UNITED STATES
NUCLEAR REGULATORY COMMISSION
ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
WASHINGTON, DC 20555 - 0001

October 14, 2010

MEMORANDUM TO: ACRS Members

FROM: Zena Abdullahi, Senior Staff Scientist **/RA/**
Reactor Safety Branch A, ACRS

SUBJECT: CERTIFICATION OF THE MINUTES OF THE REACTOR POLICIES AND PRATICES SUBCOMMITTEE MEETING ON DECEMBER 1, 2009

The minutes for the subject meeting were certified on October 7, 2010. Along with the transcripts and presentation materials, this is the official record of the proceedings of that meeting. A copy of the certified minutes is attached. The subcommittee meeting was open to the public, since no proprietary material was presented or discussed.

Enclosure: As stated

cc w/Enclosure: E. Hackett
C. Santos
A. Dias

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MEMORANDUM TO: Zena Abdullahi, Senior Staff Engineer
Reactor Safety Branch A - ACRS

FROM: Harold May, Chairman
Reactor Policies and Practices Subcommittee

SUBJECT: THE MINUTES OF THE REACTOR POLICIES AND PRATICES SUBCOMMITTEE MEETING ON DECEMBER 1, 2009 IN ROCKVILLE, MD

I hereby certify, to the best of my knowledge and belief, that the minutes of the subject meeting are an accurate record of the proceedings for that meeting.

/RA/ ***10/07/2010***

Harold Ray, Chairman Date
Reactor Policies & Practices Subcommittee

Certified on: October 7, 2010
Certified by: Harold Ray

ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
REACTOR POLICIES AND PRATICES SUBCOMMITTEE MEETING MINUTES
DECEMBER 1, 2009
ROCKVILLE, MD

The ACRS Subcommittee on Reactor Policies and Practices, with Chairman Otto L. Maynard presiding met on December 1, 2009 at the Nuclear Regulatory Commission, Two White Flint North, Room T2B3, 11545 Rockville Pike, Rockville, Maryland. The meeting started at 10:45 AM and adjourned at 12:00 PM. The Subcommittee met with NRC staff members in order to discuss the draft Revision 1 to Regulatory Guide 1.151 (DG 1178). The purpose of this meeting was for the Subcommittee to hear the specifics of the proposed changes to the original 1983 RG; including the supporting technical justification for the proposed changes in Revision 1 to the Regulatory Guide.

Attendees (May 21, 2009)

ACRS Members/Staff	**NRC Staff**	
Otto Maynard (Chairman)	Khoi Nguyen	
Said Abdel-Khalik (Member)	Russell Sydnor	
Sam Armijo (Member)		
Dennis Bley (Member)		
Charles Brown (Member)		
William Shack (Member)		
John Sieber (Member)		
Zena Abdullahi (DFO)		

The presentation slides used during the meeting are attached to the associated transcript at the following website:
http://www.nrc.gov/reading-rm/doc-collections/acrs/tr/subcommittee/

The presentation to the ACRS Subcommittee on Reactor Policies and Practices is summarized below. There were no requests by members of the public to make written or oral statements.

OPENING REMARKS BY SUBCOMMITTEE CHAIRMAN MAYNARD

Chairman Otto Maynard commenced the ACRS Regulatory Practices and Policies Subcommittee meeting by introducing the attending members. Chairman Maynard stated that the objective of the meeting was to discuss the staff's changes in Revision 1 to Regulatory Guide 1.151. He added that the Regulatory Guide establishes the methods acceptable to the staff in meeting the safety-related instrument sensing lines requirements. The original Regulatory 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 Chairman identified Zena Abdullahi as the Designated Federal Official for this meeting.

Before proceeding with the meeting, Chairman Maynard informed Mr. Nguyen, of the staff that one issue the members would like hear about was related to the noncondensable gasses. The Chairman pointed out that there is no guidance provided as to what would be the acceptable method to address the issue. In closing the introductory comments, the Chairman reiterated that we (the members) would l like to make sure we have some discussion on the issue.

Chairman Maynard invited Mr. Nguyen (NRC staff) to begin his presentation.

STAFF PRESENTATION of REGULATORY GUIDE 1.151, "INSTRUMENT SENSING LINES." ***(K. NGUYEN and R. Sydnor)***

Mr. Nguyen introduced himself and his supervisor, Russ Sydnor. He started his presentation by commenting that the current Revision 0 of Regulatory Guide (RG) has not been updated since July 1983. The original RG (Revision 0) references ANSI Standard S67.02-1980. He explained that the standard (S67.02-1980) adopted in Revision 0 of the RG doesn't address some of the guidance for the reactor events that occurred between 1973 and 1983. He added that's why Revision 1 of the Regulatory Guide provides supplemental guidance to address these events.

Mr. Nguyen continued to describe the changes between the original Revision 0 and the proposed Revision 1 of Regulatory Guide 1.151. He stated that in the updated revision of the ANSI Standards (ANSI/ISA-67-02.01-1999), the ISA combines the S67.02-1980 version with the 67.10 version, which covers sample-line piping and tubing, and the standard incorporates the NRC guidance from Revision 0 of this Regulatory Guide. The Regulatory Guide has been put out for public comments on February 6 2009. Mr. Nguyen said that the staff received comments from Westinghouse, NEI, and TVA. The staff presentation provided a summary of the changes and updates in the endorsement of the ANSI Standard 1999 version, and the referenced IEEE Standard 603-1991.

1. *Regulatory Position 1:* Remove the supplemental guidance now covered by ANSI/ISA 657.02.01-1999, and IEEE Standard 622 -1987 Clause 5.4). Also, excludes the sample line portions of ANSI/ISA-67.02.01-1999 from endorsement, because it is out of scope of the RG.

2. *Regulatory Position 2:* Removes the supplemental guidance now covered by ANSI/ISI-67.02.01-199-Table 1 & Figure 1a). Clarifies the isolation requirement as it applies to sensing lines penetrating containment boundary. The new version of the ANSI Standards excludes the isolation valves requirements. The staff needs to add clarification because GDC-55 requires isolation valve for any penetrations to containment boundaries.

3. *Regulatory Position 3*: Removes the supplemental guidance (now covered by ANSI/ISA-1999). Also, endorses IEEE Standard 622-1987 version as an acceptable method for design of heat tracing systems used for freeze protection and to prevent crystallization of concentrated chemical solutions.

4. *Regulatory Position 4*: Removes the supplemental guidance (now covered by ANSI/ISA-67- 1999) and IEEE STD 622-1987). Provides guidance for sensing lines, taking into account lessonslearned from measurement errors, during the evolution of dissolved gasses.

5. *Regulatory Position 5*: Deleted to remove supplemental guidance (now covered by IEEE Std 622-1987)

6. *Regulatory Position 6*: Deleted to remove disclaimer associated with ANSI/ISA-S67.02-1980). This disclaimer is no longer needed or no longer applicable.

The staff summarized the benefits of the RG updates, stating that it enhances reactor safety by:

- adopting the most current ANSI/ISA and IEEE standards on safety systems endorsed by the NRC and

- incorporating operational events in which evolved gases in sensing lines have affected measured water levels. The guidance prevents such events.

DISCUSSION

In regards to the major change of Revision 1 being the removal of supplemental guidance now covered by ANSI Standard 1999 version, and IEEE Standard 622, Members inquired if the staff removed any guidelines that are not covered in the new standard. Mr. Nguyen stated that the staff carefully inspected the new standards, and the new version adopts all the NRC regulatory procedures in Revision 0 of Regulatory Guide 1.151, except for isolation valves which the staff will cover.

In response to a question on the heat tracing, Mr. Nguyen explained that the ANSI Standard covers the environment protection, but it's very brief, and it's not good enough. The staff added the IEEE Standard to cover all the aspects of the freezing temperature protection.

In discussion on the sample lines in Position 1, Mr. Nguyen noted the staff excluded the sample line portion of these standards, because it's out of the scope of RG 1.151.

For Position 2, Mr. Nguyen pointed the RG added clarifications to the isolation requirements, because the new version of the ANSI Standards excludes the isolation valves requirements, although GDC-55 requires isolation valves for any penetrations through the containment boundaries. The Members observed that the regulatory position does not really change any of the containment isolation requirements because the guidance still allows the use of the same root valve for containment isolation, as long as it still meets containment isolation requirements by other requirements (means). Mr. Nguyen agreed with the assessment and stated that the staff clarifies the isolation requirements, because they are needed. It is not excluded.

With regards to Regulatory Position 4, Mr. Nguyen remarked that the staff cannot ignore some of the lessons learned from the reactor events and some of the industry events *(experiences), such as* measurement errors that contributed to possible incidents. He acknowledged that the staff addressed the issue but didn't specify the designs (needed), because different plants have different designs.

The Members cited the wording of Position 4, which stated, "Provisions shall be made to mitigate the potential effects of trapped and evolved gases." They inquired whether the staff is referring to any type of gas and not just evolved gases, but noncondensible gases too. Mr. Nguyen responded that the RG glossary defines evolved gas and it is very controlled term. There is glossary added to the Regulatory Guide as the result of the public comments. The

glossary describes evolved gas, which is gas released from reactor coolant caused by the chemical reaction or change in the solubility of the coolant. The current guidelines cover the evolved gas and trapped gas.

Considerable discussion ensued on Position 4, which relates to the adequacy of the guidelines in establishing what is acceptable to the staff in mitigating the potential effects of the trapped and evolved gasses. The members brought up the industry comment also covered in the NEI letter that states:

> *"In the discussion section, Draft guide DG-1178 describes the potential for dissolved gas in water filled instrument sensing lines to come out of solution under certain circumstances, adversely affecting the accuracy and reliability of level measurements. It further notes that some actions taken to prevent the condition have been deficient. Regulatory position 4 directs that the provision shall be made to mitigate this problem, but DG-1178 does not include description of a method acceptable NRC to implement the directive."*

The associated resolution in the staff presentation states:

> *"Resolution: The inclusion of design provisions for mitigating trapped gas in sensing lines is consistent with the objective of this regulatory guide to provide regulatory guidance on design and installation of safety-related instrument sensing lines. A separate regulatory guide is not required. "*

The members agreed with the staff on the importance of taking measures to prevent evolved gas problems, but questioned the added value or benefit of Position 4 if it does not provide specific guidance. The members asked if the endorsed standard's recommendations were acceptable to the staff. The staff characterized the industry standard guidance as adequate and stated that Position 4 was included to emphasize the importance of the evolved gas problems.

The members referred to the some of the vulnerability identified in the design resolution of the evolved gas issue in the NRC information notices. The members acknowledged that the staff does not in general identify the specific designs. Some of the members observed that the guidance covers the backfill design intended to resolve the evolved gas issue, and acknowledges that the method produced other errors. Then, the RG proposes that the issue needs to be mitigated, without further guidelines, which compounds the objective of the RG. The staff was told that the Regulatory Guide should be providing some provision as to what they would they find acceptable method, without designing the system.

The members also observed that the NEI comment was proposing that a separate regulatory guide was needed that resolves the issue. In response, the staff recognized that the comments suggest that the staff should address the evolved gas in separate guidance. Mr. Nguyen stated that the staff believes that including the provision for mitigating trapped gas in these standards was appropriate, and another Regulatory Guide to address the evolved gas problem was not needed. Some of the Members recognized that since the issue relates to the sensing lines that associated issues would be expected to be covered under the RG addressing sensing lines.

The members discussed the role the content of the RG would have in the new reactor designs. There were some discussions on the potential that the issue of evolved gasses would be addressed through the NRC review process.

Members reached general consensus that the intent of Position 4 still remained ambiguous after reviewing the material presented and hearing the staff's presentation. In preparation for the full committee, the staff was asked to clarify if the endorsed standard is sufficient and Position 4 is highlighting the issue only or not. The staff promised to re-examine the guidance in Position 4.

With the Subcommittee feedback that the staff needs to provide additional clarifications, the meeting adjourned.