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

June 24, 2009

MEMORANDUM TO: ACRS Members

FROM: Neil Coleman, Sr. Staff Scientist ***/RA/***
Vanice A. Perin, Staff Scientist
Reactor Safety Branch A, ACRS

SUBJECT: CERTIFICATION OF THE MINUTES OF THE ACRS RADIATION PROTECTION AND NUCLEAR MATERIALS SUBCOMMITTEE MEETING, MAY 5, 2009 - ROCKVILLE, MARYLAND

The minutes of the subject meeting were certified on June 22, 2009, as the official record of the proceedings of that meeting. A copy of the certified minutes is attached.

Attachment: As stated

cc w/o Attachment: E. Hackett
A. Dias
C. Santos

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MEMORANDUM TO: Neil Coleman, Sr. Staff Scientist
Vanice A. Perin, Staff Scientist
Reactor Safety Branch A, ACRS

FROM: Michael Ryan, Chairman
Radiation Protection and Nuclear Materials Subcommittee

SUBJECT: CERTIFICATION OF THE MINUTES OF THE ACRS RADIATION PROTECTION AND NUCLEAR MATERIALS SUBCOMMITTEE MEETING, MAY 5, 2009 - ROCKVILLE, MARYLAND

I hereby certify, to the best of my knowledge and belief, that the minutes of the subject meeting on May 5, 2009, are an accurate record of the proceedings for that meeting.

/RA/ 6/22/2009

Michael Ryan, Chairman, Date
Radiation Protection and Nuclear Materials
Subcommittee

Certified by: Michael Ryan Issued: June 24, 2009
Certified : June 22, 2009

ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
MINUTES OF ACRS RADIATION PROTECTION
AND NUCLEAR MATERIALS SUBCOMMITTEE MEETING
MAY 5, 2009
ROCKVILLE, MARYLAND

The ACRS Radiation Protection and Nuclear Materials Subcommittee met on May 5, 2009, in Room T-2B3, 11545 Rockville Pike, Rockville, MD. The purpose of this information briefing is for the staff to discuss the proposed Revision 2 of Regulatory Guide (RG) 1.21 (DG-1186), "Measuring, Evaluating, and Reporting Radioactive Material in Liquid and Gaseous Effluents, and Solid Waste," and RG 4.1 (DG-4013), "Radiological Environmental Monitoring for Nuclear Power Plants." Antonio Dias was the designated Federal Official for this meeting. The meeting was convened by Dr. Michael Ryan, the Subcommittee Chairman, on May 5, 2009. The presentation slides and handouts used during the meeting are attached to the official copy of the meeting transcript.

ATTENDEES:

ACRS Members
M. Ryan, Chairman
D. Powers
J. Sieber

ACRS Staff
A. Dias, Designated Federal Official

NRC Staff
Michael Cheok, NRR
Richard L. Conatser, NRR
Jean Claude Dehmell, NRO
Thomas Galletta, NRO
Steven Garry, NRR
Brad Harvey, NRO
Michael Mazaicka, NRO
Edward O'Donnell, RES
Roger Pedersen, NRR
Vanice Perin, ACRS
Edward H. Roach, NRO
Steven Schaffer, NRO
James Shepherd, FSME

Also Present
George Oliver, NEI
Gina Borsh, Dominion

Opening Remarks and Meeting Objectives

Dr. Michael Ryan, Chairman of the ACRS Radiation Protection and Nuclear Materials Subcommittee, convened the meeting at 1:00 p.m. The purpose of this information briefing was for the staff to discuss the proposed Revision 2 of Regulatory Guide (RG) 1.21 (DG-1186), "Measuring, Evaluating, and Reporting Radioactive Material in Liquid and Gaseous Effluents, and Solid Waste," and the proposed Revision 2 of RG 4.1 (DG-4013), "Radiological

Environmental Monitoring for Nuclear Power Plants." These regulatory guides are being finalized for publication and have already been through the public comment period.

DISCUSSION

The NRC staff, Richard Conatser and Steven Garry, began their presentation by informing the meeting participants about work to revise the two subject RGs. The work has been done by staff from NRR, NRO, RES, FSME, NMSS, and the regions (regional inspectors). The staff seeks ACRS comments and a recommendation for approval. The staff explained that the revision of these and other RGs was a mandate by the Commission and therefore a Regulatory Guide Development Branch was formed in the Office of Nuclear Regulatory Research. Because some of these RGs are over 30 years old and significant operating experience (OE) has accumulated during this time, undertaking the revision of these RGs became necessary. More recent issues were considered, including those reported in the Lessons Learned Task Force (LLTF) final report, dated September 1, 2006 (ML062650312), in preparing Revision 2 of RGs 1.21 and 4.1.

Revision 2 of Regulatory Guide 1.21 (DG-4013), "Measuring, Evaluating, and Reporting Radioactive Material in Liquid and Gaseous Effluents, and Solid Waste"

The subcommittee discussed these items with the staff and suggested that it be made clear that the new version of RG 1.21 is not a requirement for the licensees. The members also asked that examples be provided in the RG to clarify these points. The staff mentioned that the report written by NEI, "Industry Ground Water Protection Initiative – Final Guidance Document, NEI 07-07," dated August 2007, is a very useful document.

The staff explained that "leaks and spills can be effluents." A recommendation was made that the staff describe in the RG the relationship between monitoring and modeling, and include the concept that model improvement and validation can be based on feedback and correlations between *actual* monitoring results compared to *predicted* monitoring results.

Major changes were made in developing Revision 2 of RG 1.21, and those were presented by the staff. The new topics introduced in Revision 2 are: ground water as related to effluents, carbon 14 (C-14), dose assessment, Class A, B, and C for solid radioactive waste, "principal" radionuclides, and "significant" release points.

It was recommended that the staff briefly discuss in the RG that State and EPA regulations may be applicable during decommissioning, in addition to NRC regulations. The issue of quantity versus risk metrics for effluents was also discussed. The staff was asked to clarify that the two parameters "quantity of curies released" and "dose from radioactive materials released" as used in effluent terminology are not equivalent measures of risk. Instead, risk significance is determined by the dose assessments that are based on a combination of quantity of effluent released, environmental transport and dispersion modeling, and dose factors for each radionuclide. The result or magnitude of the dose assessment is the metric for measurement of risk and risk significance.

The subcommittee members discussed the concept of "principal radionuclides." Using the term "principal radionuclides" is not entirely risk informed. For example, a radionuclide may exceed 1% of the total quantity of effluent released but may not be risk significant, i.e., it may not be a contributor to calculated doses in risk assessments. The definition of "principal radionuclide" should be clarified to reflect risk rather than mere quantity.

During the discussion of dose assessments, the staff mentioned that these have always been performed according to 10 CFR 50, Appendix I. 10 CFR 20 was revised in 1991 to 100 mrem/year for members of the public. If the licensee meets the EPA requirement, than 10 CFR 20 is met. A recommendation was made to the staff regarding "bounding dose calculations." The use of the term "bounding dose" should be reconsidered and possibly replaced with the term "reference dose calculations." If the RG continues to use the term "bounding calculations," then explain that the "bounding" term implies "bounding under the assumptions stated." The bounding term does not imply an absolute bounding of the doses in all potential circumstances. A clarification is needed on how the term "bounding" is used in effluent guidance documents.

During the presentation on "solid radioactive waste", a recommendation for differentiating radioactive waste shipped and radioactive waste disposed was made. The intent should be to explain that the licensees report volumes shipped (it is not intended to report the radioactive waste volumes that are buried). The Manifest Information Management System (MIMS) operated by the U. S. Department of Energy tracks waste disposed in the licensed LLW disposal facilities. RG 1.21 tracks waste shipped from nuclear plants for processing or for direct disposal in licensed LLW facilities. There are no requirements for reporting LLW stored at nuclear power plants; however, LLW storage records maintained at nuclear plants are subject to NRC inspection during routine effluent module inspections.

The "significant release points" were discussed. The staff mentioned that it is important the licensees know and list the important release points and describe how they relate to RG 1.109. A recommendation was made regarding the "less significant release points." A lower end threshold of 0.1% should be considered as a cut-off point. This would be consistent practice with the three significant figure limit for effluent reporting values. The staff continued the presentation by going through the table of contents in section of RG 1.21, Revision 2, paying particular attention to the items added to Revision 2.

After concluding the discussion of the RG's table of contents, the staff discussed the public comments submitted to NRC regarding Revision 2 of RG 1.21. The staff mentioned there was excellent participation and contribution by the industry and that many comments were received. The staff stated that more than 85% of the public comments were addressed in the document, and 10 of those comments were discussed at the meeting.

Revision 2 of Regulatory Guide 4.1 (DG-4013), "Radiological Environmental Monitoring for Nuclear Power Plants"

The staff started the presentation on RG 4.1 by explaining that this RG is 35 years old, and the revision was done per recommendations in the September 1, 2006, report by the Lessons Learned Task Force (LLTF). From the 26 recommendations presented in the LLTF report, the ones specifically addressed in RG 4.1 are:

(1) The NRC should develop guidance to the industry for detecting, evaluating, and monitoring releases from operating facilities via unmonitored pathways (Sections 3.1 and 3.4).

(2) The NRC should revise the radiological effluent and environmental monitoring program requirements and guidance to be consistent with current industry standards and commercially available radiation detection technology (Section 3.2.1).

(3) Guidance for the REMP should be revised to limit the amount of flexibility in its conduct. Guidance is needed on when the program, based on data or environmental conditions, should be expanded (Section 3.2.1).

(4) Develop guidance to define the magnitude of the spills and leaks that need to be documented by the licensee under 10 CFR 50.75(g). Also, clearly define "significant contamination." Summaries of spills and leaks documented under 10 CFR 50.75(g) should be included in the annual radioactive effluent release report (Section 3.2.1 and 3.4).

Stakeholder Input

Mr. George Oliver of the Nuclear Energy Institute (NEI) addressed the Subcommittee by stating that the review effort of RGs 1.21 and 4.1 generated great interest within the industry. NEI received comments from more than 30 individuals, submitted them to NRC on February 3, 2009, and the NRC staff has addressed a number of them. NEI appreciates the clarifications offered at the meeting on January 15th and this subcommittee meeting.

One of the considerations in the NEI comments was the emergence of SECY 08-0197, which is NRC's effort to update its regulations to include ICRP-103. The SECY paper identified around 40 RGs including these two, and NEI supports this review effort, as stated by Ralph Anderson (NEI) at a recent ACRS meeting. NEI believes in integrated and consistent regulations, and that an integrated approach is needed regarding these two RGs. This would add to the efficient use of resources in both NRC and the industry.

Mr. Oliver addressed the groundwater monitoring program by citing industry guidance NEI 07-07, and the EPRI guidance companion document. He said that the industry is proud of its accomplishments in this area and that it has been working with the Office of New Reactors in their implementation of RG 2.1. Mr. Oliver added that, regarding the applicability of these RGs to existing plants, the licensees have the licensing basis which does not include these two revisions. He agrees with the NRC staff regarding the six-month time frame for Part 52 applicants, and mentioned that only a few new plants will benefit from these revisions to the RGs as part of their licensing basis. He stated that since the existing guidance will remain applicable, that resolves a number of issues for the operating reactors.

A question arose about whether it made any difference whether NRC issued the RGs. Mr. Oliver said that he did not think it made much difference for existing plants; however, there is technical merit and good practices in what was done. Mr. Oliver added that the licensees probably should look at this guidance seriously because there are some flexibilities being added to it.

A discussion followed and the Subcommittee Chair summarized a statement by Mr. Oliver as "characterizing this as a first step and a good process to make things more consistent." Mr. Garry informed the participants that the Commission has given the staff direction to begin work on ICRP 103, to engage stakeholders.

SUBCOMMITTEE DECISIONS AND ACTIONS:

Following the presentations and discussions, Chairman Ryan asked if anyone had further questions. He then thanked everyone for their presentations and participation and adjourned the meeting at 4:05 p.m. Staff is scheduled to present these RGs to the full ACRS Committee in June.