact statement, it
15 hasn't been done. Does that mean that this didn't solve the
16 problem, or that they found another way around it? Because you've
17 come in five years later and are saying, we're going to endorse
18 this thing and expand it, and really if people aren't using this,
19 that's a waste of effort on your part.

20 MR. ANDERSON: It's to be used with the next one. The
21 next one isn't out yet.

22 MR. SIESS: And you think the reason this one hasn't
23 been used is because there wasn't any qualification procedures
24 specified, or acceptance procedures is what I'd call it. In
25 other words, telling somebody what functions to specify wasn't

1 much good unless you told them how to determine whether they
2 had met that requirement, right?

3 MR. ANDERSON: I think somebody from my staff wants to
4 make an input here.

5 MR. GREGG: My name is Harold Gregg, I'm from Structures
6 and Components Branch. I'd like to say something about the
7 functional standard. Formerly, I was with a valve manufacturer,
8 I spent 20 years with the Arley(?) Corporation.

9 The functional standard that Mr. Porse is presenting is
10 the first standard of a whole series of standards that are
11 intended by industry. These standards will encompass all kinds
12 of qualifications.

13 To date, each of the A&E's have their own type of
14 specification. Every one of them is different. They're very
15 large, they consist of perhaps 500 pages. Bechtel has their own,
16 Westinghouse has their own, General Electric has their own.
17 And what this standard would do is to attempt to consolidate or
18 present a unified type of base from which to work, and it's the
19 first step in the process. And I think in view of that, it is a
20 needed type of standard.

21 MR. CARBON: That "first step in the process" words
22 worry me very much. It would seem to me, if I understand what
23 you're saying, that you're going to require all of the organiza-
24 tions that you mentioned to change much of their procedure, their
25 requirements, their specifications and so on to end up, I would

1 think, maybe at really the same place or with no particular improve-
2 ment. And it's not clear to me I guess that there really is a
3 need for what you're proposing here. And when you say that there
4 will be several additional requirements beyond this. And I guess
5 I just remain unconvinced.

6 MR. SIESS: Max, let me correct you. The staff will not
7 be requiring anybody to do anything. They're endorsing an
8 industry guide, and a Reg Guide is not a requirement. The
9 industry decided they could do things better if they got together,
10 or at least some segment of the industry. I think that's part of
11 the difficulty here I don't know whether Westinghouse was
12 represented on the task force or not, and that may be why they
13 don't see any need for it. But certain elements of the industry
14 got together through this standards writing committee and the
15 purchaser and supplier tried to agree on this. And what the staff
16 is saying is that if you go do it this way, we want these addi-
17 tional features put into it. Nobody has to use this guide or
18 this standard.

19 MR. CARBON: Is that so?

20 MR. SIESS: No Reg Guide is mandatory.

21 MR. CARBON: I appreciate that.

22 MR. ANDERSON: I think the people at NRR would have to
23 address the question as to how this is applied. We assume it
24 would be put into the standard review plan and it would find it
25 advantageous to say they are committing to this. Now, this is

1 not a format; it's a content standard. It doesn't say they have
2 to arrange in a given arrangement, but they have to provide at
3 least that much information to people who are making the valves.

4 MR. SIESS: All right, let's hear from NRR because
5 the question is when you're making a review, I can understand how
6 you would review to see if valves were qualified for the service
7 and for the environment. But this particular standard, as it
8 stands now, would not help in that; this would simply -- somebody
9 could say, we have purchased these valves in accordance with
10 this functional specification. Okay. And modified by Reg Guide
11 so-and-so. But that wouldn't qualify a valve at all, because you
12 don't know what was supplied.

13 So what do you do now in terms of looking at how valves
14 were purchased and are qualified, and how would it be different
15 if this plus that other one -- is that the only other one that
16 will come out for this?

17 MR. ANDERSON: No, there's about three or four more
18 after this.

19 MR. SIESS: So until they're all out, what would you do?
20 Can you answer that?

21 MR. PAGE: Joel Page. I believe what you do is just
22 strictly look for a commitment that they did use the guide.

23 MR. SIESS: What do you do without a guide? It's been
24 around for five years and they haven't been using it; what do
25 you do?

1 MR. PAGE: Well, in environmental qualification basically
2 what you do is you spot check by audit.

3 MR. SIESS: This is not just environmental qualification.
4 Leak rate is not an environmental qualification.

5 MR. PAGE: It can be.

6 MR. SIESS: It could be a part of it.

7 MR. PAGE: Yes, sir, absolutely. Because if a leak
8 rate is specified as a requirement of the operability of a
9 certain component then you can spot check in the test reports
10 that that indeed was met during the testing.

11 MR. SIESS: How would this change anything? This guide
12 gives a list of things they should specify. Are these things
13 now listed in the standard review plan as things to be spot
14 checked?

15 MR. PAGE: No, they're not.

16 MR. CARBON: Let me inquire right there. Again, I'm
17 quoting a comment from the Westinghouse letter and I'd appreciate
18 your response to it. It says, "The impact statement indicates
19 that requirements for valve operability exist in other regulatory
20 guides and are being implemented. Westinghouse concurs with
21 this statement and therefore does not understand the need for
22 the reg guide." Is that a correct statement or is that an
23 incorrect statement?

24 MR. SIESS: Were they referring to 170?

25 MR. CARBON: I think it's with reference to 170.

1 MR. SIESS: What's REG GUIDE 170?

2 MR. ANDERSON: Standard format content.

3 MR. PAGE: I believe in REG GUIDE 170 it gives you just
4 the very basic requirements about the operability. It doesn't
5 really get into too many specifics. The addition of these two
6 guides that we're talking about here will apply a lot more
7 uniformity and a lot more detail of things to be considered for
8 valve assemblies.

9 MR. SIESS: What bothers me is the staff has cited
10 several thousand LER's on valves as being inspiration for the
11 industry deciding to come up with a functional specification
12 approach. Or, let's say standardizing the functional specifica-
13 tion, because obviously there's been some kind of a functional
14 specification, either explicit or implicit. So if there have
15 been that many valve problems that the industry saw a need for
16 it, even though they haven't used it universally, it seems to me
17 the staff should have started doing something different in its
18 review about five years ago, with a lot of valve problems, and
19 yet it doesn't look like the staff has done anything in that
20 time, either.

21 MR. ANDERSON: I can respond to that somewhat. Back
22 in 1972, we were developing Regulatory Guide 1.48, Unloading
23 Combinations for Fluid Systems Components. In that Reg Guide
24 there is a footnote which makes it clear by emphasizing a state-
25 ment in the code that designing a valve or a pump to the

1 requirements of the code only assures that the pressure boundary
2 is being assured, and it does not assure operability. And there-
3 fore, by that guide, 1.48, and footnote, we were making it clear
4 that they had to assure the operability of valves and pumps by
5 additional testing and analysis. And since that time, that reg
6 guide has been in the standard review plan, and since that time
7 there have been some requirements in NRR about the qualification
8 of valves and pumps.

9 MR. SIESS: Let's get some terms straightened out here
10 so I know what you're talking about anyway. When you say assure
11 operability and then you say qualification, usually when I hear
12 qualification it's qualifying a valve for operation in a certain
13 environment, and usually that's an accident environment.

14 MR. ANDERSON: That's generally the case here.

15 MR. SIESS: It's radiation, pressure, temperature,
16 et cetera. But those 3000 LER's weren't in accident environments;
17 they were in ordinary operational environments, and when you say
18 "assure operability" that implies 100% and that isn't what you're
19 talking about. What you're really talking about there is
20 reliability of valve operation, aren't you? Under normal operation,
21 as well as operation under accident conditions.

22 MR. ANDERSON: We're actually talking about both
23 reliability and operability, under all defined conditions.

24 MR. SIESS: Yes. You want a valve to not cause an
25 accident by failing in normal operation, right? Or cause a

1 transient or something. You also want in systems important to
2 safety the valves to do the right thing when they're mitigating
3 some transient or some accident where there's an abnormal operating
4 condition. Although normal operating conditions have to be
5 considered, too.

6 But is there anything in here that talks about reliability
7 in the sense of what the probability is it's going to operate
8 when called on?

9 MR. ANDERSON: I don't believe the word reliability --

10 MR. SIESS: This is sort of a binary go/no-go type thing,
11 isn't it?

12 MR. ANDERSON: There is no discussion of reliability to
13 my knowledge in this standard. And operability is the emphasis in
14 the qualification standard.

15 MR. SIESS: That it can operate under the conditions of
16 pressure, temperature, number of cycles.

17 MR. ANDERSON: Seismic forces, pipe moments supplied to
18 the valve nozzles or pump nozzles, whatever. That's the question.

19 MR. BENDER: It's got some fail safe requirements in
20 it which imply a lot.

21 MR. SIESS: That's one of the functional requirements;
22 which direction does it fail? That was one you added in, as I
23 recall. And that would certainly have to be -- when somebody is
24 designing a valve they have to know which way you want it to fail;
25 open or shut or as it. Right? Although some of that is -- there

1 was some emphasis in here that it's the system more than the
2 valve that's important in some of those things.

3 MR. CARBON: I'd like to go back to my other question.
4 I'm not sure what your answer was. Again, they say that the
5 requirements for operability exist in other reg guides and are
6 being implemented. Is that so or is that not so?

7 MR. PAGE: I think there are but they're vague. They're
8 not as specific as what we're trying to get to here.

9 MR. CARBON: Are they adequate?

10 MR. PAGE: I don't know if I could answer that question
11 or not, and I worked in the valve industry, too, and we tried to
12 pick up as many reg guides as we could just because we were trying
13 to stay "ahead of the game." But whether they're adequate or not
14 I'm not sure. I'm not sure what all the valve companies are
15 doing, and if they're all given guidelines that basically tell
16 you what you should address I think it makes it a lot easier.
17 Because it's easy for things to be overlooked. If you have
18 a lot of turnover in personnel, there are a lot of reasons for
19 things to fall between the cracks and if you've got it in front of
20 you and you know that you've got to address these 26 items, it
21 lets you -- it makes it a lot easier for the guy that's specifying.

22 MR. CARBON: Now, the purchaser, be it the AE or whoever,
23 is going to specify what those valves have to do, to at least some
24 extent. I'm not sure of the complete extent. But the comment
25 you just made would sort of imply that the valve manufacturer

1 currently isn't told anything. Well, he certainly is, so you
2 have to come back again to the question, does he need more or
3 really, are things adequate as they stand right now?

4 MR. SIESS: Let me try to summarize. I think the thing
5 is becoming clearer to me. Obviously, everybody that purchases
6 a valve purchases it on some kind of a purchase specification
7 which undoubtedly includes ASME requirements on integrity, the
8 pressure boundary and some of the other kinds of information here.
9 And there are a lot of different purchasers and a lot of differ-
10 ent suppliers, and the experience with valve operability suggested
11 to a lot of people, the NRC and the industry, that there were at
12 least some deficiencies in functional specifications that were
13 contributing to these failures. That is, either people weren't
14 meeting these requirements or people weren't specifying all the
15 requirements they should. And the industry thought that this
16 could be improved by preparing a standard which specified in some
17 detail those things that you should consider that you specify as
18 functional requirements, and that the valve manufacturer would
19 then try to meet.

20 Now, from the NRC's point of view, looking at LER's,
21 valve problems, you realized that there are functional specifica-
22 tions being used but they obviously aren't working uniformly or
23 well, with the number of valve failures. And you're endorsing
24 this because you think there's a better chance that if these
25 functional specifications are spelled out in detail that there

1 will be better communication between the purchaser and the
2 supplier, and therefore, there will be better experience with
3 valves.

4 Now, we've got no assurance that this is true, but
5 this does not imply that there have not been functional specifica-
6 tions in the past, but that they have not been 100% successful
7 and maybe even 50% successful, and this is a step toward making
8 them more useful and would give the NRC more assurance. That is,
9 if somebody says, my valves are being ordered in accordance with
10 this document as supplemented by the regulatory -- well. Let's
11 say valves are being ordered in accordance with this document;
12 that certainly ought to give you more assurance, except for
13 manually operated valves which are excluded. And if they're
14 ordered according to this document as supplemented by the regu-
15 latory guide, I assume you feel it would be further assurance.

16 Now, is that roughly the situation? That is, the
17 procedures that are being used now don't seem to yield adequate
18 reliability of valves, and nobody is sure that this will do any
19 better but it looks like it ought to.

20 MR. ANDERSON: I agree. This is not considered a
21 major step.

22 MR. SIESS: This is not the only way to do it. As far
23 as you know, some manufacturer may be doing a perfect job, or
24 some purchaser may be doing a perfect job, but some people are not.
25 And a standard obviously doesn't raise the standards up to the

1 maximum because it's a consensus standard. I'll guarantee you
2 it's not the best possible way to do it but it presumably would
3 eliminate the worst ones.

4 MR. WARD: If this whole series of ANSI standards were
5 available, would you still want the reg guide? Or could you just
6 endorse it?

7 MR. ANDERSON: Oh, yes.

8 MR. WARD: You don't see the reg guide as necessary
9 today because the industry hasn't completed the series of
10 ANSI standards.

11 MR. SIESS: No.

12 MR. ANDERSON: As a matter of fact, we've considered
13 postponing this reg guide until they've completed a significant
14 number of the other standards and concluded that we could
15 probably go ahead with this even though they haven't finished
16 the other ones.

17 MR. SIESS: What you've done in the reg guide is just
18 extend this standard a little bit, Dave. First, it extend it to
19 include the manually operated valve in a system important to
20 safety. And nobody right now knows which manually operated
21 valves those are, although I'm sure they're being identified in
22 some of the older plants. As people say, yes, this system is
23 important to safety.

24 You've got some other additions here, in tying it in
25 to the ASME code, and I can't follow that. But you're tying it

1 in with design specs. Is that more than just a QA type operation?
2 I'm looking at page 5 now, Item 1(c). It's tying it into
3 NCA 3252 -- NCA 3250 actually.

4 MR. ANDERSON: Actually, there is a document called
5 a design specification under the ASME code, which does not
6 address operability. So what this suggests is that this should
7 be part of a package which includes not only structural integrity
8 but function, operability and whatever other requirements.

9 MR. SIESS: And really, you want it tied to that in
10 such a way that you know that a particular valve -- which require-
11 ments apply to it. Is that right? That's a paper requirement.

12 MR. ANDERSON: Yes.

13 MR. BENDER: Without knowing more than I know now
14 about the range of application, it's hard to know even when and
15 how to use the ASME code. As you know, many valves are used in
16 power plants that don't conform to the code at all because the
17 code was not looking for such things. Certain valves are covered
18 and require certain structural capabilities and relief valves and
19 pressure containment systems have certain requirements.

20 But I suppose I have an uncomfortable feeling about
21 how you intend to use the code in connection with this spec if
22 it really comes into being. Have you thought about it?

23 MR. ANDERSON: I'm not sure I understand. Actually,
24 the code covers valves as Class 1, Class 2 and Class 3 valves,
25 so you'd use Class 3 valves in Class 3 systems, and there are

1 structural requirements for Class 3 valves in the code.

2 MR. BENDER: Yes, but when you get to these upper
3 class levels or the higher numbers, they're not necessarily upper
4 class, the requirements sort of get to be pretty superficial.

5 MR. ANDERSON: They become like commercial products,
6 except that there are quality assurance provisions applied, et
7 cetera, that wouldn't be applied to commercial ones.

8 MR. BENDER: Yes. I guess I had reference at the
9 moment to the structural aspects of it. Just what you do to
10 verify that a valve can withstand the environment that it's
11 living in will not be determined by what's in the code in many
12 cases. So you've got to think about what you would do instead.
13 And somehow or other I thought this guide was intended to
14 satisfy that purpose, among other things.

15 MR. ANDERSON: Well, if the valve body, for instance,
16 is covered by the code and we assume that 350° steam won't do a
17 lot of damage to it, as part of an environment --. But you may
18 want to use a different package or some such thing as that,
19 depending on the environment for the valve, and I think that's
20 what this might cover.

21 MR. BENDER: You're right. All I'm saying is that you
22 have to know a lot about the application before you would know
23 whether the code applies at all.

24 MR. SIESS: Well, this doesn't really address the code,
25 Mike.

1 MR. BENDER: Well, it does to the extent that -- .

2 MR. SIESS: It just says that whatever specification
3 you get from the ASME code should be cross-referenced to this
4 functional specification. They're two separate things. It just
5 says we want them tied together for a given valve. When we look
6 at this valve we want to know what ASME requirement was applied
7 and what functional requirements were applied. Am I correct?
8 In what (c) says?

9 MR. BENDER: Well, if that means the ASME requirement
10 is vague and therefore we're not paying any attention to it in
11 a lot of cases, I think that's a meaningful statement.

12 MR. SIESS: Well, this doesn't address the ASME require-
13 ment at all.

14 MR. BENDER: It says correlate. I'm not sure that I've
15 got the words in front of me. It's cross referenced.

16 MR. SIESS: Every valve comes under ASME somewhere in
17 some category.

18 MR. GREGG: I have another statement to make in answer
19 to Mr. Bender. I'm sure Mr. Bender is aware that the code does
20 not really address operability as such. It addresses only the
21 structural aspect of the equipment.

22 MR. BENDER: It doesn't always address even structure.

23 MR. GREGG: That's true.

24 MR. BENDER: There are only certain classes of valves
25 that get structural treatment. So when you say cross reference,

1 you have to think about what you're cross referencing.

2 MR. GREGG: That's right, but the functional opera-
3 bility has to be addressed somewhere, and we're starting to do
4 that. And the industry is starting to do that, also. They are
5 aware that there's a need to address function and operability.

6 In answer to Mr. Carbon's question before, somewhere
7 the specifications that are provided to the valve manufacturers
8 don't really address functional operability, either. They
9 possibly should, but this standard and the standards that follow
10 will address that subject; that the valves should be operated
11 so many times, or shall be operated in such a fashion under
12 certain conditions that will give you more assurance that the
13 valve will operate rather than the present standards that don't
14 provide this or don't require any kind of operability requirement.

15 MR. ANDERSON: Possibly I should point out that about
16 the same time this project on the set of valve standards was
17 undertaken, a program on a set of pump qualification standards
18 was undertaken, and one of their major parts, again, is a
19 functional specification requirement. If you're buying a pump
20 you'd better tell the people you're buying it from all of the
21 things that might affect the design of that pump, or be related
22 to a qualification program for that pump.

23 And it's concluded I believe in most qualification
24 exercises that someplace there has to be a document which says,
25 this is what that thing is going to be subjected to in service,

1 and this is what it's got to be qualified for. And to call that
2 a functional specification and require or promote its use is
3 really what we're going through here today.

4 MR. SIESS: For the committee, the first question we
5 have to answer is whether we think the proposed ANSI standard
6 is a useful document, and that official recognition of it by
7 the NRC would either expedite the review process or improve
8 reliability and safety or both hopefully. The second question
9 would be, if the answer to the first one is yes, are the excep-
10 tions or, let's say the supplements added by the regulatory
11 guide desirable things. And if we answer the first question yes,
12 we should then go through the proposed reg guide item by item to
13 see what is added and whether we think they're applicable and
14 desirable.

15 Let's consider the first question then. Is the idea of a
16 functional specification standard a good idea? It presumably is
17 not mandatory; somebody that has a procedure for doing this and
18 can describe it and provide the information to the staff and
19 satisfy the staff, then it's probably acceptable. The standard
20 review plan eventually would probably say that indicating compli-
21 ance with this regulatory guide is sufficient. That's the way
22 it usually ends up, and then the staff doesn't look at it any
23 further.

24 Mike, do you think that this proposed standard is
25 something that is worthwhile?

1 MR. BENDER: Yes, I've been a long-term proponent of
2 this idea, and mostly because there are a number of different
3 ways of buying valves and a large fraction of the people that
4 buy valves do not give the manufacturer enough information so he
5 knows what he's required to provide. I'm not sure that this was
6 the form that I would have expected it to be presented in, but
7 having learned that there's a parallel qualification standard
8 that accompanies it, it makes better sense.

9 I think the fact that the guide you're putting out doesn't
10 make reference to that makes it difficult for one to know what to
11 expect, but given that you're going to deal with both aspects,
12 I'd say yes.

13 MR. CARBON: Yes.

14 MR. SIESS: Dave?

15 MR. WARD: You've alluded that there are some further
16 ANSI standards, Mr. Gregg. Could you tell me what those are
17 going to be, what areas?

18 MR. SIESS: Mr. Anderson has one over there.

19 MR. WARD: Well, the second one, the one dealing with
20 qualification testing is there, but apparently there's a series --

21 MR. ANDERSON: Okay, that's for active valve assemblies,
22 which is the operator plus the valve body. Mr. Gregg is on the
23 committee that's -- the NRC representative on that committee and
24 can explain what some of the others are.

25 MR. GREGG: There is a subcommittee being formed at

1 present on functional operability of check valves; there's one
2 that I'm a member of that just started three months ago on
3 functional operability of pressure relief valves; and I think
4 there's a series of seven or so of these items, I'm not certain
5 what the rest of them are, but there are intended to be a
6 number of them. And I think this is provided in the Forward in
7 some of these other standards; perhaps in (b) in the one that
8 you're discussing now and in B-1641.

9 MR. WARD: Well, I agree.

10 MR. SIESS: All right. Then let's take a look at it
11 item by item. In (c) I'd suggest that we not get involved with
12 (b) unless you want to look at the proposed definition of an
13 active valve. What force does that have now, when you put a
14 definition in the discussion portion of a reg guide? I don't
15 guess we have a place in the Federal Register for definitions,
16 but we're in the process of defining important to safety somewhere
17 else, and somebody did point out in a letter that putting a
18 definition in the discussion section of a guide was sort of a
19 backhanded way of doing it.

20 MR. ANDERSON: I believe this same definition occurs
21 in other places; possibly in the standard review plan.

22 MR. SIESS: The implication is here that it doesn't.

23 MR. PORSE: Let me add to that. It is the intent that
24 NRR will revise the standard review plan and this is the defini-
25 tion that will be used there.

1 MR. SIESS: The definition seemed a little strange to
2 me because it's defining an active valve and yet, most of the
3 terms in the definition seem to me not to define active but to
4 define important to safety. It seems to me an active valve is
5 a valve which must perform a mechanical motion in order to meet
6 its safety function. The mechanical motion is the part of the
7 definition that relates to active. The rest of it is to shut
8 down the plant, maintain the plant in a safe shutdown condition
9 and mitigate the consequence of a postulated event. Those three
10 terms are the ones we usually apply to systems important to
11 safety.

12 So it seems to me that your definition of active valve
13 is one that must perform a mechanical motion, period. When you
14 say, active valve in a system important to safety, the other
15 three parts of the definition come in. But if a valve is a
16 check valve and it has to close, that makes it an active valve,
17 right? Or if it's a valve that has to open or a valve that has
18 to fail --. A valve that has to fail as is. Is that an active
19 valve?

20 MR. BENDER: It might be.

21 MR. SIESS: Fail as it. There's no mechanical motion
22 required.

23 MR. PORSE: That is not an active valve.

24 MR. PAGE: It's not performing mechanical motion.

25 MR. SIESS: That's the only valve that isn't an active

1 valve, I guess; one that fails as is.

2 MR. BENDER: I may have a misinterpretation of what
3 your intent is, but it seems to me that it's not active when
4 it's in that failure mode, but it may be active under other
5 circumstances and you wouldn't want to rule out its being active
6 just because under certain failure conditions it doesn't change
7 position.

8 MR. PAGE: If you term it active, it's got to perform
9 a mechanical motion under any of those conditions, and I believe
10 a fail as is, is defined as passive.

11 MR. BENDER: In that case it is, but that's only one
12 function of the valve. That's the point I'm trying to make.

13 MR. SIESS: If it's required to fail as is in order to
14 do any of these -- perform a safety function, then it's not an
15 active valve in terms of the safety function.

16 MR. ANDERSON: Dr. Siess, it could be --

17 MR. BENDER: Well, in that particular failure, yes,
18 but there may be a number of different --

19 MR. ANDERSON: It could be that you have six different
20 situations that the valve -- you rely on the valve for something
21 or other. And if in all six, if in every one of the safety-related
22 requirements you had it was fail as is, then I guess you'd call
23 it a passive valve and you do have requirements and a definition
24 of passive valve.

25 MR. SIESS: I'm just trying to find out by elimination

1 what isn't an active valve. Now, somebody in the letters suggested
2 a better wording for that, in which they simply said something
3 must perform a mechanical motion in a safety-related system, or
4 something of that sort. I think this definition has just got
5 more in it than it needs to have in it. But the additional words
6 are there just to answer what you said; in all six cases it has
7 to fail as is.

8 MR. BENDER: That's not the only condition. You may
9 want it to be passive in the case of failure, but it still may
10 be an active valve when it's called upon to function. And most
11 valves have some active mode, and you have to be very careful
12 about how you mix things up.

13 MR. SIESS: All right. Mike, if you read the whole
14 definition then you would agree, then. It's a valve which during
15 the following postulated accidents must perform a mechanical
16 motion in order to shut down the plant, maintain the plant in
17 a safe shutdown condition or mitigate the consequence of a
18 postulated event.

19 MR. BENDER: I think that's not a bad definition.

20 MR. SIESS: If a valve during a postulated accident
21 must fail safe in order to do all three of those things, then
22 it's not considered an active valve. It may be active for normal
23 operation but it's not active for accident conditions. That's
24 what this says.

25 MR. BENDER: It may not be called upon --. If it's

1 never called upon to function under safety-related conditions,
2 then you may be willing to call it passive for safety purposes.

3 MR. SIESS: That's what this definition is; if it's
4 active for safety purposes, it's an active valve. If it's passive
5 for safety purposes, it's not an active valve.

6 MR. BENDER: And I think that's what they intended.

7 MR. SIESS: That's what it says.

8 MR. ANDERSON: I should point out that back in 1978
9 this went to the RRRC and it was held up for about three or four
10 months on this very subject. That was in 1978.

11 MR. SIESS: Does the RRRC still exist?

12 MR. ANDERSON: No, it doesn't. The decision was that
13 what we would do is refer to whatever definition they were going
14 to use in the standard review plan -- it still refers to the
15 proposed definition for that -- and all we hope is that when they
16 come out with a definition in the standard review plan, if it's
17 not the same as this, we will have implied that we intend to be
18 consistent with the standard review plan.

19 MR. SIESS: Is it a great big deal? If you have a
20 passive valve, don't some of these functional -- wouldn't you
21 still have to have functional standards? Suppose a valve was
22 passive, it was a closed valve and it stayed closed for all
23 accident conditions and it failed closed. Wouldn't you still
24 have a leak -- might you not still have a leak requirement on
25 that valve as a safety functional specification? I mean, if

1 you're writing functional specifications which deal with other
2 things than operability, why would you limit it only to active
3 valves?

4 MR. ANDERSON: It's a good question. It wasn't
5 considered when the standard was being written, to my understanding,
6 and the fact that the guide had to add fail safe suggests that
7 we might be doing more about passive valves.

8 MR. SIESS: I've got a manually operated valve that's
9 closed that I expect to stay closed; it's a containment isolation
10 valve that normally is closed; a sampling valve or something. I
11 might still want a leak rate on that. Not if it's a sampling
12 valve, but suppose it's something else.

13 MR. ANDERSON: There could be a functional specification
14 which doesn't meet this; it's not covered by this guide.

15 MR. SIESS: So this guide would not say you had to
16 write a functional specification for that kind of valve; it would
17 still have to be handled by the old procedures, whatever they are.

18 MR. BENDER: It seems to me, and there was a comment
19 that I had intended to make about this valve, that the system
20 functions need to be given to that valve manufacturer and the
21 valve supplier along with the functional specifications, so that
22 he can make some judgments about how the valve is being used.
23 This thing requires maybe more knowledge from the buyer of the
24 valve than he may have at the time that he's specifying it. And
25 somehow or other, I think there ought to be something that requires

1 some description of the system in which the valve is to be used
2 as part of the functional spec. I'd just like to offer that as
3 something to think about.

4 MR. ANDERSON: Actually, one of the things that we had
5 in mind was that people would be writing functional specifications
6 which might be an umbrella for the performance of valves in
7 many systems. So that if you buy a bunch of three-inch valves
8 and you select --

9 MR. SIESS: That's not what Mr. Bender is saying.

10 MR. ANDERSON: You might select a wide variety of
11 conditions and specify all of these conditions for all valves,
12 and then you can use which valve you want in which place, and
13 it wouldn't be that specific. It wouldn't be system-specific.

14 MR. SIESS: Okay. Gentlemen, what I propose to do
15 then is that we start with the specific considerations on page 6
16 and go through those, but first I'm going to declare a ten-
17 minute recess.

18 (A short recess was taken.)
19
20
21
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25

MR. SIESS: We will reconvene.

Gentlemen, I would like to start on page 6 of the specific considerations, and I think it might save a little time if I just bring the items up and see whether there is any comment, and if there is, to let the staff explain. That way we won't be explaining everything. We might be able to skip one or two, but I'm not sure.

The first one there is one bringing in manually operated valves. Does the subcommittee have any problem with that? That is a-1 and 2-a(1). 2-a(2) is again tying it into the ASME Code. Is that just a cross-referencing thing, or does it have more significance than I read into it?

MR. PORSE: No, it is actually to make it complete.

MR. SIESS: Now, Item b. adds some items to the list, 3.2 is the structural requirements and they go now in a through g, and this says that they should be supplemented by four additional items.

On the first one there it says, "The time dependence and number of cycles, if applicable, for temperatures, pressures, and dynamic loading," and it looks to me like temperatures is already in there. 3.2 d. says that "Time-temperature data for significant thermal transients," now, is that not the same thing you have here, "time dependence for temperatures resulting from plant transients". What is the addition, is it the number of cycles that is the addition?

1 MR. ANDERSON: Maybe so.

2 MR. SIESS: Because the time dependence it is not.

3 MR. BENDER: I didn't read it that way. I thought it
4 had something to do with the rate at which these additions were
5 imposed that they intended to cover, and that would seem to come
6 out of the standard.

7 MR. SIESS: The standard says, "Time-temperature data for
8 significant thermal transients, with number of cycles." I do
9 not really see why that temperature belongs in b.1

10 MR. PORSE: If a system is idle and you let it through
11 it of a different temperature.

12 MR. SIESS: Your point is that plant transient is
13 different .

14 MR. ANDERSON: I think what we want also in this case,
15 I believe what was intended here was that we would include the
16 time relation between both pressure and temperature.

17 MR. SIESS: I am not talking about the pressure, I am
18 talking about the temperature.

19 MR. ANDERSON: But if you are increasing pressure at
20 the same time that you are increasing temperature --

21 MR. SIESS: This does not say the temperature-pressure
22 relationship, it says the time-dependence for temperature and
23 pressure, and so forth.

24 MR. ANDERSON: Yes.

25 MR. SIESS: The standard already calls for the time-

1 temperature data for significant thermo transients. Now, I don't
2 care what kind of transient it is, if it changes the temperature
3 it is a thermo transient, right?

4 This calls for time and temperature data with number of
5 cycles. Now, if you have that, which the standard calls for, and
6 then you call for the time dependence and pressures, if I have
7 the time dependence and pressure, the time dependence and
8 temperature, I must have the relation between the two, don't I?

9 MR. ANDERSON: And the dynamic loadings.

10 MR. SIESS: I have no objection to your adding pressure
11 and dynamic loading. My question is that you have temperature
12 in there and it seems to me that is already in there. I do not
13 see the additional information you are asking for.

14 MR. ANDERSON: By repeating temperature here, I think
15 what we are doing is to say, if you give us the time zero and you
16 change temperature, then you change pressure, and you have a
17 dynamic loading.

18 MR. SIESS: That may be what you meant, but that is not
19 what you said. If that is what you meant, you had better find
20 some better words for it.

21 I can read that as simply being the time dependence,
22 number of cycles, if applicable, for temperature; the same thing
23 for pressure, and the same thing for dynamic loading. There is
24 nothing in that sentence that tells me you want to relate it. The
25 fact that you put them in the same sentence does not automatically

1 require that, rhetorically.

2 MR. ANDERSON: We will check the original intent and
3 possibly change the wording. The words "an interdependence."

4 MR. SIESS: I think you want the word "interdependence"
5 in there, if that is what you mean.

6 On seismic loading, I didn't have any question about it;
7 does anybody else?

8 MR. BENDER: Maybe somehow you need to know what the
9 restraint system is. Without knowing the restraint system, it is
10 not very helpful to us just to know the dynamic loadings, unless you
11 expect him to specify the strength.

12 So, my thought would be that you either ought to put
13 something in there that says the restraint system shall be
14 specified, or that there shall be some understanding between the
15 valve supplier and the designer as to how the restraint systems
16 will be developed when the valve is purchased.

17 MR. SIESS: It asks for the acceleration and loading on
18 the valve assembly.

19 MR. BENDER: He can't know it until he buys the valve, or
20 you have to buy the valve and then design the restraint system to
21 match it - that is a chicken and egg. That is the only way in
22 which he can do it.

23 MR. SIESS: Well, the idea that the staff has, I think,
24 and the industry has, is that you envelope these requirements for
25 a number of systems, that is, you will have valves that are

1 qualified up to 10 gs in all three directions, for example.

2 MR. BENDER: That is impossible to even suggest, that
3 is not going to happen.

4 MR. SIESS: Why not?

5 MR. BENDER: Because there are too many different kinds
6 of applications, too many locations, too many working conditions.
7 It depends on where the valve is, and the system.

8 MR. SIESS: I don't know whether we are talking about
9 the same thing. I think the idea is that the manufactured valve
10 is qualified for 10 g. Now, the purchaser says, "Gee, I have not
11 analyzed this, but on the basis of experience I am going to
12 specify 5 g XYZ."

13 MR. BENDER: I do not think that is the valve industry's
14 intent, from what I know about it. I think what they are trying
15 to find out is what their valves might be expected to do.

16 MR. SIESS: Right.

17 MR. BENDER: And then to come back and tell you whether
18 you should use that valve.

19 MR. SIESS: But I don't see how the valve industry is
20 going to make the seismic analysis for the plant.

21 MR. BENDER: They are not, so they are going to have
22 to be given something.

23 MR. SIESS: That is what it says, it gives them the
24 seismic acceleration and dynamic loadings that the valve assembly
25 shall be capable of withstanding.

1 MR. BENDER: Well, you can only do it if you can describe
2 the restraint system because the restraint system and the valve
3 are part of the same package.

4 MR. SIESS: What restraint system are you talking about?

5 MR. BENDER: The mounting arrangement of the valve.
6 All these things must be dealt with, you can't just stick a valve
7 into a system and say it is qualified.

8 MR. SIESS: I don't understand, but what would you
9 propose, then?

10 MR. BENDER: I would propose that they are either given
11 the structural arrangement, which is a common thing to do when
12 you buy a valve; or you are given the conditions and ask for
13 structural mounting requirements that go with the valve.

14 Now, if you do one of those two things, then between the
15 two organizations they will find out how to mount them, but without
16 it they won't even know what needs to be done.

17 MR. SIESS: I still don't understand.

18 MR. ANDERSON: As I understand it, if a valve with a big,
19 heavy operator, is going to be mounted in a piping system and it
20 is anticipated that you have to put a hanger or a snubber near
21 the top of the operator to keep it from whipping around, your
22 suggestion is that we should tell them about the restraint system?

23 MR. BENDER: Yes, that is what I am suggesting.

24 MR. ANDERSON: We would assume that would come in the
25 seismic loadings.

1 MR. BENDER: That should be provided, certain specified
2 needs which the valve manufacturer can specify.

3 MR. SIESS: It seems to me it is more important that
4 when I qualify that valve on a shake(?) table, I know how to
5 mount it.

6 MR. BENDER: I will repeat what I said before. There
7 are so many different kinds of locations for valves that you
8 can't generalize, "Here is a mounting scheme, a general mounting
9 scheme that will fit every valve."

10 MR. SIESS: Then, how do you qualify a valve?

11 MR. BENDER: You qualify it for its restraint system,
12 and that is what they are going to have to do.

13 MR. SIESS: You mean in qualifying these valve, in all
14 of these plants for seismic loading, I am going to have to make
15 a test for each possible combination of restraints?

16 MR. BENDER: I am not saying that is possible, but for
17 a pretty large number of them, if you are going to make it work
18 that is what you are going to have to do.

19 MR. SIESS: Is that what people are doing, then? They
20 have been putting valves on shake tables now for quite a while,
21 have they not?

22 MR. PAGE: I would like to answer that, if I may.

23 MR. SIESS: Please.

24 MR. PAGE: Normally, you qualify for the worst case in
25 the plant. All my experience has shown that you do not apply

1 snubbers to the top works of the valve. I have never seen that
2 happen, although they do apply them in installations. The plat
3 almost exclusively gives you a worst-case profile for that area,
4 for that whole area of the plant. Generally, it is by elevation
5 in the plant, and if you know your pipeline mounted, they will give
6 you a worst case to work to.

7 MR. BENDER: Well, I think my point simply is this, you
8 don't know whether the valves are mounted properly, and you don't
9 even know whether they are analyzed properly.

10 MR. SIESS: Mike, I think we have gotten pretty far
11 away from our functional specification now, we are talking about
12 qualification in plants.

13 MR. BENDER: I am talking about valves which have to
14 work in plants, Chet.

15 MR. SIESS: I know, but this guide only addresses one
16 aspect of that, and that is how does somebody order a valve, what
17 does he specify when he orders it.

18 MR. BENDER: Well, I am telling you what he has to
19 specify. He has to specify how it is mounted, so that the valve
20 manufacturer knows what he has to supply.

21 MR. SIESS: And how do you propose that this standard
22 be changed?

23 MR. BENDER: Say that the restraint system for the
24 valve shall be described.

25 MR. ANDERSON: We will add words in B-e-2 on the restraint

1 system.

2 MR. SIESS: I don't see that that is enough. It seems
3 to me you have to give him, then, a floor spectrum or a floor time
4 history if you are going to give him the system to analyze.

5 MR. PAGE: I think that you may be getting into some
6 problems here because if you haven't a top-works restraint you
7 are going to have to know what kind of motion the restraint is
8 going to see.

9 MR. BENDER: I did not say what kind of restraint it is
10 going to be.

11 MR. SIESS: I asked you what needs to be in here. You
12 are not giving me enough.

13 MR. BENDER: I said that the guy that buys the valve
14 should describe the restraint system of the valve.

15 MR. SIESS: But what else does he have to describe in
16 order to get it qualified now, Mike?

17 MR. BENDER: This is not a qualification procedure, that
18 was what I was told a little while ago.

19 MR. SIESS: I know, but what is the functional requirement?
20 Not just the restraint system, you have to give him a seismic
21 functional requirement. Right now the functional requirement they
22 have in here is acceleration and dynamic loading, is what the
23 assembly will be subjected to now.

24 MR. BENDER: I hate to be argumentative.

25 MR. SIESS: No, I am asking you for what you want to make

1 a change in, Mike, I am not arguing with you. We want to tell
2 the staff what we want them to put in there. You have to tell them,
3 and then we will decide.

4 MR. BENDER: I seem to be arguing with you and not
5 discussing with staff. I would like to make a recommendation, if
6 you don't like it, fine.

7 MR. SIESS: Does the staff understand what he wants to
8 add?

9 MR. ANDERSON: I believe I understand, that we put in
10 words in B-2 that speak to the seismic, or to the restraints and
11 mounting system. That the man writing the specification should
12 give information on that.

13 If it turns out that it would not affect the valve quali-
14 fication, fine. If it turns out that it would, he has to give him
15 the information.

16 MR. SIESS: Let's go on to the next item, then because
17 I think it relates to it.

18 MR. PAGE: Sir, may I make a quick statement here? I
19 believe that the purchaser cannot specify the restraint system
20 for the valve, I don't see how you can do it. It is quite
21 impossible.

22 If the restraint system is required, the manufacturer
23 has got to tell the purchaser. He knows his equipment.

24 MR. BENDER: I bought a lot of valves in my life, and
25 I have never yet seen a valve manufacturer that knew enough to know

1 how to evaluate seismic requirements that go with the valve
2 structure.

3 If you tell him what loadings you are going to put on
4 the valve, he will tell you whether it will survive it.

5 MR. SIESS: That is what this says.

6 MR. BENDER: But he is not going to be able to analyze
7 it by just giving a response back.

8 MR. SIESS: Mike, I am sorry, what the standard says
9 is that you specify seismic acceleration and dynamic loadings that
10 the valve assembly shall be capable of withstanding without loss
11 of functional capability.

12 MR. BENDER: I am saying, you can't tell him that unless
13 you know what the mounting scheme is going to be.

14 MR. ANDERSON: I agree that many time these specifi-
15 cations are worked out. He says, "We can't do it that way,
16 rewrite the specifications this way." There is a little give and
17 take. I think that is what you anticipate.

18 MR. BENDER: That is all I am asking.

19 MR. ANDERSON: We will include some admonition to that
20 effect.

21 MR. SIESS: I think you are going in the wrong direction
22 with this. If you tell him that he has to have a valve that
23 withstands 10 g in any direction, in three directions simul-
24 taneously, then the only question he has left is, how do I mount
25 that valve for that test.

1 MR. BENDER: Usually it is, do I have a valve that could
2 survive it.

3 MR. SIESS: Well, let's make it 1 g. That gets into
4 the next standard, how do you qualify. Let's go on to the one
5 that says, "The frequency response spectra for the OBE&SCE." I
6 don't know what you mean by, "Frequency response spectra" where,
7 input, base mat?

8 MR. PAGE: Depending on the mounting.

9 MR. SIESS: You say, the standards of the seismic
10 acceleration of the valve assembly, in other words, that is what
11 the valve assembly sees in the case of your assumed earthquake.

12 You are asking here for the frequency response spectra.
13 Now, there is an infinite number of frequency response spectra.
14 I can do floor spectra. If I just say "Frequency response spectra"
15 without qualifying it, I mean the Reg Guide 160 spectra, which is
16 applied at the ground surface.

17 MR. ANDERSON: We can qualify that.

18 MR. SIESS: Well, which do you mean?

19 MR. ANDERSON: That which is applied to the valve
20 through the restraint force and attachment.

21 MR. SIESS: Why do you want that?

22 MR. WARD: It seems to me that if you say that here,
23 then you don't need the admonition.

24 MR. ANDERSON: We could probably put that in.

25 MR. BENDER: I think those kinds of words would take

1 care of it, eventually it gets you back to the same point. You
2 ought to find out how it is mounted to know what you are doing.

3 MR. WARD: But as far as the valve manufacturer is con-
4 cerned, he wants to know what loads his valve is going to see.

5 MR. SIESS: Does 3 satisfy what you are getting at, the
6 frequency response spectra and the other potential forcing
7 frequencies such as afrom attached piping, pumps, and other
8 equipment? He has to make a dynamic analysis.

9 MR. BENDER: If the restraint system were known, you
10 could do that. You don't know it. So, you may have to do enough
11 to say, "Well, look, I am going to mount this valve somewhere near
12 the containment shell and I have some attachments in the con-
13 tainment shell to which you can tie it. We would like to have
14 you specify the valve, a valve which can be used in this way."

15 That is a very simplified kind of description of what
16 people generally would do. But that principle, I think, would
17 have to be applied.

18 MR. SIESS: How does he qualify that valve?

19 MR. BENDER: He may have a standard mounting arrangement.
20 He might say, "Here is the valve, and this is the mounting
21 arrangement."

22 MR. SIESS: Now, that was what I thought the intent was.
23 If I take 3.2-e which says, "Ten g in any direction," and the
24 manufacturer comes back and says, "Okay, I will give you Model 101,
25 mounted this way, that will take Ten g in any direction."

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1 MR. BENDER: I guess the reason I am reluctant to agree
2 to that is, I don't think the design people know that much about
3 these configurations.

4 MR. SIESS: But if they got it from the manufacturer
5 and it says, "Look, you have to mount it this way," then that's
6 the way they will mount it.

7 MR. PAGE: Sir, are you talking about secondary
8 mountings?

9 MR. SIESS: What?

10 MR. PAGE: Are you talking about the secondary type of
11 mounting arrangement where you are actually adding something over
12 and above the pipeline itself?

13 MR. BENDER: Oh, sure. Usually there is a mounting
14 support on both sides of the valve that has any mass to it.

15 MR. SIESS: On the pipe, or on the valve?

16 MR. BENDER: On the valve.

17 MR. PAGE: A lot of valve assemblies are strictly
18 mounted by the pipe.

19 MR. BENDER: Of course, small valves are just supported
20 on the pipe. But when the valve gets to be a significant loading
21 on the pipeline, you can't depend on the pipeline as support.
22 Sometimes you have to look at the matter of these combined
23 circumstances, pressure relief, for example, where the way in
24 which the fluid is released has a lot to do with the way the
25 valve has to be supported.

1 MR. PAGE: And in those cases you are talking about
2 you generally see supports - the ones I have seen have - on the
3 valve assembly itself, coming from the floor; which brings you
4 over to a hard-mount floor response spectra.

5 MR. BENDER: The manufacturer does not know where the
6 valve is going to be, and where it is going to be mounted.

7 MR. PAGE: Well, the person purchasing the valve in
8 that case is going to provide you a spectra that will go with that
9 valve assembly, and that would be a floor mount spectra, which
10 he knows.

11 I thought a minute ago you were talking about coming
12 off the wall and supporting the top parts, and leaving the pipeline
13 alone, which really could actually destroy the valve.

14 MR. BENDER: Sometimes it would be a good idea to
15 support the top parts. But you are right, they don't ever do it.

16 MR. PAGE: You are dealing with two different spectras
17 there, you are dealing with the wall spectra which was supporting
18 top parts, and the pipeline spectra, which would be dealing with
19 the valve.

20 MR. BENDER: I am not trying to say what is going to be
21 supported.

22 MR. SIESS: But this is what 3 is trying to say. This
23 says what you should supply the manufacturers, the frequency
24 response spectra, as well as other potential forcing frequencies
25 such as from attached piping, pumps, or other equipment.

1 Now, if it is a floor-mounted valve it sees a forcing
2 function from the floor, plus a forcing function from the two
3 attached pipes.

4 MR. PAGE: If it is hard-mounted on the floor, it would
5 just be the floor.

6 MR. SIESS: Well, the pipes are there. They may not
7 dominate, but you still see a forcing function of those pipes.

8 MR. PAGE: Yes, you would see a nozzle-loading, not
9 so much a spectra but a nozzle loading.

10 MR. SIESS: So, it would be a dynamic force, a time-
11 dependent force, which is what I mean by forces. But you think
12 the floor support would dominate.

13 MR. PAGE: Yes, sir. In terms of seismic motion, yes.

14 MR. SIESS: Except for the valve.

15 MR. PAGE: The valve body itself may see flexure(?).

16 MR. SIESS: Nozzle loading, all right.

17 Now, is it intended that b-3 would replace, then, 3.2-e?
18 This says, "Supplemented by."

19 See, Mike says that the valve manufacturer can't make
20 an analysis, but b-3 would require him to make an analysis. You
21 give him the spectra and the forcing function, and he has to
22 analyze his valve for that, or test it for that.

23 MR. BENDER: I think right now some kind of cooperative
24 arrangement should be worked out, specifying mounting.

25 MR. SIESS: Let me put it this way, I think between the

1 two things here you have enough functional specification. I hope
2 the next guy addresses how you qualify it for seismic. Let's
3 just leave it there, it is confusing enough.

4 All right, we will go to b-4, static and dynamic
5 differential pressure. I assume that this only calls -- it just
6 says "pressure differential".

7 MR. PORSE: This is a clarification.

8 MR. BENDER: Let me offer a comment here, this is as
9 good a place as any.

10 I notice in the ANSI standards there was nothing
11 having to do with fluid stock or water hammer. It may be
12 implicit in this, but I expect we ought to call it out somewhere,
13 that is often a point that is overlooked. It may be a control
14 consideration. Also, the fluid state is important in some of
15 the valves. That is not covered, and that is my problem.

16 MR. SIESS: That would not be under structural, would it?

17 MR. BENDER: That is not my contention, but I don't
18 think it comes up anywhere else.

19 MR. SIESS: Yes, fluid flow. Under 3.3.1 there is
20 something about system fluid. I don't know whether that considers
21 it or not.

22 MR. BENDER: I am just trying to make sure we get it
23 identified.

24 MR. SIESS: Let's go on to c., operational requirements,
25 which is 3.3 of the standard. This wants to add the fail-safe

1 response which seems reasonable. Does anybody object to that?

2 MR. BENDER: It may be quibbling, but the term "fail
3 safe" tends to be putting all this on the valve manufacturer
4 doing something he may not know how to do.

5 Maybe you ought to say something like, "desired valve
6 position", as opposed to fail safe. There are times you have it
7 in one position, and another time, in another position.

8 MR. SIESS: Well, you decide which one you want. But
9 he can only guarantee fail safe as far as the valve operator
10 is concerned, he has nothing to do with the circuits.

11 MR. BENDER: Well, you can say you want the valve to
12 stay in the existing position under loss of power, or you could
13 say you would like to move it from the closed position to the
14 open position. You will have to decide what that is.

15 So, I am suggesting to say, "desired valve position"
16 rather than fail safe position.

17 MR. ANDERSON: It may be better to avoid the use of
18 the words fail safe.

19 MR. SIESS: Well, actually failure can involve control
20 circuitry.

21 MR. ANDERSON: Loss of actuator power.

22 MR. SIESS: This only relates to the actuator valve
23 assembly.

24 Then, 3.3.1, operating conditions, Item 2. Does any-
25 body have any questions about that? This is the one where Mike

1 says, do you address two-phase flow.

2 MR. BENDER: In the standard, the 3-b-1, system fluid
3 is one of the, the property is to be listed.

4 MR. SIESS: Item 3, 3.3.2 part e, where it says "Motor
5 duty requirements", and this says it shall be supplemented by
6 including motor power and duty requirements. Why did you repeat
7 duty? I don't mind that it is being repeated, but I just thought
8 there might be something I missed.

9 MR. BENDER: I would like to offer another comment. I
10 believe it is unwise specifying power torque for the valve. I
11 expect it would be wiser to specify the conditions under which the
12 motor has to operate, and perhaps specify some limited power or
13 torque for it.

14 If you want to be sure that it can't work under
15 certain conditions, just specify the torque that is required
16 for the valve. That puts you in the position of deciding what
17 the operator can do. To me that is a job that the valve
18 manufacturer knows better than you do.

19 I would have to say the functional specs should
20 specify the pressure conditions under which the valve must
21 operate and perhaps, if you don't want it to be able to operate
22 under certain pressure differentials, then you want to be able
23 to say that the motor shall not be oversized to the extent to
24 permit the valve to operate when the pressure differential is
25 less than something. That has been a controversial issue for a

1 long time.

2 MR. ANDERSON: You suggest that we remove, then, any
3 reference to stall torque?

4 MR. BENDER: Well, I was thinking about doing it in a
5 slightly different way. I am trying to suggest that we specify
6 the conditions under which the valve must operate, and the
7 conditions under which it must not be able to move, if you are
8 relying upon it. That is the point I am trying to make.

9 There are really a few conditions under which you
10 would like to be able to say the valve can't open because the
11 motor doesn't have that much on it.

12 MR. ANDERSON: I think one of the concerns, too, has
13 been jamming the valve so it won't open the next time.

14 MR. BENDER: Usually you are allowing the torque switch
15 for that, but the motor will override the torque switch
16 occasionally.

17 MR. SIESS: There has been more failure due to torque
18 switch settings than anything else.

19 MR. BENDER: It is a good proviso, I am not critical of
20 it. I am just saying it has not been identified properly.

21 MR. ANDERSON: All right.

22 MR. SIESS: There is something like stalling torque.

23 The next item is a change in wording in 3.3.2. 1, and
24 I read this about six times and was trying to think what the
25 difference is. One difference is that whereas the standard says

1 that high and low voltage limits and frequency shall be identified,
2 the guide says they should be specified. There is a change from
3 "shall" to a "should".

4 MR. PORSE: I think this change came about because of a
5 question from the outside, it was in one of the letters we got.

6 MR. SIESS: I read that too.

7 MR. PORSE: It could be a misunderstanding that DC
8 current would have a frequency. So, we separated this. Instead
9 of having it all in one sentence we made two sentences out of it.

10 MR. SIESS: Well, the way it reads now it says, "Shall
11 be identified as AC (frequency, single phase or three phase).
12 That says for AC you specify the frequency single phase and/or
13 three phase, and/or DC and high and low voltage limits.

14 Now, that to me says you want the AC frequency single
15 or phase, and you want high and low voltage levels for both AC
16 and DC. It would be better with a comma after DC.

17 What you have now says, AC single or three phase, or
18 DC, and then applicable voltage and frequency operating ranges, but
19 you did change your "shall" to a "should".

20 MR. MORRISON: The change from "shall" to "should" was
21 inadvertent.

22 MR. SIESS: Frankly, I don't think you changed a
23 darned thing.

24 MR. PORSE: That problem with the frequency operating
25 range, as I have been informed, refers to whenever you have

1 standby power coming, the frequency may not be 60, it may go as
2 low as 50, or higher.

3 MR. SIESS: You are reading a lot more in there than I
4 think I can find. I am looking for that comment which I
5 probably can't find.

6 Incidentally, in one of the guides you have the comments
7 cross-referenced in a very, very nice way. But this one is not
8 one of them. Well, that is a trivial point.

9 It just seems to me to change the wording of the
10 standard and not to change the meaning.

11 MR. ANDERSON: What it says, they have to give limits
12 or a range on frequency. We have done that in the guide. The
13 way we did it first in the guide, people were interpreting that
14 we were asking for a frequency range and DC also, and we didn't.

15 MR. SIESS: The term frequency in parentheses, following
16 AC along with phase, I don't see how it could possibly be mis-
17 interpreted.

18 MR. ANDERSON: The frequency operating range, that is
19 important.

20 MR. SIESS: You will make that a "shall".

21 MR. PORSE: Yes.

22 MR. SIESS: Item 5 is Section 3.3.3, which is environ-
23 mental conditions. I guess I didn't quite understand what it
24 was, but it didn't seem to bother me, except to make it also
25 internal environmental conditions. It seems to me "internal"

1 went back to somewhere in the operating conditions when it talks
2 about 3.3.1 it talks about the loads temperature and pressure
3 conditions. I thought that would have covered internal operating
4 conditions. Is that what you mean by "internal"?

5 MR. PORSE: The fluid medium.

6 MR. SIESS: Well, isn't that covered under 3.3.1?

7 MR. ANDERSON: We put in fluid state.

8 MR. SIESS: If you look at this thing to mean two phase
9 flow, it is sufficiently obscured so that it is easily overlooked.

10 Environmental has gotten to mean so much, external
11 environment of the system, of components, it seems a shame at
12 this stage to give it another definition when I think you can
13 handle it under 3.3.1 when you specify what is inside the system.

14 MR. ANDERSON: It may be, too, that there would be a
15 lot of radioactivity coming down the pipe.

16 MR. SIESS: So, that is what you mean. The temperature
17 inside obviously has to be taken into account under 3.3.1; doesn't
18 it? If you are thinking of radioactivity, would it be chemistry
19 internally that could be a problem, too? Environmental refers
20 to the atmosphere in two places.

21 MR. ANDERSON: What we wanted to do was having them think
22 about what might be coming.

23 MR. SIESS: I see what you are getting at. It's
24 awkward, but let's go on.

25 In 3.4 on Seat leakage limits, in 1 it says, "Should

1 include identification of fluid, temperature, and differential
2 pressure; and 3.4 c has differential pressure. Does this mean
3 something different than that?

4 MR. ANDERSON: Differential pressure for which the
5 limit applies.

6 MR. SIESS: Yes. I assume that everything relates
7 to the limits in supply. 3.4 is entitled, "Seat Leakage Limits",
8 and it says, "Seat leakage limits for valves should be identified as
9 follows: one item is the direction of leakage and pressure
10 differential shall be identified." Now, that obviously refers to a
11 limit.

12 I can see you are adding fluid. Identification of
13 fluid, I assume, means whether it is steam or water, or air if it
14 is air.

15 MR. BENDER: I have to say that fluid state might be
16 an important consideration here also. I am inclined to agree
17 with Chet.

18 MR. SIESS: You might look at that and see if you are
19 not telling them to do something that they are already doing.
20 If they have something in there, let's give them credit for it.

21 MR. ANDERSON: I put it in in response to public
22 comment.

23 MR. SIESS: Maybe they didn't read the Guide, either.

24 MR. BENDER: You mean, read the standard. You can
25 always respond to comments by saying it is already covered in the

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1 standard.

2 MR. SIESS: And the last item is on the stem packing and
3 flange leakage; that seems reasonable.

4 Now, what suggestions have we made that you said you
5 would do?

6 MR. BENDER: Could I ask a question on the last item,
7 the stem packing? I am a little skeptical about stem packing in
8 general. So, the question really is, given that you specify a
9 leakage limit, how long is that going to be imposed for? These
10 things tend to degrade with time. I do not want to ask you to
11 complicate them, but you ought to think about it.

12 MR. ANDERSON: The in-service inspection program
13 requires that for valves where leakage is important, they check
14 the leakage. I believe it is still in the code. There was an
15 attempt to remove that portion, but it is still there that they
16 have to look at stem leakage as well as seap leakage. So, through
17 the life of the plant they will be checking.

18 MR. SIESS: Well, gentlemen, the staff has asked for
19 full committee concurrence.

20 MR. CARBON: I have one question. I would like to go
21 to the valve impact statement. The valve impact statement is
22 really quite vague.

23 Can you say anything more, and do you actually believe
24 anything more? Let me address the question to NRR, for example.
25 Do you have any true feeling as to how much this is going to

1 improve things, this guide; and how much is it going to cost
2 the manufacturers and the architect-engineers, and anybody else
3 involved? Can you really make any more definite or more firm
4 statement than you have as to the merit of doing that?

5 MR. PAGE: Well, sir, I believe you have gotten state-
6 ments from Westinghouse and possibly GE that say there is nothing
7 really new here to Westinghouse or GE.

8 I believe in most cases of A&Es and constructors that
9 probably does not introduce any new items, but it may establish
10 a uniformity of what are those things they are asking for. There
11 may be 90 percent of them that are asked by all of the, but it may
12 not be the same 90 percent.

13 It is just establishing a uniform approach. I do not
14 believe there is going to be any financial impact, any great
15 financial impact.

16 MR. CARBON: Well, there is bound to be some financial
17 impact. I know it is going to take some manpower to rewrite
18 policies, procedures, specifications and so on.

19 MR. PAGE: I don't understand that this really causes
20 any rewriting, sir.

21 MR. CARBON: Well, for example, an architect-engineer,
22 as I understand it, will already currently have a procedure
23 or specifying what he wants to specify on valves. This is going
24 to require a change, then. He is going to have to come up with
25 some new procedures, written statements that conform with this

1 new guide. I don't know how extensive that is, but I know that
2 something is going to be involved.

3 MR. PAGE: Well, it is just my impression that this is
4 not going to have a significant impact on the industry. Once
5 they read this, I think that they are going to see, as Westinghouse
6 has indicated, that they already do most of this stuff; and it
7 is probably in most cases included on what is called the Valve
8 Data Sheet. That is normally where a lot of this information
9 shows up.

10 MR. SIESS: How much effort would be involved in them
11 being able to state that they are in compliance with this reg?

12 MR. PAGE: I would say in most cases almost no effort
13 at all. There may be a few items here that some people are leaving
14 off.

15 MR. SIESS: I mean, they would have to be able to prove
16 to you or to INE that they are doing those things. How much effort
17 would that require?

18 Assuming they already are doing it, but now they have
19 to say, "We are in compliance with the reg guide and the standard."
20 That is just not enough, you don't just take their word for it.

21 MR. PAGE: All right, what you are saying is that
22 we would perform probably some sort of an audit.

23 MR. SIESS: Yes.

24 MR. PAGE: And what we would do is pick up their Valve
25 Data Sheet - this is what the actual document is this is

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1 referring to - and they would see that the documentation that was
2 provided by the manufacturer indeed covers what is in that Valve
3 Data Sheet, was that proved; or is that sufficient documentation
4 to back up what that Valve Data Sheet requires.

5 I personally don't feel that this is going to have a
6 large impact.

7 MR. SIESS: What about the business of identifying
8 those manually-operated valves that are in system support for
9 safety, and being sure they are doing all of this.

10 MR. PAGE: I'm afraid I can't respond to that right now.

11 MR. SIESS: See, that was a two-pronged question. First,
12 it will involve some valves that maybe they have not been doing
13 those things for. First it is decided which valves they ought to
14 be doing it for, that is manual valves and system support to
15 safety - nobody is quite sure what system support and safety
16 is right now.

17 MR. BENDER: Have you actually done a check on it to
18 see if any of the engineering approaches cover these matters?

19 MR. PAGE: Yes. I am working with EGB right now, and in
20 our audits of the NTOL plants we definitely look for operability.
21 Operability requirements, of course, are generally specified by
22 some of the documents, envelope requirements.

23 We do look for operability proof in those audits.

24 MR. BENDER: I am asking for more than that, though.
25 I am saying, have you actually taken what is in the standard plus

1 what is in those reg guides, stacked it up against some typical
2 sets of documents that may be provided by an architect-engineer,
3 or owner organizations as a basis for determining how well they
4 comply.

5 MR. CARBON: And as a basis for getting some real
6 feeling, valid feeling, for how much effort is going to be involved
7 in complying with it.

8 MR. BENDER: I personally wouldn't care how much effort.
9 But I think Dr. Carbon is asking a different question. Is it
10 going to be worth it to be able to show that you have the information
11 you are asking for.

12 MR. PAGE: Could you restate that question? I am afraid
13 I am a little bit off-base on it.

14 MR. BENDER: Let me try again. There is a standard,
15 an ANSI standard, and there is a reg guide that goes with it.
16 Now, I would take those two things and say, "I am going to go to
17 an architect-engineer and ask him to show me how they would
18 comply with that."

19 What is the documentation that they use? I would not
20 go to Westinghouse because Westinghouse only provides certain
21 types of equipment, they don't cover the whole stack. I am sure
22 that they do cover it for their hardware; but we are talking
23 about more than that.

24 I am suggesting, look at the relief valve, look at
25 some radioactive fluid isolation valves, things of that sort,

1 so you do have enough of a spectrum of knowledge to know how
2 well people are complying.

3 As a matter of fact, I think that is what is useful
4 about the standard that the Inspection Enforcement Group would have
5 something to check against. They don't have anything now. That
6 is why I think it is a useful idea.

7 MR. PAGE: Sir, if you went back to RB&W I think they
8 would be able to pull out documentation that pretty well follows
9 this guide. Others may not have everything that is in the guide,
10 but they will be able to show you where most of this stuff is
11 specified, and was specified as far back as '74. They will be
12 able to show you from the documents provided by the manufacturer
13 that these things were proven and they are committed to it.

14 In some cases it is supported by test data.

15 MR. BENDER: I am not trying to challenge that, but I
16 am saying, have you actually done it?

17 MR. PAGE: No, sir, we have not done that specifically.

18 MR. BENDER: You can't answer Dr. Carbon's question
19 the way he asked the question. I think your qualitative statement
20 is probably close to being right.

21 MR. ANDERSON: I would reiterate that the value
22 impact statement of this is not as good as we would like it
23 because, as I said earlier, we simply are not defining which
24 valves it applies to. In the guide we point out that - at page 2 -
25 it is anticipated that the breadth of application of this standard

1 might develop gradually as a function of user experience. There-
2 fore, I think the impact will be lessened as people work with
3 this on a limited number of valves - probably the most important
4 20 or 30 valves. When they see the value of it and see where
5 it might also be improved, that their procedures will change
6 and that they will be providing a more complete specification.

7 MR. SIESS: In other words, you don't expect to see -
8 assuming we will get an application some day - you don't expect
9 to see some general statement in the PSAR that Reg Guide 1-XX
10 has been followed for all valves; you expect to see it selectively
11 at certain places where these valves have been purchased in
12 accordance with functional specifications Reg Guide 1-XX, and
13 later on qualifying in accordance with Reg Guide something else.

14 MR. ANDERSON: That is what we anticipate to see,
15 limited applications. There may be 1,500 valves in a plant in
16 Class 1, 2 and 3 categories, Code Class 1, 2 and 3. I would not
17 expect this to be applied to anything like 1,500 valves.

18 MR. SIESS: And even though you extend this down to
19 Category C and D valves, you are not sure it will be used for
20 that unless people found that it was worthwhile.

21 MR. ANDERSON: A limited number of Ds and a limited
22 number of manually operated - very few manually operated and
23 Class Ds, quality group. Only in plants where they have made a
24 special arrangement to get credit for the use of Quality Group D
25 valve or piping in some special accident situations. For a

1 manually operated valve in some special accident situations. Only
2 in those cases are we expecting it to be used. I can be corrected
3 by NRR.

4 MR. PAGE: I think you are right.

5 MR. SIESS: Does NRR expect, let's say, compliance
6 with this reg guide and the associated standard to be essentially
7 a voluntary thing, then; there would be nothing in the Standard
8 Review Plan that would say this must be, would it?

9 MR. PAGE: I am not really sure. I don't believe they
10 ever make you.

11 MR. SIESS: Because the reg guides are guidance.

12 MR. PAGE: I don't believe it would be included.

13 MR. SIESS: The Standard Review Plan would specify
14 some criteria and say that these would be satisfied for procurement
15 if compliance with Reg Guide 1-XX had been indicated. You may
16 make this finding on a statement that Reg Guide so-and-so had
17 been. There is a little different category than some of the
18 other guides.

19 MR. CARBON: I am still troubled. That is, 25 valves
20 don't give me much problem. If it is 1,500 valves, it gives me
21 quite a bit of problem.

22 How much of this is going to come from someone in NRR
23 when they are reviewing plans, deciding, well, is it going to be
24 happy with 25 valves? Or are they really out to apply it to
25 1,000 valves or something?

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1 MR. PAGE: I am not really sure how NTR will handle
2 this right here. That would be more of a policy question and would
3 be handled, probably, by someone on a higher level than myself.

4 I think basically you go through one's operating
5 procedures.

6 MR. CARBON: Well, does that say that this may end
7 up being applied to a thousand valves?

8 MR. SIESS: I think we can end up with an awful lot
9 of valves that have to be qualified. Now, whether they qualify
10 in accordance with this subsequent standard or some other one,
11 I don't know.

12 The industry apparently has felt that this was the
13 way to go to improve communications between purchasers and
14 suppliers. The staff is endorsing that approach, that is what
15 it amounts to.

16 Now, if some aspect of the industry says, "We can get
17 the quality and the reliability we want without going through this
18 kind of a procedure," then they could justify that on whatever
19 basis they have in the past. In Westinghouse, maybe they don't
20 need this procedure, I don't know.

21 MR. ANDERSON: I understand your concerns. We face
22 this problem both with in-service inspection of valves and
23 in-service testing requirements, which valves will be qualified
24 and therefore, which valves this standard would apply to.

25 We are attempting to develop guidance right now for

1 which valves the in-service testing requirements of the code
2 apply to. That is, in the ASME Code Section 11 it says, "Code
3 Class 1, 2 or 3 valves will be tested according to this." Those
4 valves specified by the owner - the owner has never received
5 guidance from the NRC as to just which valves in the plant we are
6 talking about.

7 I suspect that - there is a reg guide under preparation -
8 that as that guide is developed and the set of valves that would
9 have to be tested as agreed upon, there will then be guidance as
10 to which valves would have to be qualified and therefore which
11 valves would have to be specified in accordance with this
12 requirement.

13 I am quite sure that we are nowhere near a thousand
14 valves. I understand we have had proposals from owners that
15 range from 6,000 to all 15,000; but I don't think it is coming
16 out much above a couple of hundred.

17 MR. SIESS: That is really a separate question, as to
18 how many. I can ask the same question as to how many valves
19 have to meet the ASME Code.

20 It seems to me that what you are trying to do here
21 is have functional characteristics, functional reliability,
22 performance of valves on a basis somewhat comparable to the way
23 of having structural integrity of valves.

24 There is another standard that says, "These are the
25 requirements for valves to meet certain service conditions, certain

1 categories when they are graded. But there is nothing in the
2 ASME Code which is viable on function. The idea is to put valve
3 function ability on somewhat the same level as structural integrity.
4 This is a step in that direction.

5 MR. ANDERSON: Yes.

6 MR. SIESS: Now, Max has asked about, you know, what
7 is it going to cost. I think he also asked what is the value,
8 3,300 LERs in ten years - I do not know whether it is going to
9 reduce that by a factor of ten percent or a factor of ten.

10 But the question which valves it is going to be applied
11 to, I think it is going to be applied to all valves that we
12 consider important to safety, eventually. That is going to be a
13 tougher question. I don't think repeat water valves were considered
14 important to safety, were they?

15 MR. ANDERSON: There has been some new guidance on that
16 subject.

17 MR. BENDER: Probably all valves will eventually be
18 dealt with this way, but it won't be because of NRC regulations,
19 it is just becoming a fact of life.

20 MR. SIESS: Basically, the initiative here was in the
21 industry.

22 MR. BENDER: Yes. You have to remember, this thing
23 started about 1971

24 MR. SIESS: The industry is not unanimous on this.
25 Some people have been doing things right from the beginning, and

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1 they don't see any need for standards. There are some that have
2 not been doing it right and they have seen the light. And there
3 are some that don't want to do it right, maybe.

4 Now, look, the basic question we have is, do we want
5 to recommend to the full committee that we concur in the
6 position taken in this guide? If the answer to that is, yes, the
7 staff has agreed to make some changes - at least, I hope they
8 will think about it before they make them, a little bit.

9 Are we sufficiently satisfied that we can say with
10 those changes we will recommend concurrence, or do we want them to
11 bring them in to us by Friday so that we can see them?

12 MR. DURAISWAMY: It is Thursday.

13 MR. SIESS: Thursday, and tell the committee what to
14 do. Personally, I think the changes we have suggested are not
15 quite at the level we have been discussing for the last few minutes.
16 It would be better to indicate to the full committee that we
17 recommend concurrence with some changes the staff expects to make,
18 rather than have them bring them in Thursday and they might get
19 them half made, rather than think about them carefully before
20 they make them.

21 So, I would propose, then, that we do recommend con-
22 currence with some changes that will be made. Is there agreement
23 on that?

24 MR. BENDER: Yes.

25 MR. SIESS: All right, one down.

1 Gentlemen, the next item is simulators. I will introduce
 2 this subject with reminding the subcommittee that we have seen
 3 this one before. Staff has gotten comments and responded to them,
 4 and made some changes based on them.

5 As further introductory statement, first I want to
 6 congratulate the staff on the procedures they have used in cross-
 7 referencing the public comments by letter number and item number
 8 and suggest as strongly as possible that they do that in all the
 9 cases. It saves a great deal of time in going through this. I
 10 don't know who is responsible for it, but everything, including
 11 the little table with the cross-listing. The only thing I did in
 12 addition was on the letter itself.

13 I took a red pencil and marked which was the comment
 14 it resolved. I found that tremendously helpful and I think the
 15 way that the comments were resolved, it was done better because
 16 of that.

17 So, I congratulate you on that. I would like to mention
 18 also that Dr. Kerr, who is not present, has phoned in some
 19 comments to Mr. Duraiswamy. They are in two categories, general,
 20 which I can state as we get to them; and some specific comments
 21 which are going to be very difficult to handle because they are
 22 not very detailed, obviously, coming over the phone. I will try
 23 to understand them and bring them up for you.

24 They will have to be addressed because Dr. Kerr will
 25 be here for the full committee meeting and if we recommend

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1 concurrence and those are not resolved, he is going to bring them
2 up at that time. On some of them we may just decide to wait
3 for him to bring them up at that time.

4 The two general comments I will just mention because
5 they bear on the whole discussion - and I will mention them for
6 the benefit of the committee - the first is almost a direct
7 quote, Sam, so I will read it.

8 "It is not a good idea to approve a guide which endorses
9 a draft standard. The need for issuing this guide in such a
10 rush does not justify it."

11 I believe this comment was addressed the last time we
12 saw this, it was a draft standard at that time. The staff has
13 recognized that it is a draft standard and they are going to bring
14 us up to date on it, which may or may not answer Dr. Kerr's
15 question.

16 I would like to add further that we have in the past
17 approved guides based on draft standards because the staff had
18 knowledge of the status of the standard pretty far in advance.

19 The second general comment from Dr. Kerr is that there
20 should be a clear definition of a training program. That, I
21 think, is a point that was made in some of the letters. It is a
22 very difficult question. The staff has clearly tried to separate
23 the training program, which is another guide, I guess, or
24 position.

25 MR. WENZINGER: We have in fact requested that ANS

1 help us out with regard to the training programs, and would intend
2 to endorse any standard that might come out of that process.

3 MR. SIESS: Now, this guide, if it is accepted at
4 face value, has a very limited scope. It simply says that if you
5 are going to use a simulator in operator training, that simulator
6 should have a one-to-one relationship with some real reactor,
7 real plant. That is what it says, right?

8 MR. WENZINGER: That is correct.

9 MR. SIESS: It does not say it has to represent the
10 plant the operator is going to be working on. Presumably, he
11 could train on a BWR and operate a PWR, which is a little absurd
12 and obviously would not happen.

13 MR. WENZINGER: If the committee will recall, this
14 question of the similarity of the training simulator and the
15 plant for which an operator is to be licensed is addressed in our
16 proposed rule in Part 55, which the committee did consider several
17 months ago.

18 MR. SIESS: Yes. That is a rule?

19 MR. WENZINGER: Yes, sir.

20 MR. SIESS: That is a separate situation. This guide
21 simply says if you are going to have a simulator there should be
22 a reference plant and it should match that reference plant. It
23 should not be some hybrid.

24 MR. WENZINGER: That's correct.

25 MR. SIESS: Now, it goes beyond that in that it specifies

1 the kinds of things that can be done, the kinds of things in which
2 it has to match the plant, I assume.

3 MR. WENZINGER: That's correct.

4 MR. SIESS: With 75 operations, that is really going
5 beyond saying it must be a reference plant.

6 MR. WENZINGER: It is really a different question. If
7 you like, it is a matter of the degree to which it will be able
8 to simulate the reference plant. It will be able to go through
9 at least that many different evolutions.

10 MR. SIESS: Now, with that introduction, you want to
11 make some introduction?

12 Oh, the other general statement is, this is the first
13 time you have done it that you have jumped the gun on the con-
14 currence.

15 MR. WENZINGER: It is in the draft version that we
16 are proposing to you. Of course, it would not be published that
17 way without your concurrence.

18 MR. SIESS: But usually it does not appear in the draft
19 version. Somebody caught that and said, "Gee, we have already
20 approved it."

21 MR. WENZINGER: That, of course, is in addition. It
22 would only be included if you in fact did concur.

23 MR. SIESS: I know that, that is why I said you jumped
24 the gun.

25 MR. MORRISON: Are you ready now for introductory

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1 comments?

2 MR. SIESS: Just a minute.

3 Yes, go ahead.

4 MR. MORRISON: Mr. Merchoff will make the statement, the
5 introductory statement concerning this guide.

6 MR. MERSCHOFF: This is nuclear power plant simulators
7 for use in operator training. We discuss the proposed guide.

8 By way of introduction, this came before this sub-
9 committee in April, at which time you concurred in its release
10 for comment. It was issued for 60-day public comment in July.

11 As a result of that issuance we received 14 letters, 34
12 comments; 16 of those comments were concurred in by the staff
13 and resulted in changes in the guide as appropriate. So, we feel
14 we were relatively responsive to public input.

15 MR. BENDER: That was 16 out of how many?

16 MR. MERSCHOFF: Out of 34, sir, 47 percent.

17 MR. BENDER: What is a good average now-a-days?

18 MR. CARBON: As I read your resolution of public comment,
19 in many cases there is no resolution. It says that we are going
20 ahead and do what we said we would do.

21 MR. SIESS: On 60 percent.

22 MR. CARBON: But that is called "resolution."

23 MR. SIESS: Proceed.

24 MR. MERSCHOFF: This guide endorses ANS-3.5, which is
25 itself undergoing revision. At this point I would like to

1 mention that the chairman of the working group for ANS-3.5 took
2 time out of his busy schedule to attend this meeting. So, we can
3 have some help if we need it as far as the intent of the standard.

4 At any rate, this guide endorses the March 1980 draft
5 of ANS-3.5. The guide and the standard together comprise our
6 regulatory position.

7 The March provision is itself being refined and recently,
8 at the working group level, there is a November revision which
9 is just a refinement of March. In fact, it resolves negative
10 NAPSCO(?) comments.

11 This November draft, if it becomes effective, would
12 result in the absorption of about five of the regulatory positions
13 from this guide into the standard itself. It in fact would make
14 a cleaner regulatory product.

15 We have recently sent a letter to the chairman of the
16 Steering Committee for ANS-3, which requests permission for us
17 to endorse either the March or the November revision. If permission
18 is granted to endorse the March revision, that is the Reg Guide
19 that will be issued.

20 If permission is granted to endorse the November
21 revision, this Reg Guide - except for the five regulatory positions
22 which are now incorporated in the standard itself, will be issued.
23 I feel due to the importance of this guide it is necessary to
24 endorse a draft standard, or working parallel with the draft
25 standard to get guidance out to the industry since more and more

1 simulators are being ordered we should let the industry know
2 what we want, what our guidelines are as soon as possible. I
3 state that in order to address the question raised by a member.

4 MR. SIESS: Let's see, you said there are five positions?

5 MR. MERSCHOFF: As I go through each reg or position
6 I will note what becomes of it.

7 MR. SIESS: There are five regulatory positions that
8 ANSI has adopted.

9 MR. MERSCHOFF: Yes, sir. You will notice these
10 regulatory positions have parts. So, it is awkward to say five.
11 I will mention each one as I go through it, though.

12 MR. SIESS: And what status is that again?

13 MR. MERSCHOFF: It is at the working group level.

14 MR. SIESS: The working group has approved it?

15 MR. MERSCHOFF: The chairman of the working group has
16 worked out the changes, yes. This is Mr. Norm Elliot, the
17 chairman. He has worked out the changes and will present it to
18 the working group on January 21.

19 MR. SIESS: The working group has taken no action, then.

20 MR. MERSCHOFF: That's right.

21 MR. WENZINGER: Excuse me. Dr. Siess, I might mention
22 that in the case of Regulatory Guide 197 we went through a similar
23 process and the ANS moved rather quickly on that one, as you may
24 be aware and, after receiving a letter similar to the one sent
25 to them on this guide, they actually published the ANS standard

1 4.5 in its final form.

2 MR. SIESS: The point is that the working group has
3 not even considered these changes.

4 MR. WENZINGER: That's correct.

5 MR. SIESS: These are just ones that the chairman thinks
6 they might be able to get through.

7 MR. WENZINGER: That's correct.

8 MR. MORRISON: That is the November version, it is not
9 continued within this guide which is based on the March.

10 MR. SIESS: In other words, what may eventually come
11 out may be a closer agreement than this indicates, but it is not
12 likely to be changed otherwise.

13 MR. WENZINGER: The technical content of the combination
14 will be the same. The number of positions may well change.

15 MR. SIESS: All right.

16 MR. MERSCHOFF: The changes to the regulatory position,
17 three revisions to regulatory positions and eight additions. This
18 is in comparison to the guide as it was issued for comment.

19 At this point I would like to go right to the regulatory
20 positions and go through them one by one. The changes made in
21 the discussion section, in the introduction section are of
22 editorial nature.

23 Regulatory Position 1 remains unchanged. Regulatory
24 Position 2 remains unchanged. Regulatory Position 3 was
25 clarified by the addition of that last phrase, "Within the limits

1 of the simulator's accuracy."

2 The reason we did that was, we did not intend to have
3 this guideline state that the simulator should exactly correspond
4 with the reference plant. It should correspond within the limits
5 as specified in Section 4 of the Standard. There was an additional
6 regulatory position added that said this phrase, "Within the
7 limits of the simulator's accuracy" as used in both the standard
8 and the guide, which means the limits as specified in Section 4
9 of the standard. It is just a clarification.

10 I would like to note at this point that this guide, this
11 position, has been incorporated in the November revision of the
12 standard.

13 MR. SIESS: The November revision is the proposal.

14 MR. MERSCHOFF: Yes, sir.

15 Regulatory Position 4a remains unchanged, but that
16 position has been incorporated in the November revision. Regula-
17 tory Position 4b remains unchanged. That has been incorporated
18 in the November revision of the standard.

19 Regulatory Position 4c is new. It is a clarification
20 of what types of evolutions should be simulated in core physics
21 testing after load or reload portion.

22 What is intended by the guide is to simulate the normal
23 evolutions you would expect during a start-up of physics testing.
24 We do not want to require a reactivity meter, for instance. The
25 value gained from it would not really be considered appropriate.

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1 When you go through a start-up test you may have a
2 reactivity meter, you may have temporary installed controls to
3 move fuel around, check shut-down margin, check various things.
4 That is not necessary in a simulator, it was not intended, and
5 this was added to clarify that point.

6 MR. SIESS: Somebody questioned whether that requirement
7 would mean that they would have to accumulate a lot more data on
8 core physics testing in the reference plant in order to provide
9 bases for the simulator and update all of that. Are you saying
10 that is not required?

11 MR. MERSCHOFF: No, sir. The simulator should operate
12 within the limits specified in Section 4 of the standard during
13 start-up testing and physics testing. However, the special tests
14 that require temporary instrumentation to be installed in a plant
15 need not be done.

16 MR. SIESS: But you should be able to simulate, let's
17 say, the evolutions in a normal start-up.

18 MR. MERSCHOFF: Yes, sir.

19 MR. SIESS: Give me just a second to check up on Dr.
20 Kerr's specifics -- Sam says nothing so far. So, go ahead.

21 MR. BENDER: Can we comment as we go along?

22 MR. SIESS: Yes, we want comments as we go along. So,
23 hold it and let's see if anybody passed one up that they wanted
24 to comment on.

25 Theoretically we should only comment on the changes that

1 we approved once before, but that does not apply. We now have
2 the benefit of public comments and some new members.

3 MR. MORRISON: You never really approved it before.

4 MR. SIESS: We told you that you could send it out.

5 Comment on anything that comes up, gentlemen. As if I could stop
6 you.

7 (Laughter.)

8 MR. BENDER: I have a general comment, but I will get
9 to it.

10 MR. SIESS: All right. You were on Item 5. Go ahead.

11 MR. MERSCHOFF: Regulatory Position 5 was reworded in
12 the general format change, but 5a remains unchanged in its words,
13 just its location as a regulatory position.

14 MR. BENDER: There is a term in there that seems wrong.
15 It says, "Specified by the purchaser." I don't think that is
16 intended to be in the standard.

17 MR. SIESS: Of what?

18 MR. MERSCHOFF: Of the simulator.

19 MR. BENDER: Isn't it the user or the licensee? I
20 just did not read this thing as being directed at a purchase
21 specification, I may be wrong.

22 MR. MERSCHOFF: What we are trying to say there is,
23 since this standard and the guide are an aid to the industry in
24 developing a simulator, we want to point out the fact that some
25 accidents do have a variable severity as a result of initiating

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1 various other parameters. That should be indicated.

2 MR. BENDER: Why don't you just strike out "By the
3 purchaser"?

4 MR. MERSCHOFF: Certainly. This, by the way, has been
5 incorporated into the standard, this regulatory position. But,
6 "By the purchaser" is not in it.

7 Regulatory Postion 5b has been revised. The words,
8 generally "power supplies" were replaced by "electrical distri-
9 bution." The problem with this, as it was originally stated,
10 was the public felt that this could be interpreted to require
11 a component - by component, modeling of in-cabinet electrical
12 distribution, which was not the intent of the regulatory position
13 at all, but rather to indicate that modeling of the electrical
14 distribution system's loss of AC power, loss of DC power, loss
15 of off-site power, should be considered in a simulator.

16 I had discussions over the telephone with the commenter
17 on this specific item because the commenter was a little unclear
18 as I read it. This, as written now, satisfies the intent of the
19 staff as well as the comments.

20 MR. BENDER: Well, does the term, "Not important to
21 safety" come through in an understandable way? That seems to
22 me to say all the distribution systems, everything. Is that
23 what you are really intending?

24 MR. MERSCHOFF: Yes, sir, loss of all off-site power.
25 This regulatory position has been incorporated into the November

1 revision. What we are saying is, to be able to simulate loss of
2 all power, AC loss, DC loss --

3 MR. BENDER: I have not thought enough about it, but
4 I suspect that makes it more encompassing than most stimulators
5 are able to do. But, I have not looked at it in detail.

6 MR. SIESS: Dr. Kerr had a question on this. He just
7 says, it needs clarification. We got a little bit. He does not
8 understand what it means at all. Obviously, some of us didn't
9 either.

10 Let me address the second sentence. The last phrase,
11 "And anticipated operational occurrences and accidents." I can
12 read that two ways.

13 One way I can read it is to say that the failure should
14 include anticipated operational occurrences and accidents. I
15 can read it as saying, applicable to the anticipated operational
16 occurrences and accidents.

17 Can you explain what it means?

18 MR. MERSCHOFF: Yes, sir. There is an anticipated
19 operational occurrence or accident evaluated in the FSAR of the
20 plant, it shall be simulated, or it should be simulated.

21 MR. SIESS: No, this does not say that.

22 MR. MERSCHOFF: Well, this is just a clarification.

23 MR. SIESS: I am not saying the failures should include
24 AC or DC power supplies, or both.

25 MR. MERSCHOFF: That's right.

1 MR. SIESS: As applicable to the referenced plant's power
2 supply arrangement.

3 Let's take that and say the failures should include AC or
4 DC power supplies or both, period. Now, what further information
5 is given? Step by step.

6 MR. MERSCHOFF: Well, what I want to say is to expound on
7 the reference plant's power supply. Now, each plant has a
8 different power supply arrangement, and as a result of its
9 arrangement you may have different anticipated accidents or
10 anticipated operational occurrences.

11 MR. SIESS: I am not getting through. Why doesn't it
12 say if I put a period after both, I can obviously take a simulator
13 and fail the AC and figure out what systems go out on it. There
14 are two "ors" in there, and it does not tell them what to do.

15 It says AC, or DC, or both.

16 MR. MERSCHOFF: That's right.

17 MR. SIESS: I am going to fail the AC. I have to
18 trace through and find out what that failed, on the simulator;
19 right?

20 MR. MERSCHOFF: That's right.

21 MR. SIESS: And you only want me to trace it through as
22 it affects an anticipated operational occurrence or accident?

23 MR. MERSCHOFF: No, sir.

24 MR. SIESS: You see, this statement has, "Applicable
25 reference plant power supply arrangements", which seems to me to

1 be completely redundant since the whole guide says that this has
2 to be tied to a reference plant. So, leave that one out. A
3 reference plant is a reference plant. If I fail the AC on the
4 reference plant, that fails certain systems. You can put it in
5 in you want, but it is redundant.

6 MR. MERSCHOFF: We just didn't want to get into the
7 problem with that of seeming to suggest that a plant have an
8 accident that is impossible on a plant, to simulate to have an
9 accident.

10 For instance, if the reference plant power supply
11 did not have a diesel, it would be rather foolish to require a
12 loss of the diesel generator.

13 MR. SIESS: Well, that is so obvious it is not helpful.
14 Can you find one that I might overlook?

15 MR. ELLIOT: I am Norm Elliot, I was chairman of the
16 writing group for this standard. I worked with Mr. Merschhoff
17 before.

18 I am not sure in our analysis whether or not we should
19 require both AC and DC to fail simultaneously. I do not think that
20 is an assumption that is either in the safety analysis or
21 plant black-out.

22 MR. SIESS: That is not the question, I am still trying
23 to understand the sentence. It has some very important words in
24 it that I don't understand what they tell me. They must mean
25 something.

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MR. BENDER: Let me try one, shall I?

If some of these plants have DC power that is split up and serves different portions of the system in different ways, it is very possible that you can argue that you would not want all the DC power supply failing at the same time in systems like that; whereas you might, when one DC power supply supplies everything. That argument has been going on for some time. That may be the thrust of what you are trying to call out. I don't know.

MR. SIESS: What about the last phrase, "And anticipated operational occurrences and accidents", the "and" adds it to what? What is the other part before the "and", power supply arrangement?

MR. MERSCHOFF: Yes, sir.

MR. SIESS: So, whether you fail both is a function of the reference plant's power supply arrangement and the anticipated operational occurrences and accidents.

MR. MERSCHOFF: Yes, sir.

MR. SIESS: All of that qualifies the both.

MR. MERSCHOFF: Yes, sir.

MR. SIESS: If you really mean that, you better put a comma in fron of "or".

MR. BENDER: And change the "and" to "during".

MR. SIESS: That really only qualifies the both, you better put a comma behind "supply". Now, that is really what

1 you mean.

2 MR. MERSCHOFF: You don't want a comma after the "supply".
3 You mean after the "arrangement"?

4 MR. SIESS: No, sir. Everything following "both" is
5 a modifier on "both". You need to indicate that some way because
6 right now it modified everything that comes before it.

7 MR. MERSCHOFF: What we are trying to say is that you
8 should look at the reference plant's power supply arrangement, and
9 anticipated operational occurrences and accidents for that plant
10 to determine what electrical failure should be simulated.

11 MR. SIESS: Okay, then it does not apply just to the
12 "both".

13 MR. CARBON: It applies to all three, AC, DC or both.

14 MR. SIESS: All I know is what you told me.

15 MR. CARBON: There are two "ors".

16 MR. SIESS: Which failures of AC or DC power supplies
17 should be included shall depend on the reference power plant's
18 power supply arrangement and on the anticipated operational
19 occurrences and accidents. Is that what it says now?

20 MR. MERSCHOFF: Yes, sir.

21 MR. SIESS: All right. I hope that is clear to other
22 people. Maybe I could explain it to Dr. Kerr.

23 MR. BENDER: Line 17, I still suggest you change the
24 first "and" to "during".

25 MR. CARBON: That changes the meaning.

1 MR. BENDER: I think it does. I think it gives it the
2 right meaning.

3 MR. CARBON: It might be, but there are two different
4 meanings and I thought it meant the other one.

5 MR. MERSCHOFF: What I mean is that the reference plant's
6 power supply arrangement and anticipated operational occurrences
7 and accidents should be considered when determining which
8 electrical situation to simulate.

9 MR. BENDER: You really mean "and" then.

10 MR. MERSCHOFF: You mean between arrangement and
11 anticipated? Yes, sir.

12 MR. SIESS: I could find better ways to say it.

13 MR. MERSCHOFF: That sentence remains unchanged from the
14 first time it went out.

15 MR. SIESS: They don't improve with age.

16 (Laughter.)

17 MR. SIESS: Anything else on that item?

18 MR. MERSCHOFF: This item, by the way, will go away
19 in large part, or will be incorporated in large part by the
20 November revision to ANS-3.5.

21 MR. SIESS: All right, proceed.

22 MR. MERSCHOFF: Regulatory Position 5c has been added,
23 and all that does is modify one item that was on the list of
24 abnormal emergency conditions that shall be simulated. The old
25 item was loss of core coolant flow, and that was modified by

1 the addition of single or multiple pump failure.

2 MR. SIESS: And that means that those are the only
3 conditions of loss of forced coolant flow that should be simulated,
4 and LOCA(?) doesn't count?

5 MR. MERSCHOFF: Well, LOCA is covered under a different
6 part of this.

7 MR. SIESS: Loss of flow in the entire system.

8 MR. MERSCHOFF: Yes, sir.

9 This regulatory position has been incorporated in the
10 November revision of ANS-3.5.

11 5d is a new regulatory position, and it added items
12 to be simulated to that same list just discussed, diesel
13 generator failure; turbine load control failure; hotwell level
14 control failure; high radiation alarm, and fire alarm.

15 Three of these five have been incorporated in the
16 November revision of ANS-3.5.

17 MR. SIESS: Does diesel generator failure mean failure
18 to start, or failure after it runs?

19 MR. MERSCHOFF: If the diesel generator is not available
20 for service for any reason.

21 MR. SIESS: One or both, or all three, all the combi-
22 nations thereof?

23 MR. MERSCHOFF: Yes, sir. If you have no lube oil in
24 it, it is not available; it has no starter in it, it is not
25 available; it is torn apart of inspection of bearings, it is not

1 available.

2 MR. SIESS: It is not just nonavailability, it is
3 failure. It could be running for ten minutes.

4 MR. MERSCHOFF: Yes, sir, and fail while it is loading.

5 MR. BENDER: Is it multiple and single? How many diesels
6 are you trying to deal with, all of them or one?

7 MR. MERSCHOFF: Well, all of them will come under the --
8 I hesitate to go back to the electrical regulatory position, but
9 all, I think, would come under this loss of all DC power. This is
10 addressed more towards loss.

11 MR. BENDER: No that is AC power.

12 MR. MERSCHOFF: AC. This would come more under, or
13 this would address a single piece of generator failure.

14 MR. BENDER: I am not quite satisfied. There are cases
15 where diesels are not available but the other AC power is
16 available. I am still not clear on what you are trying to do.

17 MR. MERSCHOFF: Well, we wanted to make the guide more
18 complete. This was a result of public comment. The importance
19 of the diesel generator to the plant itself was mentioned.

20 There are certain conditions where just the lack of
21 availability of a diesel generator, for instance, may alter your
22 operating scheme. If you rely under EDG for an emergency core
23 cooling system, you may have to shut down or reduce power if a
24 diesel generator is lost. We wanted to cover that within the
25 guide as well as a motive diesel generator tripping off the line

1 and causing loss of electrical power.

2 MR. BENDER: I am trying to see whether you cover the
3 case where you have external AC power and no diesel generator
4 power --

5 MR. SIESS: That is trivial.

6 MR. BENDER: That may not be, if nothing happens
7 instantly.

8 MR. SIESS: That is all the simulator will do.

9 MR. MERSCHOFF: If AC power is available and the
10 diesel generator is unavailable?

11 MR. BENDER: Yes.

12 MR. MERSCHOFF: That situation is directly addressed,
13 I feel.

14 MR. SIESS: No problem if you lose AC power.

15 MR. BENDER: That's right.

16 MR. SIESS: Dr. Kerr finds a lack of justification for
17 simulating a fire alarm. I don't quite know why.

18 MR. MERSCHOFF: Fire alarm is an interesting item. That
19 was one of the two that was not accepted explicitly for incorpora-
20 tion into the November revision of ANS-3.5. However, I feel that
21 is an important item.

22 There can be a good argument made for noninclusion. A
23 fire alarm tends to be outside the control room; very little
24 activity other than the organizational effort will come from the
25 control room, why bother.

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1 I found, however, that in my year of operating plants
 2 whenever we go for training, be it on a simulator or natural plant,
 3 you will cover the LOCA accident; you will cover the major accidents
 4 and there is only a modicum of interest because you know that
 5 is never going to happen to you.

6 But whenever a fire drill was done, I listened because
 7 I knew sooner or later there was going to be a fire on my watch.
 8 I think that the problems with including fire alarms in a simulator
 9 are negligible. The practice that can be gained from how it is
 10 organized, how it is administratively controlled; who gets
 11 notified, who puts out what; what instrumentation is affected
 12 by the location of the fire is very important and very helpful
 13 to the operator. I see this as a present to the operator, getting
 14 something that he feels is really useful.

15 MR. SIESS: You brought in something that certainly
 16 is not stated here, and that is, what instrumentation is affected
 17 by the location of the fire. I guess it was said you ought to
 18 have about 50 loss of instrument incidents in here on top of
 19 your 75 other evolutions.

20 Would you then propose that there should be selected
 21 loss of instrumentation tied in with fire alarm.

22 MR. MERSCHOFF: Not necessarily tied in with fire
 23 alarm, but if applicable it would be. Instrumentation is covered
 24 in other sections of this guide. Admittedly, we did not want to
 25 go with 50.

1 I talked to the IMPO(?) about that specific comment
2 to get some justification. It was an arbitrarily selected number
3 and I wanted a firmer basis to work from. Well, IMPO backed off
4 immediately. They said they didn't have justification, they
5 thought it was a good idea, but they really did not want to push
6 it. I agreed with them. It is probably a good idea, but it will
7 adversely affect the simulator by limiting its flexibility.

8 MR. SIESS: Does that fire alarm mean that somebody has
9 to gather together those fire guys to go hunt for it?

10 MR. MERSCHOFF: It could be handled the way the
11 facility would want to, but if they were smart, they certainly
12 would.

13 MR. SIESS: It is an interesting item. I think it
14 belongs more in the Reg Guide you are going to get out on training,
15 rather than in a Reg Guide on how to make a simulator like the
16 reference plant.

17 I suspect the fire alarm is not really related to a
18 reference plant at all, it is a light, or a horn, or a bell
19 that is going to go off, all the guys know what it is for their
20 plant. He has nothing to do with that control board on the plant
21 response, the way it is set up.

22 Everything you said in argument for the fire alarm
23 is part of the training process, but I don't see how it relates
24 to the simulator at all. It is a good idea, but I don't see where
25 it belongs in this guide.

1 MR. WENZINGER: It depends, I think, on what we are
2 talking about. Right now we are talking about what should be the
3 facilities provided for a physical fire drill. If one is going
4 to have the facility for providing the training, how does one
5 respond to a fire alarm, say, in combination with some other event,
6 one would have to have those in the simulator for the facility
7 for having the fire alarm simulated.

8 MR. SIESS: Yes, but if I were a utility that had
9 three or four PWRs and only one simulator, I would install four
10 fire alarms on it, one to match each plant that those operators
11 are going to come from, so when I was training an operator he
12 would get the same fire alarm he got at his plant - whether it
13 is a bell, or a gong, or a siren, you know, and not worry about it.

14 I don't see how it ties into a simulator matching a
15 reference plant because it is just going to be an entrepreneur-
16 enunciated type thing. You can tie it in any way you want.

17 I do not think it is a big deal. I think it is a
18 good part of the training. But the fire alarm now has to be just
19 like the reference-plant fire alarm - big deal.

20 Now, if you have a reference plant where the fire
21 alarms are just like some other alarms, I guess it would be
22 nice to have it on the simulator so the guy would learn to
23 distinguish it.

24 MR. WENZINGER: Well, you could make the same argument,
25 I think, with regard to the enunciator audible alarm of a reference

1 plant not being the same as the audible alarm on some other plant.

2 MR. SIESS: You could. That is a problem that gets us
3 into the training.

4 MR. WENZINGER: That's right. I think what we are
5 trying to do is stick here with making the simulator be as close
6 to the reference plant as possible.

7 MR. SIESS: I don't think it is, either way.

8 MR. BENDER: I think I will make my general comment now.
9 You made a big point about making a simulator correspond to the
10 reference plant because you have to have some real case to work
11 from.

12 But I am still concerned about the fact that the
13 reference plant has not been established to have any relationship
14 to the plant on which the operator is eventually going to use his
15 skill. How is that dealt with in this guide?

16 MR. WENZINGER: That is not in the scope of this guide.
17 That is dealt with in the proposed change to Part 55 of the Rule
18 wherein it specifies four similarities, if I recall correctly.
19 One, that the reference plant the individual trains on must be
20 similar to the plant on which he seeks a license in the following
21 way: It must be a BWR if he is going to be operating a BWR, and
22 a PWR if he is going to operate a PWR. It must have the same
23 number of loops; it must have the same type of steam generator.
24 If it has an advance control, the simulator should have an
25 advance control on it.

1 Those were the specific characteristics of the plant
2 on which the man is going to be trained. It has to relate to the
3 simulator he is going to use. That is in Part 55, which you
4 gentlemen saw several months ago.

5 MR. BENDER: I guess that is why I am raising the
6 question. I don't know whether that is enough. I think that goes
7 back to Dr. Kerr's question - which I think is also a general
8 one. How much do we know about the training program, and how can
9 you sanction the development of simulators without knowing the
10 broader question of how the training is going to be handled?

11 MR. WENZINGER: Well, I think at the moment, until there
12 is a simulator for every plant, we are going to be stuck with
13 the situation where operators that are trained on simulators will
14 have to be trained on simulators that are not identical to the
15 plant on which he will be operating.

16 MR. BENDER: I think everybody agrees with that. But
17 nevertheless, there are some other qualifications that I would
18 want to deal with. One of them is, how similar is the electrical
19 distribution system to the one in the plant that I am trying to
20 train on?

21 Another is, how near are all the instruments placed
22 of the sort that I will see, other than the advanced?

23 MR. WENZINGER: I understand your comment, Mr. Bender.
24 That comment, I think, is not appropriate for this guide. That
25 comment is appropriate for the change in Part 55.

1 MR. BENDER: But you can't deal with one without the
2 other. They are telling me Part 55 covers it, and I say Part 55
3 does not. Where is this going to be covered?

4 MR. WENZINGER: Well, I think we should cover it in
5 Part 55 if you feel that there are inaccuracies in Part 55.

6 MR. BENDER: I would be unwilling to accept this guide
7 with the present contents as being adequately definitive
8 concerning what needs to be provided in a simulator, without
9 knowing that Part 55 is going to have some other kinds of
10 requirements in it.

11 MR. WENZINGER: Well, it does have the other requirements
12 in it. What you are questioning is the adequacy of those require-
13 ments.

14 MR. BENDER: Yes. It has other requirements but not
15 the right ones, I would say. It has some of the ones I like.

16 It is a far cry from what needs to be provided if you
17 want to say that something is being simulated by a simulator.

18 MR. WENZINGER: We have to be careful about separating
19 the issues. The issue before us is, given a reference plant,
20 what does the simulator of that reference plant have to look like.
21 That is what this guide and the standard deal with.

22 What you are talking about is, what is the relationship
23 between the reference plant and the plant that is going to be
24 operated.

25 MR. BENDER: I think about the guide is going to be

1 used. Just to put out a guide without knowing its application
2 is somewhere near committing suicide. If some guy uses it in
3 the wrong way it will be waved in your face sometimes as being,
4 "Well, this is what you said the simulator ought to be able to
5 do."

6 Now you have written Part 55 and it does not have
7 quite enough in it. You need a lot more. I would rather see
8 something that takes Part 55 and ties it to this and says, "Here
9 is the way we are going to train people on simulators."

10 MR. WENZINGER: Well, in our paper on Part 55 we do
11 make reference to this guide, and we did tell you at the time
12 that we were coming up with it.

13 MR. BENDER: I know, and it obviously doesn't have
14 enough in it to tie it together.

15 Now, let me finish my general comment, but I will
16 oppose issuing a guide of this kind.

17 MR. SIESS: Let me get it straight, Mike, you don't
18 think that this guide is sufficient for defining a training
19 simulator?

20 MR. BENDER: That's right, period.

21 MR. SIESS: Period.

22 MR. MERSCHOFF: It doesn't seem to me that the
23 appropriate place for legislating which simulators can be used
24 to train people in which plant is a regulatory guide, it should
25 be a rule. Now, maybe Part 55 is not complete enough, but I

1 don't think that should be placed in a regulatory guide.

2 MR. BENDER: Well, I am using this regulatory guide
3 as part of Rule 55. In the absence of certain contents in the
4 rule, it makes me say it has to be in here, it is inadequate.

5 MR. WENZINGER: If we put it in Part 55, would this be
6 adequate?

7 MR. BENDER: If enough is in Part 55, this can disappear
8 altogether, as some people tried to do with the fire protection.

9 MR. SIESS: Let me see, Mike, I don't know what Part 55
10 requires. But, you are talking about, they want a simulator to
11 match their plant - or plants, as the case may be. Right now,
12 this would be the requirement for that simulator, right, they would
13 choose their plant as a reference plant.

14 MR. WENZINGER: If they choose their plant as a
15 reference plant, they would then do it this way.

16 MR. SIESS: The rule says that you have to use your
17 plant as a reference plant, we have a rule that says that.

18 MR. CARBON: But there isn't any such rule.

19 MR. WENZINGER: The rule does not say there has to be a
20 one-to-one relationship between the reference plant and the plant
21 on which you will be licensed.

22 MR. SIESS: I think most of the utilities are going to
23 do that, whether or not there is a rule.

24 MR. WENZINGER: I suspect that is true.

25 MR. SIESS: But assuming that a utility wants a simulator

1 for each of its operating plants, Mike, you don't think that this
2 sets up requirements for an agreement that is suitable.

3 MR. BENDER: I do not, unless it says this simulator is
4 one which has to match to the plant for which the operator is
5 being trained.

6 MR. WENZINGER: That is the point I think I understand
7 you say is missing from Part 55, and I understand that.

8 MR. BENDER: Unless it is in Part 55, I mistrust the
9 issuance of this guide as a reference for Part 55.

10 MR. WENZINGER: Could you tell us, please, what you
11 think should be in Part 55, that is, how closely should the
12 reference plant match the plant on which a man is to be licensed?

13 MR. BENDER: You are asking me to do off the cuff what
14 you guys should have been working on for about a year.

15 MR. WENZINGER: Well, we did make a proposal, and this
16 committee said it was sufficient to forward to the Commission for
17 their consideration.

18 MR. BENDER: I don't know, I wasn't part of that
19 agreement.

20 MR. SIESS: Mike, right now people are training on
21 simulators that are not the plant they are going to operate.
22 Presumably they are training on simulators that don't have a
23 reference plant. Is that right?

24 MR. WENZING: At the present time, I suspect that is
25 correct.

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1 MR. BENDER: And I might say, they are probably being
2 badly trained.

3 MR. SIESS: There is an argument in one of the letters
4 which says that training a man on a simulator that exactly
5 duplicates his plant is not the best way to do it because all he
6 does is learn automatic actions, and he doesn't learn to think
7 at all.

8 MR. BENDER: I didn't say that. You are putting an
9 interpretation on what I am saying. That is not what I said.
10 I said you have to decide what the simulator is going to simulate
11 for the plant for which the operator is being trained before
12 you decide whether this simulator guide is worth the paper it
13 is written on. That is what Bill Kerr said. I think that is
14 right, and we need to make a point on it.

15 MR. SIESS: I still don't understand it. Now, start
16 at the beginning and tell me what you think ought to be
17 required for simulator training of operators. Forget about the --

18 MR. BENDER: I told you that I am not in a position
19 to make that statement. I think that is something which the
20 regulatory staff should be doing, should have been doing before
21 they did this; and they didn't do it.

22 MR. SIESS: And you think that it is possible or
23 probable that they would come up, after they thought it out,
24 with a synthetic simulator being acceptable, one that did not have
25 a reference plant.

1 MR. BENDER: Yes, with some other kinds of training
2 that go with it. I think there has to be some combination. I
3 very much think that ought to be done before the rule which is
4 being argued for, is promulgated.

5 MR. SIESS: I don't think the industry made any of
6 those arguments. They argued against the one-by-one on a couple
7 of cases. But that was indirectly an argument that the simulator
8 training serves a purpose, but it doesn't have to be on a reference
9 plant or even on an actual plant.

10 MR. BENDER: The industry's response is just pragmatic.
11 That is not the point I am making.

12 MR. SIESS: There were comments made by the public
13 in here that pointed out that even with these requirements for
14 simulation of a reference plant and a real plant, as opposed to a
15 synthetic plant, there was still the potential for negative
16 training because the simulator will do something the plant would
17 not, or it would do the wrong thing.

18 This was a point that was made in two or three
19 instances, and was not very well responded to by the staff
20 except saying that the instructor has to keep the trainee from
21 getting negative training because the simulator would either go
22 too far where the plant would not; or would not go as far.

23 Now, that argument for the reference plant makes some
24 sense, it minimizes the amount of negative conditioning or
25 negative training.

1 MR. BENDER: I don't think that is ture, Chet. It
2 seems to me it does train the operator for the plant which is
3 being simulated. But if there is not a good one-to-one match,
4 you still can create a condition, operator reflex, that is the
5 wrong one.

6 MR. SIESS: Well, I don't think I could find the exact
7 statement, but there is one about a turbine over-speed. You
8 can operate the simulator outside the range for which it was
9 programmed and get an incorrect response. The operator would not
10 know that he had led to a turbine over-speed condition or some-
11 thing of that sort.

12 The answer was, "Well, the instructor knows these
13 limits and he will keep the trainee from going outside."

14 MR. WENZINGER: Of course, the instructor can always
15 terminate the exercise at that point whenever it goes beyond
16 the limits that the instructor should well be aware of.

17 MR. SIESS: But that was one argument, in my mind,
18 for having a reference plant. That you have a better chance of
19 keeping away from that negative training.

20 MR. WENZINGER: That's correct.

21 MR. SIESS: How strong an argument that is, I don't
22 know.

23 Why did the industry decide they wanted reference
24 plants for simulators? Has this started with an industry effort
25 through a standard, or did the NRC require the standard? Sometimes

1 the industry does this on their own, sometimes they react,
2 obviously, to regulatory direction.

3 MR. ELLIOT: This is Normal Elliot. That start for
4 reference plant follows the lead of the aircraft industry in that
5 each aircraft simulator that is used in their training program
6 is tied to a specific air frame. That was one of the very first
7 considerations in developing the original standard that was
8 approved in either '78 or '79.

9 MR. SIESS: What was behind that thinking?

10 MR. ELLIOT: That for one specific aircraft it was
11 possible to have a set of performance data, an arrangement of
12 controls, that a pilot would be confronted with.

13 The exactness of control rooms in the case of aircraft,
14 airlines will have a DC-9 cockpit and that is Tail No. XYZ, but
15 they may in their fleet have slightly different configurations,
16 and the pilots adapt to that, which is one of the things of
17 whether or not individuals can adapt from a simulator that
18 simulates one plant whereas the arrangement is slightly different
19 elsewhere.

20 MR. SIESS: Tell me something, the existing simulators,
21 do they all have a reference plant?

22 MR. MERSCHOFF: The SNUPPS doesn't.

23 MR. SIESS: SNUPPS doesn't.

24 MR. MERSCHOFF: SNUPPS is nuclear systems --

25 MR. SIESS: I know what SNUPPS is. SNUPPS were a

1 replicated system, why would they pick a different plant for
2 their simulator?

3 MR. MERSCHOFF: That was supposedly used as a generic
4 trainer that would easily be converted to something somewhat
5 similar to anybody's reference plant, but not really similar to
6 anybody's reference plant.

7 MR. ELLIOT: Mr. Merschoff, I can only speculate as
8 to Westinghouse's activity here, but I think that simulator was
9 built to be the replica of the standard control room that was to be
10 used in the original six or eight SNUPPS plants. Evolution has
11 unfortunately caught up with them and they drift off.

12 MR. SIESS: So, nobody actually built the simulator
13 that was not related to reference plants, but with evolution it has
14 not been kept up to date; is that right?

15 MR. ELLIOT: I suspect that is true.

16 MR. SIESS: You could not get feedback from an
17 operating plant, say, on reload and things of this sort.

18 Now, of the simulators that are being ordered now, are
19 being built now, have been ordered, are there any of those that
20 are not related to a reference plant?

21 MR. ELLIOT: I don't know of any, sir.

22 MR. SIESS: Why do we need this? I mean, I suspect
23 the GE simulator up in Dresden, which was originally Dresden II,
24 Dresden II has been modified enough now that the simulator does
25 not match it any more. There must be some around like that. I

1 don't know.

2 MR. WENZINGER: The standard and the regulatory guide
3 combined do call for periodic review and updating of the simulators
4 to make sure that they do catch up with changes that are made
5 in the reference plant.

6 MR. SIESS: I guess I am addressing the question Dr.
7 Kerr has raised, Mr. Bender has raised, that there are some
8 questions in some people's minds as to just what is the best way
9 to train people, and whether this thing is that urgent.

10 Are there simulators on order that would be affected
11 by this thing? Obviously, you give them three years to update
12 these simulators, look at the Dresden II. I guess the Dresden II
13 and III are not even the same, I believe. They were ordered at
14 different times, if I am not mistaken.

15 Do you have a sense of urgency about this?

16 MR. MERSCHOFF: If I can interject here, sir, it takes
17 on the average about 30 months to build a simulator. Simulators
18 are constantly being ordered and we are probably going to get
19 more and more as time goes on.

20 MR. SIESS: But I just asked the question whether
21 any simulators that were on order, are being ordered, do not have
22 a reference plant.

23 MR. MERSCHOFF: None that I know of.

24 MR. SIESS: So, it is just a question as to whether
25 they would agree with the reference plant in this much detail.

1 MR. MERSCHOFF: That's correct.

2 MR. SIESS: The extent to which they agree with the
3 reference plant. This addresses how close they must be to it,
4 and what evolutions you must be able to carry out, or what
5 transients and accidents; right?

6 MR. MERSCHOFF: That's correct.

7 MR. SIESS: If that last question is still sort of up
8 in the air, do we have our training program well in mind.

9 MR. BENDER: That is a basic issue. We need to know
10 how we are going to use these things.

11 MR. SIESS: There were some suggestions from the
12 public that indicated that they wanted - whoever it was that
13 wrote - they really wanted an engineering simulator to do even
14 the things you had not thought about.

15 MR. MERSCHOFF: That is a whole different aspect.

16 MR. SIESS: I think it is, and I think it is far
17 enough in the future that nobody is going to be ordering one
18 for a while. Not only that, but they are going to be a lot more
19 expensive.

20 Somebody said you need a simulator to design the
21 plant. Well, obviously that is not the point here.

22 MR. WILLIAMS: May I make a comment? I am Pete Williams
23 from the Research and Standards Coordination Branch. I do work
24 closely with the Division of Human Factors.

25 We are developing a research user need to answer some

1 of the questions that you have raised. We are also exploring
2 the advances in simulators, simulators that can operate in real
3 time; simulators that can evaluate the operator's acts of omission.
4 In other words, if he makes a mistake the simulator just won't
5 stop and require something more out of the operator.

6 I would say that from what I understand, we do believe
7 there is a use for simulators.

8 MR. BENDER: I don't think we are challenging that
9 point at all.

10 MR. SIESS: Pete, if this thing went out, do you think
11 this is good enough?

12 MR. WILLIAMS: Well, I just recently got into this
13 game.

14 MR. SIESS: Pardon?

15 MR. WILLIAMS: I just recently received this new
16 assignment.

17 MR. SIESS: We miss you, Pete.

18 MR. WILLIAMS: Well, I hope to be out at Fort St. Trane(?)
19 at the meeting.

20 MR. SIESS: Good.

21 MR. WILLIAMS: Let me say that Paul Collins did find
22 the regulatory guide acceptable. But in a meeting just held a
23 week ago with Hanauer(?) and Merle(?) they had some new ideas.
24 The question I have in my own mind is, shall we give them a
25 chance to factor in some other new ideas. I am not too sure how

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1 closely aware Hanauer himself is of this reg guide. I would like
2 some more of that before I can answer your question.

3 MR. SIESS: I am seeing some opposition develop to
4 putting the guide out at this time. This does not hold everything
5 up, the staff can clearly go ahead. The staff has 90 percent of
6 what is in the guide, frankly, accomplished 90 percent of what
7 is in the guide. Industry can set up its own guidance as far
8 as it wants to go.

9 The Commission, in this guide, does a lot in two
10 senses. It does a little in adding certain things to the standard,
11 it expands it. But more than that, it says this is acceptable,
12 this standard is what we want, what we can be happy with.

13 I think it is not entirely clear what the committee feels,
14 if we ought to be happy with this standard at this stage. I am
15 not sure that the rest of the Commission researched the human
16 factors, etc. could come in and can argue that this is likely
17 to be the last word.

18 MR. WENZINGER: I don't think anyone is suggesting it
19 is the last word.

20 MR. SIESS: But it ought to be good for two or three
21 years, you know, if we are going to endorse it and tell the
22 industry that this has our blessing.

23 MR. WENZINGER: With regard to how closely a simulator
24 should simulate its reference plant, I think this is the best we
25 have at the moment. It does not address, admittedly, the question

1 of the relationship between the reference plant and the plant that
2 the man is going to be licensed on.

3 MR. SIESS: As far as the industry is concerned, what
4 the have not, without those additiona items, or even with the
5 ones that they might put in the proposed November draft - I
6 don't know what the status is - it would represent some upgrading,
7 but it would not commit the NRC to the whole training concept.

8 MR. WENZINGER: Well, as you have certainly pointed out,
9 this does not indicate the whole training concept in the first
10 place.

11 MR. SIESS: An aspect of it.

12 MR. WENZINGER: Secondly, it would leave undetermined,
13 as far as the industry is concerned, as to what is acceptable to
14 the NRC, at least for the moment.

15 MR. SIESS: I am not sure the NRC knows what is
16 acceptable in the training simulator.

17 MR. WENZINGER: Well, with regard to the degree of
18 similarity between the reference plant and the simulator, or
19 with regard to the type of plant one should be trained on? I
20 am still not clear about which point you are trying to make.

21 MR. SIESS: I don't think we know yet.

22 MR. WENZINGER: On either?

23 MR. WENZINGER: On either. If you are training people
24 for emergency operations that have to be done split second
25 without thinking, it probably ought to be on the identical plant

1 they are going to be operating, just like they take the operator's
2 license on that plant.

3 MR. WENZINGER: But if you want to argue that, you
4 have to argue that it has to respond identically, too. I am
5 not sure that any utility is going to be able to afford that.

6 MR. SIESS: That may be a problem. Now, if you are
7 going to train them on handling a lot of cases where they have little
8 time to think and you want to teach them to think and to analyze,
9 you want to be able to test out whether your emergency procedures
10 are written so a guy can get through them in a minute and-a-half,
11 or something, then I am not sure that it makes any difference
12 that it is an exact replica of a plant, if you are trying to
13 train people to act in an emergency and not act by rote.

14 MR. WENZINGER: That is correct.

15 MR. SIESS: These are rather basic questions on human
16 factors that I do not think have been settled. It might end
17 up that we are better off spending a lot of money for a highly
18 sophisticated simulator rather than having one for each
19 control room. That is a tough decision to make at this stage.

20 MR. WENZINGER: This guide does not make that decision.

21 MR. SIESS: It does not. And this guide really does
22 not commit, let's say the standard without the guide because
23 there is not that tremendous amount of difference between them,
24 let's face it. The standard does not commit to a tremendous
25 improvement of simulators. It means putting some additional

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1 features in and programming. It probably means more in software
2 than in hardware except in reproducing all the panels. The
3 simulators I have seen had all the panels reproduced.

4 But I think Mike feels there is a tendency to commit
5 the Commission a little further than he thinks is desirable at
6 this time.

7 MR. BENDER: Well, I really believe that would happen
8 because the Commission can't read this guide in the detail we
9 are reading it.

10 Secondly, I think it is hard to tie the several kinds of
11 rules and guides together in such a way that people understand
12 what the whole package is.

13 MR. SIESS: Do you know what I think presents a
14 bigger problem and maybe it presents a problem to you, Mike.
15 That is, if you read the introduction to this guide, all guides
16 have an introduction which relates them back to a rule. The
17 justification is always in terms of a rule, right?

18 This one relates it back to 10 CFR Part 55. I think that
19 is what bothers you. I think if the guide simply said, "The
20 industry has come up with some requirements for simulator
21 compatibility and we think they are pretty good, perhaps we
22 would like to add some more to it," it would be a little different
23 level. I think tying it back to Part 55 is what is bothering
24 Mike.

25 MR. BENDER: You have raised the right point a little

1 while ago. There is a helter-skelter rush to buy a simulator
2 because right now that is the mode of things. Everybody has to
3 have a simulator.

4 The simulator industry is overjoyed because it will be
5 able to seel a lot of hardware. What most of us are concerned
6 about is whether there is a training program of which the
7 simulator is a part, which really provides the right kind of
8 training to operators.

9 I would like to see more done on the total training
10 picture before we do this helter-skelter rush into buying
11 simulators and the industry takes this guide and says, "Now we
12 are ready to buy a simulator." We are not ready to buy them when
13 the guide comes out. We are ready to buy them when we understand
14 the training program.

15 There is no rush until the training progrm is defined.

16 MR. WENZINGER: I think the fact is that simulators are
17 being bought today, and they are being bought, I suspect, at a
18 fairly high rate, as you describe. The question is whether NRC
19 should make a position known formally to the industry as to whether
20 the standard they are using to buy those simulators is adequate
21 or not adequate.

22 MR. BENDER: Well, they ought to, if they know what the
23 answer is; but they don't know the answer, that is clear.

24 MR. WENZINGER: That is true, but a few years from now
25 we are going to have a large number of simulators out there and

1 we will to have then face the notion of whether or not we are
2 going to say the use of those simulators is unacceptable for use
3 in whatever training program has been developed by that time, and
4 keep in mind that it takes a while to build those simulators and
5 a while to put out guidance with regard to training programs as
6 well.

7 MR. SLESS: Right now the industry says, "It seems like
8 a good idea if we are going to have simulators that they ought to
9 match a reference plant and they ought to be able to do these
10 things as a minimum, that is what the standard says; right?

11 MR. WENZINGER: Yes.

12 MR. CARBON: Can I get a point of clarification there?
13 The standard says, as I understand it from reading it, that they
14 shall closely parallel the reference plant. The reg guide says,
15 "shall duplicate." Now, I am confused.

16 MR. MERSCHOFF: Sir, if I can address that. The November
17 revision has adopted the word "duplicate".

18 MR. CARBON: The November?

19 MR. MERSCHOFF: Yes, sir. Mr. Elliot and I have dis-
20 cussed that at some length, that that is the direction.

21 MR. CARBON: Okay, that clarifies that point. Go ahead.

22 MR. SLESS: Well, the industry says, "We think that
23 when we buy simulators they ought to be tied to a reference plant;
24 they ought to duplicate it, most of the things we do on it, or
25 everything we do on it. These ought to be the things we are able

1 to do on it." That is their position.

2 MR. WENZINGER: That's right.

3 MR. SIESS: There is some argument for it. It keeps
4 you out of negative training, etc., etc., and defines some scope
5 for the training.

6 Now, the Commission comes along with the reg guide
7 and says, "Gee, fellows, that is a good idea, we agree with you.
8 If you are going to do that, you ought to be able, we think, to
9 do a little bit more. You ought to do a few more things on it,
10 and we are going to review your simulators on that basis."

11 Now, in doing so the Commission has said, "We agree
12 with you. That is a good idea. That is the way simulators ought
13 to go."

14 MR. WENZINGER: But it does not say in th is regulatory
15 guide whether or not the simulator that is chosen as a reference
16 plant is acceptable for training on Plant A, B, C, or whatever.
17 It does not address that question at all.

18 MR. SIESS: And it does not address the question as
19 to whether training of operators might better be done on a completely
20 different kind of simulator; a different kind of training; a
21 different kind of background; different kind of classroom, rather
22 than training on an exact replica.

23 MR. WENZINGER: That's correct.

24 MR. SIESS: It is a little far fetched, but I am not
25 enough of a human factors person to know.

1 MR. WENZINGER: That is correct, but once you have
2 decided whatever the reference plant is, if it is going to be
3 identical to the plant the man is going to be trained on, or if
4 it is not, regardless, it is still going to need this kind of
5 guidance, whatever decision you make on that question.

6 If you decide it has to be a one-to-one relationship
7 between the reference plant, the plant the man is going to be
8 licensed on, you are still going to need this kind of guidance.

9 If you decide the other way, that it is acceptable that
10 the man is going to be trained on a simulator that is not the
11 same as the plant he is going to be licensed on, you still need
12 this kind of guidance, either way.

13 MR. SIESS: Some of it. You might decide that it is
14 all right to train him on a synthetic or a hybrid if your
15 training is supplemented in other ways. You might want to build
16 one simulator for every ten PWRs, make it much more sophisticated;
17 make it do all the things you want it to do, and it does not
18 tie into any reference plant, but it gives him the kind of
19 training that will make him a better operator. Can you rule
20 that out?

21 MR. CARBON: For all practical purposes you can do
22 that under this as written, I believe. It does not say that
23 an operator has to be trained on the kind of simulator that
24 simulates his plant.

25 MR. SIESS: But it says that the simulator must

1 relate to some plant.

2 MR. CARBON: If Westinghouse, for example, wanted to
3 build a simulator for PWR, they could in theory have one
4 simulator.

5 MR. SIESS: Oh, yes.

6 MR. CARBON: That would follow one reference plant,
7 and they use it for everything.

8 MR. SIESS: But if we know for sure that any kind of
9 simulator, if there are real reasons why that simulator has to
10 tie in to a reference plant, where you could get data from the
11 reference plant to check the simulator performance, it would
12 analyze it and so forth, if that is absolutely sure, that we know
13 they have to go that way, then I don't see that this is a
14 irrevocable step, or one that has the likelihood to be revoked.

15 MR. WENZINGER: That is certainly the conclusion I
16 believe the industry has come to, and the conclusion that the
17 staff has come to.

18 MR. CARBON: Could you express briefly why it is that
19 all of you feel that the simulator needs to be tied to "a"
20 specific reference plant, even though it might be used in a very
21 generic sense for operators from 25 or 50, or 100 other plants?

22 MR. WENZINGER: Well, I guess the most logical answer
23 to that is that it is a very real situation. It will duplicate
24 "a" particular plant and is a real situation, it is not something
25 that is simply dreamed up out of the blue.

1 MR. CARBON: To me that is not a good answer.

2 MR. SIESS: Let me try another answer, that unless it
3 is tied to a reference plant, you are not sure that it is responding
4 in a realistic manner.

5 MR. WENZINGER: That is another way of saying it, sure.

6 MR. SIESS: Is that correct?

7 MR. WENZINGER: Yes.

8 MR. CARBON: But that is not enough, and you are not
9 sure just from that, that it is going to respond in a realistic
10 manner anyway.

11 MR. WENZINGER: I understand that, but that is still a
12 correct statement.

13 MR. MERSCHOFF: If I can add something here, sir. It
14 will also prevent your plant and simulator from evolving in
15 divergent paths. Five years from now we are sure that that
16 simulator still looks like a nuclear power plant rather than a
17 donut-making machine.

18 MR. CARBON: It looks like "a" nuclear power plant,
19 but 99 others might have gone off in some different direction.

20 MR. MERSCHOFF: That is true, but the probability that
21 it is still being useful as a simulator for other plants is much
22 higher, rather than letting it go its own way.

23 MR. SIESS: That argument does not lead us to any
24 urgency to get this guide out. It is hard to believe that once
25 you have a beat-up yaw(?) and you put the pump trip on it, that

1 you don't go and modify your simulator and put that on. Those
2 kinds of things, I don't think, require a regulatory position
3 right now.

4 MR. WENZINGER: Well, again, the fact is that simulators
5 are being bought and built. When they are physically in
6 existence, I guess we are going to decide whether or not we are
7 going to permit them being used, or get credit for their being
8 used.

9 It seems to me we owe it to the industry to at least
10 indicate what our current thinking on that subject is.

11 MR. WARD: Do you have any reason to believe that
12 adoption of this guide or standard is going to stimulate more
13 simulators? That seems to be the argument here, that you are
14 going to get a lot more simulators of questionable quality
15 because you promulgated this guide.

16 I think your argument is that they are coming anyway,
17 and you want to give them some guidance.

18 MR. WENZINGER: Your latter statement is correct, yes.

19 MR. SIESS: The likelihood that you will get a simulator
20 that won't meet this guide is not great physically; it is not
21 too great, is it? Most of this will be software.

22 I mean, there is a question here about whether you
23 put photographs and instruments on the board. I have three
24 instruments, two of them are dummies. The simulators I have
25 seen did not have that. The ones I saw out at Singer(?) had

1 every cockeyed thing you could imagine on them.

2 MR. WENZINGER: That is the general trend.

3 MR. SIESS: If you want to go from 75 revolutions to
4 175 revolutions, that is a hundred percent software. You maybe
5 add another CPU on it.

6 MR. WENZINGER: That is basically true.

7 MR. SIESS: What the danger is that by the time
8 human practice gets through telling to remodel the control rooms,
9 that the one simulator they ordered, they have the things all
10 arranged wrong.

11 MR. CARBON: I would like to get back to this question
12 of duplication. Again, the point was made that industry favors
13 simulators. Could you tell me what industrial groups are
14 represented in that statement? I am thinking specifically, are
15 there licensees, nuclear power plant licensees, involved to a
16 considerable extent when you say that?

17 MR. SIESS: Maybe you should tell us who is on the
18 working group.

19 MR. ELLIOT: The working group was very small. As we
20 anticipated, the changes were not too great. I think that is
21 probably consistent from where it was. It consisted of myself,
22 I am training manager for Babcock-Wilcox. We have a training
23 simulator and I am an electronic engineer and have done some of
24 the system design of our modifications to our simulator.

25 We had Mr. Pete Walzer, who has a similar position at

1 Combustion Engineering; Mr. Abercombie from Tennessee Valley
2 Authority, who is a plant superintendent; not involved in the
3 training program other than an end user.

4 Let's see, Frank Kelley, who at one time was the
5 licensing branch head of the Nuclear Regulatory Commission and
6 is currently a consultant in the training evaluation area at
7 this time, and ultimately Mr. Merschoff joined our group.

8 We then had a group of what I call technical consultants
9 who participated in the development of the standard, and that
10 list is there. It includes people from Singer-Lay(?), from
11 Westinghouse, General Electric. I don't remember whether any
12 of the users who have simulators are on that list. If you will
13 give me a moment.

14 On the list here is Mr. Crawford from Singer; Gill
15 from Westinghouse; Jerry Hallman, Nuclear Regulatory Commission;
16 Mr. Rosser is my technical man for modifying the equations that
17 are in my simulator. Mr. Stephens from Northines(?) Associates;
18 Mr. Warner from Singer, and Mr. Webe from Nuclear Regulatory.

19 MR. CARBON: There seems to be one user in this group,
20 the gentlemen from TVA.

21 MR. ELLITO: That is correct.

22 MR. SIESS: All the people in the training program are
23 users.

24 MR. CARBON: I am thinking of user in the sense of a
25 utility company. He presumably voted this way. This was a

1 unanimous vote?

2 MR. ELLIOT: Yes, sir.

3 One of our difficulties or great concern that has not
4 come up - we have not gotten to that part of the standard - we
5 were very concerned with our ability to upgrade the world we have,
6 the plant transient data that we had at this time to fabricate
7 the data. Section 4 of the standard addressed the area of
8 performance standard. Mr. Abercombie also helped us in trying
9 to decide what power plant transients were available and could
10 be available.

11 MR. WENZINGER: That would be the argument in favor of
12 using the reference plant as opposed to dreaming up some plant
13 that would be fictitious.

14 MR. CARBON: I would still like to ask the question
15 on a broad basis, I guess. What is your philosophy that you need
16 the simulator to be exactly a duplicate of any reference plant?
17 And yet, 99 percent of your operators may be trained, then, on
18 this simulator which has a very loose connection with the plant
19 that they are going to be working on. I don't really understand
20 your philosophy.

21 MR. WENZINGER: Because of the requirement we have placed in
22 part that there will not be 99 percent to start with. I think
23 you can divide it in half to start with because Part 55 requires
24 they have to be trained on the same type of plant to start with.

25 I do not know what the ratio of simulators to plants is

1 right now, but there are 70-some plants. Maybe Norm Ellito
2 can tell us how many simulators there are in existence and on
3 order.

4 MR. ELLIOT: I think in the close delivery area there
5 may be 20 simulators around at this time, at some stage of
6 final delivery or actually out running.

7 MR. WENZINGER: There is something on the order of a
8 three to one ratio.

9 MR. CARBON: Well, by 99 percent, I didn't mean it the
10 way you interpreted it. What I am attempting to say is that you
11 are going to have a large number of people trained on a
12 simulator and maybe a majority of these people, three to one,
13 99 percent, or whatever, are not going to be working on a plant
14 that is duplicated by that simulator which fits a reference plant.

15 My point again, a majority of the people trained on
16 the simulator may not be working in a plant that is exactly
17 duplicated.

18 Again, I am asking what your philosophy is that you
19 want that simulator tied to a reference plant, very closely to it.

20 MR. MERSCHOFF: I can address that, sir. I think part
21 of the problem is, we are all agreeing that it is nice to train
22 on a simulator that duplicates your plant. However, if you are
23 training on a simulator that does not duplicate your plant, it is
24 my feeling that you are better off with a simulator that is
25 different than one that is close.

1 Now, if you have one of these homogeneous mixes of
2 all the plants, you can have confusion. I operated mirror image
3 plants, and I found that helped because the two plants have
4 different operating characteristics. One plant has certain
5 equipment that is OOC, the other plant does not.

6 If you are used to operating one plant and then you go
7 stand a watch on the other plant, the fact that it is mirror
8 image constantly reminds you that it is a different plant and
9 different things should be done in different instances - different
10 equipments up and down.

11 Now, if you have a simulator and you tie it to a
12 reference plant, you have a data base to draw from; you have the
13 FSAR to draw from; design bases to draw from, you can make a good
14 simulator that acts like a plant. You can train people on that
15 simulator, even though it is different, strong and secure in the
16 knowledge that it is acting like a plant; and secure in the
17 knowledge that they are aware it is not their plant. You are not
18 teaching them to type or you are not teaching knee-jerk operations
19 because it is different from their plant.

20 MR. SIESS: Gentlemen, we have 15 minutes and then we
21 have to get out of this room. I would like to propose the
22 following. It seems to me that the issue on this guide addresses
23 the guide as a whole, and to some extent the standard. I do not
24 think we have enough issues on the individual items of the guide
25 which will supplement the standard to worry about wasting time

1 on those until we decide - by "we" I mean the committee -
2 whether we think the guide is desirable at this stage and at
3 this time.

4 What I would like to propose is that we put the
5 question of the need for a guide, requiring that simulators have
6 a reference plant, a certain level of agreement, with a certain
7 capability for evolution, that we put that question to the full
8 committee; ask the staff to come in for that to the full
9 committee with whatever help they want. It might be nice if
10 we got Steve Hanauer in here to give us the state-of-the art
11 on human factors.

12 MR. WILLIAMS: I will pass that message along. I
13 do not know if he is available.

14 MR. SIESS: Maybe you can do it, Pete.

15 MR. WENZINGER: When is that, on Thursday, is that
16 correct, Sam?

17 MR. SIESS: Yes. If we decide at this time that the
18 committee wants to go ahead with the guide, I think Bill Kerr
19 can give a few of his little items so people can be prepared
20 if they have individual items. I think the individual items
21 are trivial questions compared to the major questions. I do
22 not think that there are any in there that bother anybody that
23 much. There are some that are not all that clear, and we can
24 spend an hour on them.

25 Is this agreeable to you?

1 MR. CARBON: It is to me, and I would like to request
2 the specific question of how is industry better off if we do
3 come out with this and give them the guidance that is here,
4 as contrasted to what happens if we do not do it. I wish you would
5 address that question specifically. It is a powerful point - if so,
6 I don't really see it yet. I don't understand how it is so.

7 MR. SIESS: Now, that will dispose of that one until
8 Thursday. If the full committee cannot settle it and wants it
9 to come back to us, we will take it up again at the earliest
10 possible time.

11 Now, gentlemen, we have one more guide here, and I
12 would like to make a proposal. This guide is Reg Guide 1.28
13 Revision 3. What we have is Draft 1 of Revision 3.

14 Staff would like to issue this for comment. This is a
15 very complicated thing to go through because there is a new ANSI
16 ASME quality assurance standard which brings together parts of
17 eight other ANSI ASME standards, a whole series of quality control,
18 quality assurance standards that are now being integrated into
19 one.

20 What the staff has got here is a guide that endorses
21 that new one, with exceptions. The exceptions are, except for
22 one, the exceptions that they have taken on the previous endorsement
23 to the previous standard. Am I correct?

24 MR. SCARBROUGH: My name is Tom Scarbrough.

25 What was done with these reg positions, cases where

1 in the consolidation process some of the requirements that were
2 in the N-45-2 and the series standard that were downgraded in
3 that consolidation process, were re-instated as requirements.

4 That was a major aspect of those regulatory positions.
5 We also went through other regulatory guides and made sure that
6 the positions which had not been incorporated into N-2-81, were
7 now re-instated as regulatory positions.

8 MR. SIESS: So your regulatory positions in this draft
9 are either positions that you had previously on the previous
10 standards, or restoring something that was in a previous standard
11 but not in the new.

12 MR. SCARBROUGH: Right.

13 MR. SIESS: With one exception, which was Regulatory
14 Position 9.

15 MR. SCARBROUGH: That's correct.

16 MR. SIESS: Now, I would recommend to the subcommittee
17 that we simply let them put this out for comment, get all the
18 comments in and give it a review then.

19 I think it is too complicated at this stage of the
20 game to do it. I do not think it involves that much change. I
21 move, if you have no objection to it going out for comment.

22 MR. CARBON: Second.

23 MR. SIESS: Does that suit you?

24 MR. SCARBROUGH: Yes, sir.

25 MR. SIESS: Then we will set a date on it when we get.

1 it back.

2 Gentlemen, the meeting is adjourned. There will be a
3 meeting next month. We have three guides. It will be on Tuesday
4 before the full committee meeting, unless we finish up the
5 report to Congress this month, in which case we can have it on
6 Wednesday before the full committee meeting.

7 We have three regulatory guides. One is the criteria
8 for lightning protection for nuclear power plants, which we had
9 a lot of fun with. I understand the staff has now resolved all
10 of its internal problems and industry problems; we will see.

11 We have a Revision 2 to Regulatory Guide 1.136, materials,
12 construction and testing of concrete containments; and we have
13 the new guide on ultrasonic testing of reactor vessel wells
14 during preservice and inservice examination; that relates to
15 Appendix 11. We will see that Paul Shuman gets a copy of that.
16 If there are any comments, as soon as you can get them to us.

17 We will meet next month. This meeting is adjourned.

18 (Whereupon, at 12:55 p.m. the meeting of the sub-
19 committee adjourned.)
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NUCLEAR REGULATORY COMMISSION

This is to certify that the attached proceedings before the

ACRS - Subcommittee on Regulatory Act.

in the matter of:

Date of Proceedings: 6 Jan 81

Docket Number: _____

Place of Proceedings: WASH, D.C.

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

Suzanne Bohman

Official Reporter (Typed)

Richard Bohman

Official Reporter (Signature)

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This is to certify that the attached proceedings before the

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in the matter of:

Date of Proceeding: 6 Jan. 81

Docket Number: _____

Place of Proceeding: WASH. D.C.

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M. E. Hansen

Official Reporter (Typed)

M. E. Hansen

Official Reporter (Signature)