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Instrument Sensing Lines

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6 ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
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10 proceeding of the United States Nuclear Regulatory
11 Commission Advisory Committee on Reactor Safeguards,
12 as reported herein, is a record of the discussions
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14

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UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

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ADVISORY COMMITTEE ON REACTOR SAFEGUARDS

(ACRS)

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SUBCOMMITTEE ON REACTOR POLICIES AND PRACTICES WITH
RESPECT TO DRAFT FINAL REVISION 1 TO REGULATORY
GUIDE 1.151 (DG-1178), INSTRUMENT SENSING LINES

+ + + + +

MEETING

+ + + + +

TUESDAY

DECEMBER 1, 2009

The Subcommittee met at the Nuclear
Regulatory Commission, Two White Flint North, Room
T2B3, 11545 Rockville Pike, at 10:15 a.m., Otto
Maynard, Chairman, presiding.

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1 SUBCOMMITTEE MEMBERS PRESENT:

2 OTTO L. MAYNARD, Chairman

3 SAID ABDEL-KHALIK

4 J. SAM ARMIJO

5 DENNIS C. BLEY

6 CHARLES H. BROWN, JR.

7 HAROLD B. RAY

8 WILLIAM J. SHACK

9 JOHN D. SIEBER

10

11 NRC STAFF PRESENT:

12 ZENA ABDULLAHI, Designated Federal

13 Official

14 KHOI NGUYEN

15 RUSSELL SYDNOR

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

10:14 a.m.

CHAIR MAYNARD: Okay, let's bring the meeting to order here.

This is a meeting of the Advisory Committee on Reactor Safeguard, Subcommittee on Regulatory Practices and Policies. I'm Otto Maynard, Chairman of the ACRS's review of Revision 1 to Reg Guide 1.151.

Members in attendance, we have Jack Sieber, Sam Armijo, Dennis Bley, Bill Shack, Said Abdel-Khalik, Harold Ray, and Charles Brown.

The purpose of the meeting is to discuss the staff's changes in Revision 1 to Reg Guide 1.151. The Regulatory Guide establishes the methods acceptable to the staff in meeting the safety-related instrument sensing lines requirement.

The original Reg Guide 1.151 was issued to the public in 1983, and in 2008 the NRC staff issued the revised draft Regulatory Guide 1.151 for public comment.

The staff received comments from NEI and incorporated some of the comments in the final revision of the Regulatory Guide.

In today's meeting, the Subcommittee will

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1 hear presentations by, and hold discussions with, the
2 staff. The Subcommittee will gather information,
3 analyze relevant issues and facts, and formulate
4 proposed positions and actions as appropriate for
5 deliberation by the full Committee.

6 The Subcommittee will hear presentations
7 by, and hold discussions with, the staff. The
8 Subcommittee will gather information. We've already
9 discussed that.

10 The rules for participation in today's
11 meeting have been announced as part of the notice of
12 the meeting previously published in the Federal
13 Register. We have received no written comments or
14 requests for time to make oral statements from members
15 of the public regarding today's meeting.

16 A transcript of the meeting is being kept
17 and will be made available as stated in the Federal
18 Register notice.

19 Zena Abdullahi is the Designated Federal
20 Official for this meeting. As requested the speakers
21 first identify themselves and speak with sufficient
22 clarity and volume so that they can be readily heard.

23 We'll now proceed with the meeting, and
24 before I turn it over to Mr. Nguyen, it's a short
25 meeting, we want to make sure we get to the areas that

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1 we need, so I'd like to ask any of the members if
2 they've got any pressing issues.

3 One thing I'd like to make sure we talk
4 some about, and that's on the adding the non-
5 condensable gases, and some of the comments, there's
6 no guidance being provided as to what would be an
7 acceptable method, so I'd like to make sure we have
8 some discussion on that.

9 Are there any other specific issues that
10 the members would like to add?

11 Okay. I'll turn it over to Mr. Nguyen,
12 and go through his presentation.

13 MR. NGUYEN: Good morning. My name is
14 Khoi Nguyen, Digital I&C Branch from Office of
15 Research.

16 I have Russ Sydnor, my boss, here, to back
17 me up if I stuck with some questions, and I will go
18 over Revision 1, proposed Revision 1, of Reg Guide
19 1.151, instrument sensing line.

20 For the background, the current Revision 0
21 of this Reg Guide has not been updated since July,
22 1983. And Reg Guide references ANSI Standard S67.02-
23 1980.

24 And, because the standard at present
25 doesn't address some of the guidance for some of the

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1 reactor events occurring between 1973 and 1983, so
2 that's why the Revision 0 of this Reg Guide is some
3 supplement guidance to, you know, address those
4 events.

5 In the updated revision of the Standards,
6 ANSI Standards, ISA combines the S67.02 version with
7 67.10 version, which covers sample-line piping and
8 tubing, and this version of the standard incorporates
9 NRC guidance from Rev 0 of this Reg Guide.

10 This Reg Guide has been put out for public
11 comments in February 6th of 2009, and we received
12 comments from Westinghouse, NEI, and TVA, and we will
13 go over the public comments later on.

14 We have the summary of change, which
15 updates the endorsement to ANSI Standard 1999 version,
16 and also we updated the reference to IEEE Standard
17 603-1991.

18 We also endorse IEEE Standard 622-1987
19 version, which contains the requirements for the heat
20 tracing system using for freeze protection and to
21 prevent crystallization of concentrated chemical
22 solutions.

23 The major change of this revision is to
24 remove the supplemental guidance now covered by this
25 ANSI Standard 1999 version, and IEEE Standard 622.

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1 CHAIR MAYNARD: Okay. Now, I think you
2 just said this, but the things that were removed, they
3 were removed because they are not covered as part --
4 in the new standard. So, you are not really removing
5 any requirements.

6 MR. NGUYEN: Right, we don't remove any --
7 we endorse a new version of the requirement, and I
8 carefully inspected the new standards, and it cover --
9 it adopt all the NRC regulatory procedures in this
10 Revision 0 of this Reg Guide into the new version.

11 So, the new standard cover all the NRC
12 procedures, except for isolation valves which we will
13 talk later on.

14 CHAIR MAYNARD: Okay.

15 MEMBER BROWN: There was one other item.
16 The new standard, the ANSI Standard, covers sample
17 lines as well, from what I understand, and this Reg
18 Guide does not.

19 MR. NGUYEN: Right. We excluded that.

20 CHAIR MAYNARD: Now, was that excluded
21 because it's not within the scope of the Reg Guide?

22 MR. NGUYEN: Right.

23 CHAIR MAYNARD: Because the Reg Guide is
24 just for --

25 (Simultaneous speakers.)

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1 MEMBER BROWN: So, they don't want any
2 spread.

3 CHAIR MAYNARD: They just want to make
4 sure that the licensees don't say, well, you've
5 endorse this, so it must be okay to do it, because you
6 didn't even really review that as part of this.

7 MR. NGUYEN: No.

8 MEMBER BROWN: The sample-line part.

9 CHAIR MAYNARD: Right, the sample-line
10 part.

11 MR. NGUYEN: And we say in the opening and
12 in the section that we did call the -- this version of
13 the Reg Guide only a couple instruments, sample lines,
14 no sample lines.

15 MEMBER BROWN: I guess the one other
16 question I had at this point relative to the changes,
17 you added 622-1987, that was heat trace.

18 MR. NGUYEN: Right.

19 MEMBER BROWN: It took me a while to
20 figure out why you added that, but if I'm -- just
21 correct me, there was one section of the old Reg Guide
22 that said freezing temperatures should be added to the
23 environmental standard installation, et cetera, and
24 you should be able to stand that.

25 So, I mean, is that why 622 was brought

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1 in, because you --

2 MR. NGUYEN: Right.

3 MEMBER BROWN: Okay. All right.

4 MR. NGUYEN: The current revisions we are
5 talking about the freezing temperature, and --

6 MEMBER BROWN: Yes, I was trying to figure
7 out how instrument lines inside our plants were going
8 to be freezing.

9 MR. NGUYEN: Actually, the ANSI Standards
10 cover the environment protection, but it's very brief,
11 and it doesn't -- it's not good enough.

12 MEMBER BROWN: I don't have a problem with
13 it.

14 MR. NGUYEN: We added the IEEE Standard to
15 cover, you know, all the aspects of the freezing
16 temperature protection.

17 MEMBER BROWN: Okay. I had a difficult
18 time routing that out, that was -- I just wanted to
19 make sure I had the right perspective.

20 Thank you.

21 MR. NGUYEN: Okay. Now, we go to the
22 detail of the changes, the regulatory positions.

23 Position 1, we -- as I said earlier, that
24 we removed the supplemental guidance. It's now
25 covered in Clause 5.4, in the ANSI Standards.

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1 Also, we had to exclude the sample line
2 portion of these standards, because it's out of the
3 scope of this Regulatory Guide.

4 Same thing for Position 2, we removed the
5 supplemental guidance, and we clarify the isolation
6 requirements, because we -- in the new version of the
7 ANSI Standards it excludes the isolation valves
8 requirements. So, we need to clarify because the need
9 of the isolation valves is GDC-55 requires isolation
10 valve for any penetrations to containment boundaries.

11 CHAIR MAYNARD: And, the way I read this
12 position, it doesn't really change any of the
13 containment isolation requirements, you are saying
14 that you can use the same valve, the root valve for
15 the containment isolation.

16 But, that's only as long as it still meets
17 containment isolation requirements by other -- in the
18 other requirements.

19 MR. NGUYEN: That's correct. The reason
20 we had the clarification in there, because the
21 standard was excluded and we clarified it's still
22 needed. We endorse this standard, but the standard
23 doesn't cover the isolation valve, so we need to
24 clarify the isolation requirements, because they are
25 needed. It's not excluded.

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1 For Position 3, we again removed the
2 supplemental guidance, and we endorse IEEE Standard
3 622 for heat trace for freeze protection, as we
4 discussed earlier.

5 Position 4, same thing, we removed the
6 supplemental guidance, because they are now covered by
7 ANSI Standards, and provides guidance for sending
8 lines taking into account lessons learned from
9 measurement errors during the evolution of dissolved
10 non-condensable gases.

11 And, we think that this is a good
12 practice, and this -- we cannot ignore some of the
13 lessons learned from the reactor events and some of
14 the industry events, but we know that the measurement
15 errors are contributed to the possible incidents. We
16 agree we need to address it, but we don't specify what
17 specific design for each specific plants, because
18 different plants have different designs.

19 We will talk more about that later.

20 CHAIR MAYNARD: Back just a minute, the
21 actual wording of Position 4, "Provisions shall be
22 made to mitigate the potential effects of trapped,
23 evolved gases."

24 You were talking non-condensable, and I
25 take it that by trapped you are talking about any type

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1 of gas, not just evolved gases, but non-condensable
2 gases, too?

3 MR. NGUYEN: That's correct, and the way
4 we describe the evolved gas, I mean it's very
5 controlled on the term of the use of the evolved gas,
6 and we have the glossary in the back of the Reg Guide.

7 CHAIR MAYNARD: Your papers are touching
8 the speaker there, the microphone.

9 MR. NGUYEN: I'm sorry.

10 CHAIR MAYNARD: So, thank you.

11 MR. NGUYEN: So, we have the glossary
12 added into the Reg Guide as the result of the public
13 comments to describe the evolved gas, which is gas
14 released from reactor coolant caused by the chemical
15 reaction or change in the solubility of the coolant.
16 And, this will cover the evolved gas, trapped gas, as
17 you asked earlier.

18 CHAIR MAYNARD: Okay.

19 MEMBER BROWN: Did you say that glossary
20 is in here?

21 MR. NGUYEN: Yes, in the Reg Guide we do
22 have the -- on page six.

23 MEMBER BROWN: I'm trying to find it. I
24 thought I had the Reg Guide.

25 MR. NGUYEN: Page six.

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1 MEMBER BROWN: I must have had the wrong
2 thing here, I might have to apologize. I was looking
3 for that.

4 MS. ABDULLAHI: You had it in Word
5 glossary.

6 MEMBER BROWN: Okay.

7 MS. ABDULLAHI: Because the Reg Guide in
8 by itself does not have it in the package.

9 CHAIR MAYNARD: At least the version we
10 have.

11 MEMBER BROWN: The version we have doesn't
12 have that.

13 MS. ABDULLAHI: Yes.

14 MEMBER SHACK: There may be a version with
15 it.

16 MR. SYDNOR: My name is Russell Sydnor.

17 Mr. Brown is looking at the draft guide.
18 the draft guide did not have the glossary, the
19 glossary was added due to the public comments, so it's
20 in the Reg Guide, pre-decisional Reg Guide.

21 MEMBER BROWN: I didn't have that either,
22 I just had the --

23 MS. ABDULLAHI: The 2009 one.

24 MEMBER BROWN: I've got December '09, Reg
25 Guide 1.151 (DG-1178), and that's the only thing we've

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1 got.

2 MS. ABDULLAHI: Okay, go ahead and put it
3 on then.

4 MEMBER SIEBER: I think one of the issues
5 was the level measurements, if you have, for example,
6 in a PWR --

7 MS. ABDULLAHI: It should be the same, it
8 should be --

9 MEMBER SIEBER: -- where you have a LOCA,
10 the gases don't come out of the reference leg until
11 the pressure drops, which then makes the reference leg
12 decline compared to the level which gives you an
13 artificially high reading. And, I don't know that
14 that's specifically been addressed. They do have a
15 make-up system installed, but that really doesn't do
16 it, I don't think.

17 MEMBER ARMIJO: Do we not have the -- no,
18 we didn't have the '09 one?

19 MEMBER BROWN: No, we have the December,
20 '08 version, which was the one that was modified,
21 because it as the draft.

22 MEMBER SIEBER: It's what went out for
23 public comment.

24 MEMBER BROWN: And, oh, and then she did a
25 compare on the --

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1 MS. ABDULLAHI: With the other one.

2 MEMBER BROWN: So, we don't have -- we
3 don't have the current version that they are talking
4 about.

5 CHAIR MAYNARD: Okay.

6 MEMBER BROWN: That was one of my problems
7 when I was going through. I guess I just couldn't
8 find stuff.

9 CHAIR MAYNARD: Well, I want to move on
10 here. I think --

11 MEMBER BROWN: That's fine.

12 CHAIR MAYNARD: -- Zena, we do need to get
13 copies of the ones we are really being asked to
14 approve to all the members. We need to get that
15 before our full Committee meeting.

16 MR. NGUYEN: Sorry about the
17 inconvenience. I thought this was the current, the
18 latest version of the Reg Guide had been forwarded to
19 the staff members.

20 MEMBER SHACK: Yes, I don't even think
21 that's on the website, because I looked for that, too.

22 MS. ABDULLAHI: No, I do have a package.

23 MEMBER SHACK: No, they have a draft guide
24 website, and I don't think they updated it.

25 MR. NGUYEN: Right, because this revision

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1 is --

2 MEMBER SHACK: It's predecisional.

3 MR. NGUYEN: -- predecisional.

4 MEMBER SHACK: Oh, it's predecisional.

5 MR. NGUYEN: Yes, so we cannot, you know,
6 put it on the website, the ML numbers.

7 CHAIR MAYNARD: Okay, let's go ahead, but
8 we do -- again, we'll get copies to the members. We
9 need to get the one that we are really being asked to
10 review and approve here, and we'll probably have some
11 more discussions on this, but let's go ahead with the
12 presentation here, the positions.

13 MR. NGUYEN: I'm sorry about that.

14 We, for Positions 5 and 6, we deleted --
15 for Position 5 we deleted to remove the supplemental
16 guidance, for Position 5, I'm sorry.

17 Position 6, we deleted to remove the
18 disclaimer associated with the previous version of the
19 ANSI Standards, which is no longer needed, or no
20 longer applicable.

21 So, I will briefly offer the benefits of
22 the Reg Guide Update.

23 The main -- I mean, the primary
24 enhancement of the reactor safety by addressing the
25 most current ANSI Standards on the safety system

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1 endorsed by NRC, and know the benefit is to address
2 the operational events in which the evolved gases in
3 the sensing lines have affected measured water levels
4 and provide guidance to prevent such events.

5 Before we go to the public comments and
6 resolutions, do you have any specific questions on my
7 presentation?

8 CHAIR MAYNARD: I just want to -- you are
9 not going to go over the comments?

10 On your slide nine, I've got a specific
11 one, this is where it talks about including the gases,
12 but does not include description of a method
13 acceptable to the NRC.

14 And, I know that the NRC doesn't tell
15 people how to design things, but, typically, a Reg
16 Guide tells you what is -- what would be acceptable,
17 or whatever.

18 My question really gets at, first of all,
19 don't misunderstand, I believe that gases are a very
20 important issue. I'm not sure what the Reg Guide is
21 adding, if it doesn't provide some exception of what
22 would be acceptable.

23 The Reg Guide just says, you've got to
24 take it into account.

25 MEMBER SIEBER: Right.

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1 CHAIR MAYNARD: Well, the requirements,
2 the regulations should already say that. If the
3 regulations don't say that, then the Reg Guide is
4 imposing a new requirement. If the Reg Guide is not
5 imposing a new requirement, then what value is it if
6 it's not providing an acceptable method? That's the
7 gist of my question.

8 MEMBER ARMIJO: At least one.

9 MR. NGUYEN: For BWR plants -- the staff
10 already have acceptable methods to address these
11 problems, but for PWRs, because of different designs,
12 and we don't say that there's no problem for evolved
13 gas in PWRs, there are, but since all the measures
14 have been implemented we haven't seen additional
15 events in PWRs after these measurements were
16 implemented.

17 So, we -- I understand what your concern
18 is, that we don't provide specific guidance for the
19 industries, but we -- because it's very hard to, you
20 know, impose some of, you know, specific designs, if
21 they have a different design what do we do? We have
22 to review it to accept it, or --

23 CHAIR MAYNARD: Okay. I understand that,
24 but what benefit is it of having this in the Reg Guide
25 then? What is the Reg Guide doing that is beneficial

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1 here?

2 MR. NGUYEN: We just emphasize the
3 importance of taking measures to prevent evolved gas
4 problems.

5 MEMBER SHACK: But then, I assume, because
6 you were endorsing the standard, you found the
7 guidance in the standard on this adequate. Now, is
8 that now the case?

9 MR. NGUYEN: Not really. The standard is
10 adequate, but we also want to emphasize the importance
11 of the evolved gas problems.

12 MEMBER SIEBER: Well, that question was a
13 public comment. I think you discuss it on slide ten.

14 MR. NGUYEN: The comment on ten, yes, you
15 are right.

16 MEMBER SIEBER: Yes.

17 MR. NGUYEN: The comments suggest that we
18 should address the evolved gas in separate guidance,
19 but the staff believes that including the provision
20 for mitigating trapped gas in these standards, I mean,
21 this Reg Guide, is appropriate, and we don't need
22 another Reg Guide to address the evolved gas problem.

23 CHAIR MAYNARD: Well, I have to give it
24 some more thought. You know, first of all, I believe
25 this is an important issue, so I'm struggling between

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1 what -- with, in my mind, what value is being added by
2 the Reg Guide. And, you know, if it's already in the
3 requirements, already, you know, covered as part of
4 the standard, then why is it being added here?

5 I also see some value in emphasizing the
6 importance and stuff of it, but it's not -- that's
7 what I'm struggling with, is that it's not providing
8 an acceptable method or an acceptable -- you know,
9 what's the NRC going to find acceptable in it. It
10 just says do it, and that's kind of more what the
11 regulations stuff do, say do it.

12 The Reg Guide should be providing some
13 provision as to what would they find acceptable, not
14 designing the system, but in just -- so, that's what
15 I'm struggling with.

16 I think we've already discussed that. I
17 don't -- so, why don't we move on here.

18 MEMBER ARMIJO: Well, some designs have
19 already been found acceptable. This backfill thing,
20 and why couldn't that be referenced as an acceptable
21 measure?

22 MEMBER SIEBER: Because that is not the
23 only way.

24 MEMBER BLEY: Well, Reg Guides are never
25 the only one.

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1 MEMBER ARMIJO: No, but it's a way, and it
2 could be -- could be mentioned in the Reg Guide.

3 MR. NGUYEN: In the discussion section, we
4 discuss the backfills solution for BWR plants, and I
5 think that would answer your question.

6 MEMBER ARMIJO: Well, yes, I think so, but
7 one of these comments said, even a properly installed
8 backfill can have problems.

9 MEMBER SIEBER: Sure.

10 MEMBER ARMIJO: So --

11 MEMBER SIEBER: If you have a big --

12 MEMBER ARMIJO: -- the Reg Guide is silent
13 on those, at least I didn't see anything.

14 MR. NGUYEN: Do you have the page number
15 you are talking -- you are looking at?

16 MEMBER ARMIJO: Yes, it's comment number
17 two from DTE, which I think is --

18 CHAIR MAYNARD: Detroit.

19 MEMBER ARMIJO: -- yes, even properly
20 installed instruments may be affected by the non-
21 condensible gases, and special measures must be taken
22 to ensure accurate water level measures.

23 CHAIR MAYNARD: That was comment two in
24 the NEI letter, where the NEI letter provided --

25 MEMBER ARMIJO: Yes, NEI incorporated the

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1 DTE comments.

2 MR. NGUYEN: Okay.

3 MEMBER ARMIJO: And again, it was in the
4 theme of there really should be a separate Reg Guide
5 on this issue, at least that was their view.

6 MR. NGUYEN: During the development
7 process, we went through all the inputs from BWROG,
8 and we include the acceptable solution in the
9 discussion section, I believe.

10 CHAIR MAYNARD: Well, again, we may not be
11 looking at the version that has --

12 MEMBER ARMIJO: The right version.

13 CHAIR MAYNARD: -- yes, we don't even have
14 the -- the comparison we got was the DG-1178, 2008
15 version, with 1983 1.151.

16 MEMBER BLEY: So, we might have questions
17 again when we see it.

18 MR. NGUYEN: Do you want me to open the
19 Reg Guide, later version of the Reg Guide, to see what
20 are we talking about?

21 CHAIR MAYNARD: The latest one, does it
22 provide a little clarification on --

23 MR. NGUYEN: Yes.

24 CHAIR MAYNARD: Okay, let's -- if you
25 could, that might help us a lot here.

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1 Jack?

2 MEMBER SIEBER: Yes, I was just going to
3 say, if we get the predecisional latest version of the
4 draft guide, if we could get it today, that would give
5 us a day to look at it.

6 MR. NGUYEN: This begins on bottom of page
7 two.

8 MEMBER BLEY: Unfortunately, I can't read
9 that, it's too small.

10 MEMBER SIEBER: Well, put it on a slide
11 show, and say start from the current slide.

12 MEMBER BROWN: That's not a slide, it's
13 not a Power Point, but you can expand it, though. He
14 just has to zoom a little bit, which he doesn't have a
15 whole lot of room to do.

16 (Whereupon, off-the-record comments.)

17 MR. NGUYEN: The NRC issued information
18 Notice 92-54, level instrumentation accuracies caused
19 by rapid depressurization, dated July 24, 1992, Rev 7,
20 to a licensee to potential inaccuracies in water level
21 indication during and after rapid depressurization
22 events. Inaccuracies in level instrumentation could
23 affect the performance of the safety function of the
24 pressurized water reactor in BWR plants.

25 NRC information notice 95-20, failures of

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1 Rosemount Pressure Transmitter, due to hydrogen
2 commission into the center cell, dated March 22,
3 1995, that presents evidence of the presence of the
4 soluble gas in the PWR instrument line.

5 For BWRs, the potential problem is that
6 diesel gas can evolve in the reference leg for level
7 measurements in the reactor vessels, as the solubility
8 of the gases decrease during the depressurization.

9 Such gases can be trapped in the
10 instrument sensing line, and affect the differential
11 pressure measurements, level measurements. Such
12 events --

13 CHAIR MAYNARD: Can you scroll down a
14 little further. Does it talk in there about the fact
15 that what's been done would be acceptable? It says in
16 response to the --

17 MEMBER BROWN: Well, they pointed out
18 somewhere in one of these that even the backfill thing
19 had some problems in its operation, which is not
20 unexpected.

21 MEMBER SIEBER: That was in the Detroit
22 Edison comments.

23 MEMBER BROWN: Yes, but I thought it was
24 discussed somewhere else. I was trying to find it,
25 and I can't, but you are right, it was in that one

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1 comment.

2 MEMBER SIEBER: There's not a lot of
3 choices.

4 MEMBER BROWN: Oh, no, I understand the
5 issues.

6 CHAIR MAYNARD: Well, I think what we need
7 to do is, we need to get a copy of the latest version,
8 so we can read that, and take a look at that before
9 the full Committee meeting later this week.

10 MS. ABDULLAHI: The difference between
11 this version and the other version, the 2008 is the
12 evolved gas statements, and a few other, not much.

13 The tabbing says December, 2009, but what
14 was attached ended up being 2008. That was the
15 difference.

16 And, you are getting the copy right now.

17 CHAIR MAYNARD: Okay.

18 MS. ABDULLAHI: I just printed it out,
19 it's coming.

20 CHAIR MAYNARD: Well again, I think we
21 need to take a look at that and see -- again, I've got
22 mixed emotions about all this, because I'm not seeing
23 what value is being added, but I also don't see that
24 anything is being harmed.

25 So, you know, it's an important issue

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1 that's not fully being addressed.

2 MEMBER SHACK: Well, what gets me is the
3 implication that the standard is sufficient, and it's
4 not, to address the issue.

5 MEMBER BROWN: The ANSI standard?

6 MEMBER SHACK: Yes.

7 MR. NGUYEN: The ANSI standard, I wouldn't
8 say it's not sufficient to address the evolved gas,
9 but it doesn't --

10 MEMBER SHACK: Well, Detroit Edison says
11 it isn't.

12 MR. NGUYEN: They don't specify, you know,
13 the specific method to resolve the issue.

14 MEMBER ARMIJO: But, they do mention
15 special measurements, whether they are analytical
16 measurements, or some sort of a design fix, or
17 something, that people apply, to make sure that they
18 get the right water level.

19 So, you know, I would think that if they'd
20 done this somewhere along the line it would have gone
21 through the staff for review and approval, and that
22 could be in the Reg Guide as one way of addressing
23 that problem.

24 CHAIR MAYNARD: Bill, I'm not clear that
25 it's really saying that the standard is sufficient, or

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1 else they wouldn't have Position 4 in there.

2 MEMBER SHACK: Yes, well, it just seems to
3 me somewhat ambiguous.

4 CHAIR MAYNARD: Right.

5 MEMBER SHACK: It's not clear whether
6 it's, you know, are they highlighting it, or they are
7 asking you, you know, or are they pointing out that
8 it's not sufficient? And, if it's highlighting it's
9 one thing, if it's saying it's not sufficient that's a
10 different thing.

11 But, since we haven't got the actual
12 position, I'm not sure what it's saying. .

13 CHAIR MAYNARD: I've got a feeling that
14 probably says pretty close to the same thing, but I
15 don't know.

16 Okay, so I think for the full Committee
17 meeting, I think we are going to want a little more
18 discussion on this, is the standard sufficient or not
19 in this area, like Position 4, is that really -- is
20 that just adding emphasis, or is it really something
21 different from the standard, because usually those
22 positions are either taking exception to a standard,
23 or it's adding something that wasn't in the standard.

24 MR. NGUYEN: Well, generally, we clarify
25 -- when we endorse standards exclude something in the

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1 standards, in the position we clarify or exclude some
2 of the -- something in the standards.

3 But, for this case, Position 4 simply
4 wanted to emphasize the importance of evolved gas.

5 And, I will go back to relook to see if
6 any value added if we just mention it, and it doesn't
7 provide any, you know, doesn't provide any specific
8 guidance.

9 CHAIR MAYNARD: Yes, and I think it's
10 important, I think Bill's point is that, it's not
11 clear whether we are saying -- if we are really saying
12 that the standard is not sufficient, I think it
13 probably needs to be highlighted more, that you've got
14 to do more than what the standard is saying. I think
15 that part kind of needs to be clarified, as to whether
16 this is just adding emphasis or whether this is saying
17 that the standard is not sufficient and you need to do
18 more than what the standard says.

19 MR. NGUYEN: Well, for something that we
20 want to clarify, that the standard is not sufficient,
21 we say it front of like Position 2, we say, the
22 standard doesn't call actuation valves, but isolation
23 valve.

24 CHAIR MAYNARD: Okay, so right now you are
25 saying that Position 4 is saying that the standard is

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1 sufficient, you are just emphasizing the importance of
2 the evolved gases, not the non-condensable gases.

3 MR. NGUYEN: That's correct. Do you want
4 me to change the language to just say that, I will.

5 MEMBER BROWN: Okay, I've lost the bubble,
6 in other words, does the ANSI standard 1999, actually,
7 cover the dissolved gas issue or not? Isn't that what
8 you are asking?

9 MR. NGUYEN: Not the whole thing for BWR
10 and PWRs, but it's some, yes, it covers some of the
11 evolved gases.

12 MEMBER BLEY: It's inadequate.

13 MEMBER SHACK: It's inadequate then. If
14 it's inadequate, where's the missing guidance, or at
15 least the statement should be made that, you know,
16 it's not sufficient, and it's not complete, and
17 provisions should be made.

18 I mean, I read the first statement that it
19 says it provides a basis acceptable to the staff or
20 designing and installing instrument sensing lines, and
21 that says it's good to go.

22 MEMBER SIEBER: Yes.

23 MR. NGUYEN: Except for the isolation
24 valves.

25 MEMBER SHACK: Except for the isolation

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1 valve, and then No. 4 is just to me somewhat
2 ambiguous. I don't -- it's not clear to me whether
3 that is saying it's not sufficient.

4 MR. NGUYEN: I don't think the --

5 MEMBER SHACK: And, you are sort of giving
6 me mixed messages here, you know, I get one that it is
7 sufficient, and the other is, well, no, not quote, you
8 know, not for BWRs, but okay for PWRs.

9 MR. NGUYEN: No, no, again, I said if we
10 see that the standard is not sufficient, we would like
11 to say in front we don't -- you know, try to confuse
12 the readers, so, again, in Position 2 we say, we
13 endorse the standard, but the standard doesn't include
14 the isolation valve, so we said in the front, Position
15 4 doesn't have the same meaning.

16 We can change the language to just say we
17 want to emphasize the importance of the evolved gas.
18 It's not, you know, just saying the standard is not
19 sufficient.

20 CHAIR MAYNARD: What I would suggest for
21 the full Committee meeting, and we can discuss it more
22 here if we want to, but I think we need a clearer
23 statement as to whether they need to be doing
24 something more than what's in the standard.

25 You know, in this position statement, it's

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1 not clear to several of us as to whether we are saying
2 that the standard is sufficient and we are just
3 highlighting the importance, or whether we are saying,
4 in addition to the standard you need to also do more.

5 And, I think that's the clarification we are going to
6 need in the full Committee meeting.

7 MEMBER SIEBER: Yes, Position 4 does not
8 say that, in my view.

9 CHAIR MAYNARD: And, if the standard is
10 sufficient, and all you are doing is emphasizing it,
11 the importance, that's one thing. If you are saying
12 meeting the standard is not enough, you also have to
13 do more, because that's a different statement, and I
14 don't think it's been clear how that's been answered.

15 MEMBER SIEBER: Even further than that, I
16 don't think that they ought to be telling people how
17 to design the system, but you ought to point out what
18 that more refers to, you know, what kinds of things
19 will happen in rapid depressurization that would cause
20 non-condensibles to appear and affect the reference
21 leg.

22 You know, there's a couple ways you can
23 deal with it, none of which are perfect. But, some
24 from a regulatory standpoint should be good enough.

25 CHAIR MAYNARD: Now, this is, basically,

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1 primarily, for new plant designs. The existing plants
2 already committed to an older version, and they may or
3 may not convert or whatever, but, you know, for a new
4 plant, if they do, basically, the same thing that the
5 older plants have done by the bulletins and stuff, is
6 that okay or not? Or, do they need to do more?

7 MR. NGUYEN: I believe it is okay to do
8 whatever is acceptable to NRC staff for reviewing the
9 license. But, we also want to emphasize that you have
10 to watch out when you implement these, because these
11 may not -- you know, the measurement errors may be
12 resolved, some of the implementation you make.

13 So, that's the whole purpose of Position
14 4, that's what it wants to say.

15 CHAIR MAYNARD: But, to several of us it's
16 not clear what Position 4 is really saying. It's not
17 clear whether it's saying that more needs to be done
18 than what's in the standard, or what's been done in
19 the past, or whether it's just saying this is really
20 important, and we want to make sure that we carry on
21 in the future what we've done in the past.

22 MEMBER BROWN: Well, if you look at the
23 handouts that they gave you, which is similar to the
24 red-line type thing of the 1178 that we saw, it talks
25 about that the backfill thing produced other errors.

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1 I mean, it's a wide discussion, so it says, hey,
2 here's a method that was used that doesn't necessarily
3 work all the time, and then it goes on and says, gee,
4 you've got to mitigate stuff.

5 I mean, there's just, like you say,
6 there's just no -- you compound the discussion, you
7 say the methods being used don't necessarily work and
8 result in inaccuracies also, so let's invent something
9 new when you go back to the provide mitigation means.

10 I mean, it's -- I sort of agree with you,
11 there's the value added here seems to be confusing,
12 it's contradictory, in my mind.

13 MEMBER SIEBER: But, no backfit is
14 intended according to Section D.

15 MEMBER BROWN: Yes, well, that statement
16 is in here, under implementation.

17 MR. NGUYEN: So, your suggestion is that
18 we remove the Position 4, because it's not adding any
19 value?

20 MEMBER BROWN: Well, you've got, what is
21 it, an IN or whatever it was that was issued, and then
22 there was 1992.04, and then there was another one in
23 9520, and then there's a -- I don't know what those
24 are.

25 MEMBER SIEBER: The Information Notices

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1 don't do anything, other than, you know -- you don't
2 have to do anything with those.

3 CHAIR MAYNARD: You know, first of all, I
4 don't think we are saying that the issue should be
5 dropped, because it is an important issue.

6 From my own perspective, I think we either
7 need to clarify it in addition to what we are wanting,
8 or if we are going to pull it out it needs to be
9 handled in some other guidance document.

10 I don't think we want to just pull this
11 out and toss it, because it is an important issue, but
12 it either needs to be clarified more in this document,
13 or if we are going to pull it out, then put it in
14 another document say what is acceptable, or what do we
15 do there.

16 Let's not take it out and forget it.

17 MR. NGUYEN: It's difficult to put into
18 the Regulatory Position the specific designs, and
19 again --

20 MEMBER SHACK: Yes, but the question is
21 whether the guidance in the standard is sufficient.
22 You know, we are not asking you to put in designs, we
23 are asking you to make a judgment as to whether the
24 guidance and the standard is, in your judgment,
25 sufficient.

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1 MEMBER SIEBER: And if not, where not.

2 MEMBER SHACK: You know, and if it is,
3 then this is sort of confusing, I think, and should be
4 removed from the Regulatory Position. If the guidance
5 isn't sufficient, then that should be clarified, too,
6 that the guidance is not sufficient, and we need
7 something like this. And, that's -- you know, I don't
8 think we are ready to make that decision today, but
9 that's what needs to be clarified.

10 MR. NGUYEN: Okay.

11 MEMBER SIEBER: Well, I think you have to
12 go just one step further. If you say that the
13 guidance -- the standard is not sufficient, you have
14 to tell them where it's not sufficient.

15 MEMBER SHACK: Yes. Well, I'd even
16 provide a clarification just to say you need to do
17 more, even if I didn't tell them what to do more.

18 If I do what's in the standard, and that's
19 enough, and it isn't, that's a -- that's a problem.

20 MR. NGUYEN: We'll reexamine the
21 standards, and I will get back with you on that.

22 CHAIR MAYNARD: Okay.

23 MR. NGUYEN: Either clarify or make a
24 statement that it's not sufficient.

25 CHAIR MAYNARD: Okay. You need to be

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1 clear whether we are saying yes or no, the standard is
2 sufficient. I think that needs to be clear.

3 MEMBER BROWN: If we are going to do
4 something different, I really wouldn't -- this is a
5 personal opinion in this case -- develop another
6 document. I mean, sensing lines are sensing lines. If
7 you want your sensing lines to perform properly, the
8 information necessary for them to be performed
9 properly ought to be in this Reg Guide, not in another
10 document somebody has to go root up somewhere.

11 CHAIR MAYNARD: I'm not advocating --

12 MEMBER BROWN: I know you are not, I'm
13 just providing that as my observation, based on what
14 falls out of the rest of this discussion.

15 CHAIR MAYNARD: Well again, I get back, I
16 think the real key issue is, is the standard
17 sufficient? If it is, fine. If it's not, what else
18 needs to be done, or what -- and again, the desirable
19 thing would be what else needs to be done, and this is
20 what we would use in acceptance criteria, but at a
21 bottom line, if the guidance -- if the standard is not
22 sufficient, at least make it clear they need to do
23 more than what's in the standard.

24 MEMBER BROWN: Yes, that would do it.

25 MEMBER SIEBER: Do you think that

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1 everybody that will attend the full Committee meeting
2 understand how level sensing lines are set up, or
3 would a little chart be appropriate, and say here's
4 where the non-condensibles come out, this is what
5 happens, and this is why it's not accurate.

6 CHAIR MAYNARD: Yes, I think it would, you
7 know, some of the diagrams that are in the standards,
8 you know, one simple diagram would probably be good,
9 at least as a back-up slide if people get into what
10 are you talking about type of thing.

11 MS. ABDULLAHI: One of the INs, or I don't
12 know which one it is, actually, has a backfill
13 diagram, but I will provide that if you need it.

14 CHAIR MAYNARD: Yes, it would be good to
15 have.

16 MEMBER SIEBER: That would be a good thing
17 to show.

18 MS. ABDULLAHI: Okay.

19 MEMBER ARMIJO: Rather than trying to
20 guess.

21 CHAIR MAYNARD: Have we beat this item to
22 death here?

23 MEMBER BROWN: Yes.

24 MEMBER SIEBER: Well, I think we hit the
25 most important point in my view, which is the one

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1 we've spent the last 15 minutes on.

2 CHAIR MAYNARD: Do you have anymore?

3 MR. NGUYEN: I think we covered two of the
4 comments. I don't know if you want me to talk about --
5 the first comment is about isolation valves, which we
6 already said.

7 The comments interpret Position 2, we
8 didn't -- we didn't intend to limit the containment
9 integrity to the isolation valves, or exclude the
10 requirements of isolation valve, if the instrument
11 line is not penetrating the pressure boundary. We
12 didn't intend that.

13 But, the comments overstate it.

14 The diesel gas we discussed.

15 CHAIR MAYNARD: Yes. We've beaten these
16 two to death.

17 MR. NGUYEN: And, this one goes to
18 Charlie's comments that --

19 MEMBER SIEBER: I think we've discussed
20 this one.

21 MR. NGUYEN: -- okay.

22 CHAIR MAYNARD: The problem with the
23 backfill, yes.

24 There is a picture in one of the documents
25 we got that IN-20-02.06. I'm just not sure of what

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1 the members have.

2 I'm not saying it has to be part of the
3 presentation, but I'd certainly have it as a back-up
4 slide if we get to discussing it, it's much easier to
5 talk about how one of these works if you have a
6 diagram up there for the people to look at there.

7 MR. NGUYEN: I'm sorry for not providing
8 you the latest version of the Reg Guide. That's not my
9 intention.

10 MS. ABDULLAHI: Actually, we do have the
11 2009 version, it's just that attachments made does not
12 include the 2009.

13 MEMBER BROWN: They didn't give it to us.

14 MS. ABDULLAHI: Yes.

15 MEMBER BROWN: The staff didn't give it to
16 us. Our staff did not give it to us.

17 CHAIR MAYNARD: Okay, let's -- if that's
18 all you have, let's go around the room here and just
19 see if there are any other comments.

20 Jack?

21 MEMBER SIEBER: I don't have anything in
22 addition to what I've already said about the sensing
23 line, and I agree with the other members' thoughts on
24 that.

25 CHAIR MAYNARD: Okay. Sam?

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1 MEMBER ARMIJO: No, nothing.

2 CHAIR MAYNARD: Okay. Bill? Said?
3 Harold?

4 MEMBER BLEY: Yes, well, I would only add
5 that to me the language about mitigate potential
6 effects isn't even what I would like to see. I'd like
7 to see ensure against the effects of trapped gas.

8 MEMBER SIEBER: I'm not sure --

9 MEMBER BLEY: Screwing up the
10 instrumentation.

11 MEMBER SIEBER: -- I'm not sure you can
12 say that, because that means, I'm going to get rid of
13 all errors, and my conceptual view of how this works
14 is that there's going to be some residual errors, just
15 because of temperature differences.

16 MEMBER BLEY: Well, maybe, Jack, I don't
17 know, but I'm trying to make it a stronger statement
18 than this is a good thing to do.

19 MEMBER SIEBER: Okay.

20 CHAIR MAYNARD: Anything else, Harold?

21 MEMBER BLEY: No.

22 CHAIR MAYNARD: Charlie?

23 MEMBER BROWN: I would agree with Harold
24 that we ought to have a more positive declaration. I
25 understand your point, but there are others, there's

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1 always going to be some errors, but when you are
2 dealing with water level measurement, and all these
3 things, you do your analysis based on the temperature
4 that you have there, and the potential pressures that
5 you have, even though, you know, in your sensed water
6 level area or in the reference leg area.

7 So, you are supposed to consider that when
8 you determine your setpoints for doing stuff.

9 Oh, I did have one other thought, that the
10 Reg Guide, they talked about, and this is under
11 discussion again, they mentioned on page three that
12 there was an Information Notice presented evidence of
13 the presence of dissolved gas in a PWR instrument
14 line, that everything else -- that's the only
15 reference to PWRs, everything else is BWRs throughout
16 the entire, if I'm not mistaken, and it's like PWRs
17 don't have this problem, and that's not necessarily
18 the case. There are function in the PWRs where you
19 have to pressurize your levels, and steam generator
20 levels, and things like that, that have to have
21 provisions made to make -- because pressure transients
22 will make those flash, and your indications will go
23 all over the place.

24 CHAIR MAYNARD: And I know that the PWRs
25 did go through some changes as a result of the BWR

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1 designs, reference legs still and stuff like that.

2 MEMBER BROWN: This gives the impression
3 that BWRs are the only thing that has to be addressed.

4 CHAIR MAYNARD: Yes, it gives it in the
5 writing, but the guide doesn't say it's applicable
6 only to BWRs.

7 MR. NGUYEN: Original version we sent out
8 for the public comments, we only talk about BWRs, and
9 the public comments, you know, said what about PWRs.
10 That's why we add in all the statement, the
11 Information Notice for PWRs.

12 MEMBER BROWN: Right, that's one line in
13 the discussion.

14 MR. NGUYEN: Right, and that Information
15 Notice is addressed about the instrument errors for
16 PWRs, and that's showing that evidence that occurred
17 in PWRs.

18 CHAIR MAYNARD: Yes.

19 MR. NGUYEN: So, PWRs --

20 MEMBER BROWN: The positions are non-
21 specific, I agree with that, they don't -- that's why
22 just reading the whole document you don't do it.

23 CHAIR MAYNARD: I think all the discussion
24 is oriented towards the BWR, but the Reg Guide itself
25 applies both to PWR and BWR.

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1 MR. NGUYEN: That's correct.

2 MEMBER SIEBER: The issue is in those
3 plants, too.

4 MR. NGUYEN: Yes.

5 MEMBER BROWN: Pardon?

6 MEMBER SIEBER: The issue is in both
7 plants, too.

8 MEMBER BROWN: Yes.

9 CHAIR MAYNARD: All right, if that's it,
10 then we appreciate your discussion very much, and
11 we'll adjourn the meeting.

12 (Whereupon, the above-entitled matter was
13 concluded at 11:08 a.m.)

14

15

16

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Revision of RG 1.151

“Instrument Sensing Lines”

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Background

- Current regulatory guide (Revision 0) – has not been updated since July 1983
- Current standard reference – ANSI/ISA-S67.02-1980
- A number of reactor events occurring between 1973 and 1983 led to supplementary guidance in Revision 0 of RG 1.151 for concerns not addressed in ANSI/ISA S67.02-1980
- In the updated ANSI/ISA-67.02.01-1999, ISA combines ANSI/ISA S67.02-1980 with ANSI/ISA-67.10 (ISA standard for sample-line piping and tubing) and incorporates NRC guidance from RG 1.151 Rev. 0
- Public comment period for Draft Regulatory Guide DG-1178 ended on February 06, 2009

Summary of Changes

- Updates the endorsement to ANSI/ISA-67.02.01-1999 excluding the portions associated with sample lines.
- Updates reference to IEEE Std 603-1991.
- Endorses IEEE Std 622-1987 which contains requirements for the proper design of heat tracing systems used for freeze protection and to prevent crystallization of concentrated chemical solutions (such as boric acid).
- Removes supplemental guidance now covered by ANSI/ISA-67.02.01-1999 and IEEE Std 622-1987.

➤ **Position 1:**

- Removes the supplemental guidance (now covered by ANSI/ISA-67.02.01-1999_Clause 5.4).
- Excludes the sample line portions of ANSI/ISA-67.02.01-1999 from the endorsement.

➤ **Position 2:**

- Removes the supplemental guidance (now covered by ANSI/ISA-67.02.01-1999_Table 1 & Figure 1a).
- Clarifies the isolation requirement (excluded from ANSI/ISA-67.02.01-1999) as it applies to sensing lines penetrating containment boundary.

Changes to Regulatory Positions (Cont.)

➤ **Position 3:**

- Removes the supplemental guidance (now covered by ANSI/ISA-67.02.01-1999_Table 1 & Figure 2a).
- endorses IEEE Std 622-1987 as an acceptable method for design of heat tracing systems used for freeze protection and to prevent crystallization of concentrated chemical solutions

➤ **Position 4:**

- Removes the supplemental guidance (now covered by ANSI/ISA-67.02.01-1999_Clause 5.2.1 and IEEE Std 622-1987_Clause 4.1.3)
- Provides guidance not covered in ANSI/ISA-67.02.01-1999 for sensing lines taking into account lessons learned from measurement errors due to the evolution of dissolved non-condensable gases.

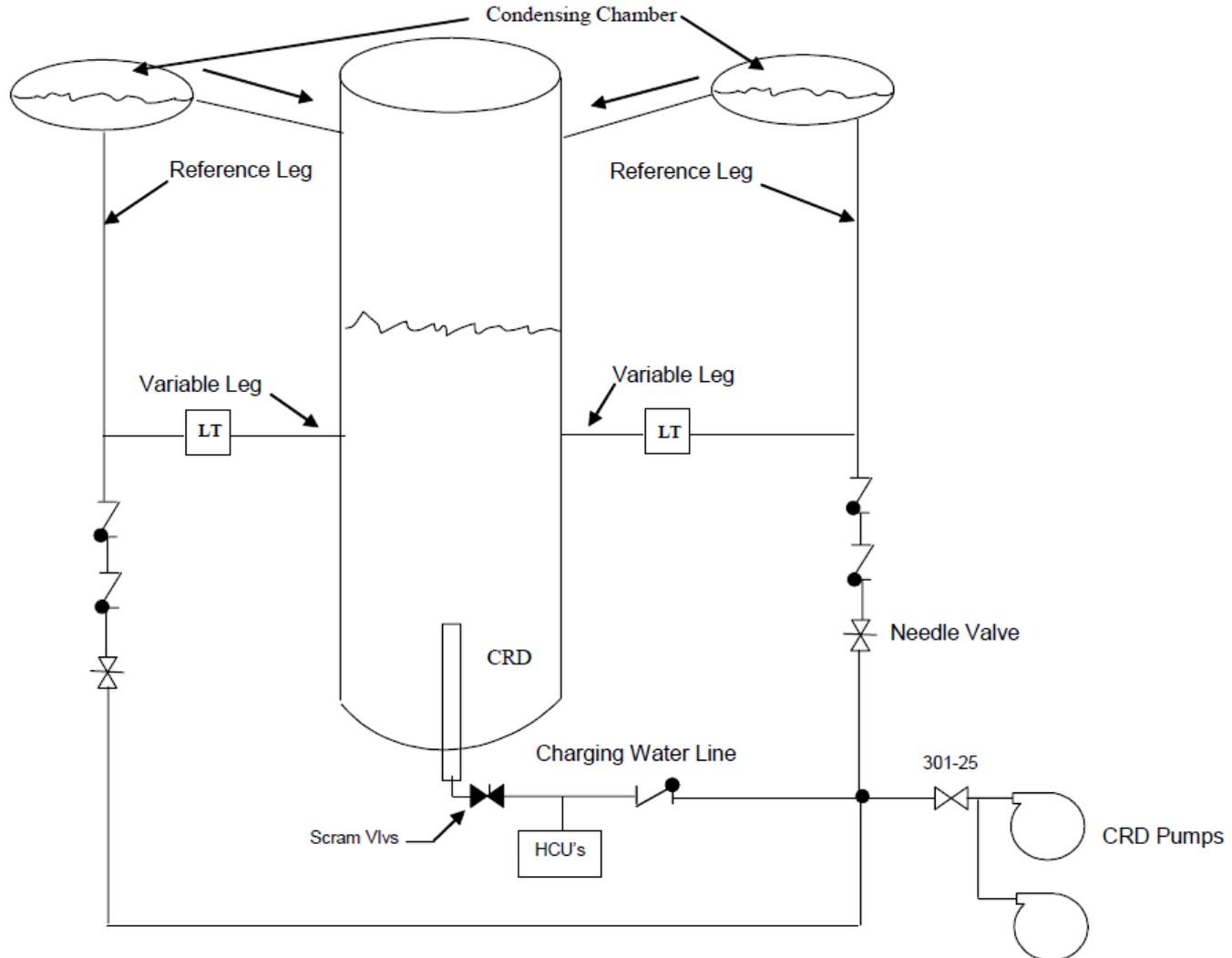
Changes to Regulatory Positions (Cont.)

- **Position 5:** deleted to remove the supplemental guidance (now covered by IEEE Std 622-1987_Clause 5.2.2.4)
- **Position 6:** deleted to remove the disclaimer associated with ANSI/ISA-S67.02-1980

- Enhances reactor safety by
 - addressing the most current ANSI/ISA and IEEE standards on safety systems endorsed by the NRC and
 - addressing operational events in which evolved gases in sensing lines have affected measured water levels and provide guidance to prevent such events.

BACKUP

RWL Reference Leg Backfill



BACKUP (Cont.)
Indication inaccuracies covered by
ANSI/ISA-S67.02.01-1999

- ***ANSI/ISA-S67.02.01-1999*** Section 5.2.1n states:
“Potential inaccuracies in water level indication during and after rapid depressurization events have been identified as industry concerns and shall be considered. Inaccuracies result from noncondensable gases collecting in the condensate pot (chamber) of instrument reference legs and migrating down the reference leg.”
- ***ANSI/ISA-S67.02.01-1999*** recognizes the potential indication inaccuracies during and after rapid depressurization events but provides no specific guidance.

BACKUP (Cont.)

Proposed Changes to Position 4 Based on ACRS Subcommittee Comment

- **Current Regulatory Position 4:**

Provisions should be made to mitigate the potential effects of trapped, evolved gases in sensing lines during or following depressurization events as long as the associated measurements are required for monitoring the plant or for operating the safety system. This position is based on GDC 13, GDC 21, GDC 22, and 10 CFR 50.55a(h).
- **Proposed Regulatory Position 4:**

In addition to the design guidance provided by ANSI/ISA-67.02.01-1999 for instrument sensing lines, provisions should be made to (a) determine the potential impacts of trapped, evolved gases in instrument sensing lines during or following depressurization events and (b) to mitigate such impacts, as long as the associated measurements are required for monitoring the plant or for operating the safety system. This position is based on GDC 13, GDC 21, GDC 22, and 10 CFR 50.55a(h).