Revised Agenda and Location

December 29, 2008

MEMORANDUM TO: Stacey L. Rosenberg, Chief
Special Projects Branch
Division of Policy and Rulemaking
Office of Nuclear Reactor Regulation

FROM: Joseph F. Williams, Senior Project Manager **/RA/**
Special Projects Branch
Division of Policy and Rulemaking
Office of Nuclear Reactor Regulation

SUBJECT: REVISED NOTICE OF FORTHCOMING MEETING WITH THE PRESSURIZED WATER REACTOR OWNERS GROUP (PWROG) AND THE BOILING WATER REACTOR OWNERS GROUP (BWROG)

DATE & TIME: Thursday, January 8, 2009
1:00 p.m. – 3:00 p.m.

LOCATION: Executive Boulevard Building
6003 Executive Boulevard, Room EBB1B13
Rockville, MD 20852

PURPOSE: To discuss issues related to Technical Specifications Task Force Traveler (TSTF)-423, "Technical Specifications End States," TSTF-493, "Clarify Application of Setpoint Methodology for LSSS [Limiting Safety System Setting] Functions." TSTF-513, "Revise Operability Requirements and Actions for RCS [Reactor Coolant System] Leakage Instrumentation," and an associated draft Regulatory Issue Summary (RIS) will also be discussed. TSTF-513 issues were not part of the original meeting agenda. The Meeting Agenda is shown in Enclosure 1. A copy of the draft RIS is shown in Enclosure 2.

CATEGORY 2*: This is a Category 2 Meeting. The public is invited to participate in this meeting by discussing regulatory issues with the NRC at designated points identified on the agenda.

MEETING CONTACT: Joseph F. Williams, NRR/DPR
301-415-1470
joseph.williams@nrc.gov

* Commission's Policy Statement on "Enhancing Public Participation in NRC Meetings," (67 FR 36920), May 28, 2002

Revised Agenda and Location

PARTICIPANTS: Participants from the NRC include members of the Office of Nuclear Reactor Regulation (NRR).

NRR	Industry
Frederick Brown	Douglas Coleman, BWROG
Michael Cheok	Dennis Buschbaum, PWROG, et al.
Robert Elliott	
William Kemper	
Ravinder Grover	
Carl Schulten	
Hukam Garg	
Joseph Williams, et al.	

Project Nos. 694 and 691

Enclosure: As stated

cc w/encl: See next page

PARTICIPANTS: Participants from the NRC include members of the Office of Nuclear Reactor Regulation (NRR).

NRR	Industry
Frederick Brown	Douglas Coleman, BWROG
Michael Cheok	Dennis Buschbaum, PWROG, et al.
Robert Elliott	
William Kemper	
Ravinder Grover	
Carl Schulten	
Hukam Garg	
Joseph Williams, et al.	

Project Nos. 694 and 691

Enclosure: As stated

cc w/encl: See next page

DISTRIBUTION

PUBLIC	FrederickBrown
PSPB Reading File	MichaelCheok
RidsNrrAdro	RidsNrrDeEicb
RidsNrrDpr	WilliamKemper
RidsNrrDirs	HukamGarg
RidsNrrDprPspb	RidsNrrDirsItsb
HollyCruz	MichelleHoncharik
JosephWilliams	RobertElliott
RavinderGrover	CarlSchulten
RidsNrrLADBaxley	RidsOpaMail
PMNS	RJasinski
RidsOgcMailCenter	RidsAcrsAcnwMailCenter
Receptionist (OWFN and TWFN)	RidsNrrDe
MMurphy	MHamm
RGrover	DStarkey

ADAMS ACCESSION NO.: ML083640134 NRR-106

OFFICE	PSPB/PM	PSPB/LA	PSPB/BC
NAME	JWilliams	DBaxley	SRosenberg
DATE	12/29/2008	12/29/2008	12/29/2008

OFFICIAL RECORD COPY

AGENDA FOR THE JANUARY 8, 2009, CATEGORY 2 PUBLIC MEETING

BETWEEN THE U.S. NUCLEAR REGULATORY COMMISSION

AND THE PRESSURIZED WATER REACTOR/BOILING WATER REACTOR

OWNERS' GROUPS REGARDING TSTF-423, TSTF-493, AND TSTF-513

TOPIC
Opening Remarks & Introductions
Discussion of TSTF-423, "Technical Specifications End States"
Discussion of TSTF-493, "Clarify Application of Setpoint Methodology for LSSS Functions"
Discussion of TSTF-513, "Revise Operability Requirements for RCS Leakage Instrumentation" and an associated planned Regulatory Issue Summary.
Next Steps/Action Items
Public Comment
Closing Remarks/Meeting Adjourned

ENCLOSURE 1

D R A F T

UNITED STATES
NUCLEAR REGULATORY COMMISSION
OFFICE OF NUCLEAR REACTOR REGULATION
WASHINGTON, DC 20555-0001

DATE

NRC REGULATORY ISSUE SUMMARY 2008-xx
USE OF GASEOUS ACTIVITY RADIATION MONITORS AS REACTOR COOLANT SYSTEM LEAKAGE DETECTION EQUIPMENT AT NUCLEAR POWER REACTORS

ADDRESSEES

All holders of operating licenses for nuclear power reactors except those who have permanently ceased operations and have certified that fuel has been permanently removed from the reactor vessel.

All current and potential applicants for an early site permit, combined license, or standard design certification for a nuclear power plant under the provisions of Title 10, Part 52, "Licenses, Certifications, and Approvals for Nuclear Power Plants," of the *Code of Federal Regulations* (10 CFR Part 52).

INTENT

The U.S. Nuclear Regulatory Commission (NRC) is issuing this regulatory issue summary (RIS) to inform addressees of the NRC's plan to address the failure of gaseous activity radiation monitors used as reactor coolant system (RCS) leakage detection equipment to meet technical specification (TS) requirements. This RIS requires no action or written response on the part of an addressee.

BACKGROUND INFORMATION

The NRC requires licensees to install RCS leakage detection equipment at their power reactors because the equipment can be used to detect significant reactor coolant pressure boundary (RCPB) degradation. A typical RCS leakage detection system consists of a combination of the following:

- containment sump-level and sump-pump instrumentation
- containment cooler condensate monitoring instrumentation
- a containment atmosphere particulate radioactivity monitoring system
- a containment atmosphere gaseous radioactivity monitoring system

ML083460664

Regulatory Guide (RG) 1.45, "Reactor Coolant Pressure Boundary Leakage Detection Systems," Revision 0 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML003740113**)**, serves as the basis for plant monitoring of and response to RCS operational leakage. RG 1.45, Revision 0 states that a plant's RCPB leakage detection system should employ at least 3 separate leakage detection methods. Consistent with this RG, the TS for many nuclear power plants typically require two or three of these systems to be operable. Specifically, these systems must be capable of detecting an RCS leak of 1 gallon per minute (gpm) within 1 hour. The detection sensitivity is based on guidance from RG 1.45, Revision 0. Page 1.45-3 of RG 1.45, Revision 0 discusses detector response times. The discussion states that a realistic primary coolant radioactivity concentration assumption should be used to analyze the sensitivity of leak detection systems. It states expected values used in the plant-specific environmental report are acceptable values for this assumption.

In May 2008, the NRC issued RG 1.45, "Guidance on Monitoring and Responding to Reactor Coolant System Leakage," Revision 1 (ADAMS Accession No. ML073200271), which contains new guidance on acceptable methods licensees can use to meet NRC requirements for RCS leakage detection systems. Page 7 of Revision 1 to RG 1.45 states "Analysis of the capabilities of leakage monitoring systems that measure radioactivity should use a realistic primary coolant radioactivity concentration assumption consistent with plant normal operations (as opposed to the maximum concentration permitted by technical specifications or used in accident analysis)." This is a change in the NRC staff position for determining an acceptable primary coolant radioactivity concentration assumption used in leakage detection system analysis. Position 2.3 of Revision 1 to RG 1.45 states that plant TS should identify two independent and diverse instruments and/or methods that have the detection and monitoring capabilities of being able to detect a 1 gpm leak within 1 hour. Position 2.3 also states that other methods that may not be able to detect a 1 gpm leak within 1 hour should be used along with those capable of meeting the detection criteria. Monitoring airborne gaseous radioactivity is the first other method mentioned that may not be able to detect a 1 gpm leak within 1 hour. This is also a change in NRC staff expectations, because the NRC staff RG position no longer states that a containment atmosphere gaseous radioactivity monitoring system should have the capability to detect a 1 gpm leak within 1 hour.

RG 1.45, Revision 1 has not been incorporated into the licensing basis of most plants. The NRC issues RGs to describe and make available to the public methods that the NRC staff considers acceptable for use in implementing specific parts of the agency's regulations, techniques that the staff uses in evaluating specific problems or postulated accidents, and data that the staff needs in reviewing applications for permits and licenses. RGs are not substitutes for regulations, and compliance with them is not required. Licensees can propose methods and solutions that differ from those set forth in RGs if they provide a basis for the findings required for the issuance or continuance of a permit or license by the Commission.

Containment airborne gaseous and particulate radioactivity monitoring systems measure RCS leakage indirectly by detecting airborne radioactivity indicative of RCS leakage. Thus, RCS specific activity concentrations determine leakage detection capabilities of containment airborne gaseous radioactivity monitoring systems. Leakage detection systems licensed using RG 1.45, Rev. 0,, assume a specific activity level in the RCS approximately equivalent to 0.1 percent failed fuel in the core. Gaseous radioactivity monitors were also designed to detect a 1-gpm

leak within 1 hour based on this level of activity. However, improvements in fuel cladding integrity and RCS chemistry controls have significantly reduced RCS specific activity at most plants. As a result, the containment atmosphere gaseous radioactivity monitor for operating units may not be able to detect an increase in RCS leakage in the time required by a plant's licensing basis. Containment airborne particulate radioactivity monitoring systems are not as susceptible to this phenomenon because the particulate radioactivity monitors respond to a combination of activation- and fission-product particulates, but activation-product particulates (mostly activated corrosion and wear products) dominate. The fission-product particulates have decreased by the same amount as the gaseous radioactivity. However, the wear products have been stable, and the improved RCS chemistry controls have only moderately reduced the corrosion-product inventory. Thus, the particulate radioactivity has undergone a more modest decrease that is more readily compensated for by a change in the particulate radioactivity monitor setpoint to maintain original design sensitivity. Plants have generally been successful in adjusting particulate radioactivity monitor setpoints to maintain design sensitivity.

Most plants have TS requirements for airborne gaseous radioactivity monitoring systems used as part of RCS leakage detection equipment. If the monitors cannot detect an increase in RCS leakage in the required time, licensees may be in noncompliance with TS requirements for RCS leakage detection equipment. When licensees are unable to comply with their TS, they must either shutdown the reactor, obtain a license amendment from the NRC, or seek enforcement discretion from the NRC. This situation can negatively impact plant operations.

Information Notice (IN) 2005-24, "Nonconservatism in Leakage Detection Sensitivity" (ADAMS Accession No. ML051780073), communicated this issue to all licensees. The purpose of IN 2005-24 was to have licensees review information related to problems with containment gaseous radioactivity monitors as RCS leakage detection equipment and consider appropriate actions as applicable to their plants. Information Notices do not require any action by licensees.

Three years after IN 2005-24 was issued, NRC inspectors at the Diablo Canyon Power Plant identified a non-cited violation for not complying with TS requirements for RCS leakage detection equipment. In November 2008, the licensee for the Watts Bar Nuclear Plant and the Sequoyah Nuclear Plant requested exigent license amendments from the NRC after entering TS Limiting Conditions for Operation ACTIONS statements because of a concern that the gaseous radioactivity monitor channels are unable to detect a 1-gpm RCS leak. To date, very few individual licensees have requested NRC review and approval of plant-specific solutions. Instead, licensees working through the Technical Specifications Task Force (TSTF) have attempted to create generic TS changes, model License Amendment Requests (LARs), model safety evaluations, and model proposed no-significant-hazards consideration determinations using the NRC TS consolidated line item improvement process (CLIIP). However, the NRC has not yet approved these generic changes.

The NRC staff considers the inability of gaseous radioactivity monitors to detect a 1-gpm RCS leak within 1 hour to be a low safety significance issue. Even though gaseous radiation monitors may be unable to detect a 1-gpm RCS leak within 1 hour, it would likely still detect degradation in the RCPB long before components fail catastrophically. Additionally, plant designs still have multiple diverse and redundant methods available to detect RCS leakage. These remaining methods will continue to provide licensees with a means to detect significant RCPB degradation

and to take appropriate action to ensure the continued protection of public health and safety. Also, the degradation of components and piping is generally characterized by relatively slow rates of stable crack growth. These slow failure mechanisms allow licensees adequate time to take appropriate action to prevent catastrophic failure caused by further degradation. The probability of an abnormal loading event (e.g., an earthquake) that could lead to catastrophic failure of the component or piping is considered to be low. Finally, nuclear power plants are designed to provide adequate core cooling after any postulated loss-of-coolant accident up to and including a break equivalent in size to the double-ended rupture of the largest pipe in the RCS. This design feature, coupled with the extremely low likelihood of an undetected crack growth resulting in a loss-of-coolant accident, leads the NRC to conclude that the risk significance of this issue is low. Therefore, the NRC considers the issue of gaseous radioactivity monitors being unable to detect a 1-gpm RCS leak within 1 hour to be of low safety significance. Nevertheless, licensees still need to address the issue to ensure that they are operating in compliance with their TS. This will prevent future negative impacts on plant operations caused by this licensing issue.

SUMMARY OF ISSUE

The NRC guidance on acceptable assumptions for primary coolant radioactivity concentration used to analyze the sensitivity of leak detection systems differs between RG 1.45, Revision 0, and Revision 1. This difference has brought the operability of gaseous and particulate radioactivity monitors used in RCS leak detection systems into question. The gaseous radioactivity monitors at several plants have been determined to be inoperable based on the actual value of primary coolant radioactivity concentration being lower than the value assumed in design analyses. For licensees with a licensing basis constant with RG 1.45, Revision 0, the NRC uses the primary coolant radioactivity concentration value assumed in gaseous and particulate radioactivity monitors' design analyses to judge the monitor's operability.

To facilitate resolution of this issue, the NRC will review the generic solutions that the TSTF proposes for pressurized-water reactors (PWRs) and boiling-water reactors (BWRs). The NRC will ensure the generic TS solutions clearly state that the NRC uses the primary coolant radioactivity concentration value assumed in gaseous and particulate radioactivity monitors' design analyses in determining the monitor's operability for those plants having a licensing basis consistent with RG 1.45, Revision 0,. Once the generic TS solutions are approved, the NRC will make the generic model LARs, model safety evaluations, and model no-significant-hazards consideration determinations available to licensees using the NRC CLIIP.

On November 14, 2008, the TSTF submitted TSTF-513, "Revise Operability Requirements and Actions for RCS Leakage Instrumentation," to the NRC for review as a solution to the issue for PWRs. The TSTF plans to submit TSTF-514 to the NRC in January 2009. TSTF-514 will propose a solution to the issue for BWRs. Licensees are free to submit LARs to address the TS compliance issue using TSTF-513 or TSTF-514; or they can propose alternative solutions. By addressing the issue, licensees will avoid future potential negative impacts on plant operations caused by this licensing issue.

The NRC will exercise enforcement discretion and not issue citations for violations related to gaseous radioactivity monitors being unable to detect a 1-gpm leak within 1 hour. The

enforcement discretion period is effective immediately and will remain in effect until the NRC completes the processing of license amendments resolving the issue. The NRC will exercise enforcement discretion for all licensees who submit LARs to resolve the issue for their plant within 4 months of the issuance of a notice of availability of the CLIIP TSTF travelers for the respective plant type (BWR or PWR). The enforcement discretion period will be terminated for each licensee when license amendments are issued or if licensees fail to submit acceptable LARs to the NRC within 4 months of the issuance of a notice of availability of the CLIIP TSTF travelers for the respective plant type (BWR or PWR). This enforcement discretion is appropriate because the technical issue is not a matter within a licensee's control, and the issue is of low safety significance, as discussed at the end of "Background Information" in this RIS.

BACKFIT DISCUSSION

The intent of this RIS is to inform addressees of the NRC's plan to address the failure of gaseous radioactivity monitors used as RCS leakage detection equipment to meet TS requirements.

The NRC changed guidance and a regulatory position regarding RCPB leakage detection systems when it issued RG 1.45, Revision 1 (ADAMS Accession No. ML073200271). Page 7 of RG 1.45, Revision 1 states that a primary coolant radioactivity concentration assumption consistent with plant normal operations should be used in leakage detection system analysis. This guidance differs from that on page 1.45-3 of RG 1.45, Revision 0 (ADAMS Accession No. ML003740113), which states expected values used in the plant specific environmental report are acceptable values for this assumption. Regulatory Position 2.3 of Revision 1 to RG 1.45 changes the regulatory position on the acceptable number of leakage detection methods capable of detecting a 1-gpm RCS leak within 1 hour from three methods to two methods. RGs are not substitutes for regulations, and compliance with them is not required. Licensees can propose methods and solutions that differ from those set forth in RGs if they provide a basis for the findings required for the issuance or continuance of a permit or license by the Commission.

The staff is not imposing any new positions on licensees. This RIS contains discussions of a past change in regulatory position. Compliance with or adoption of the change in regulatory position is optional for licensees. This RIS is not providing any new regulatory positions. This RIS only conveys the NRC's plan to address the issue of RCS leakage detection equipment failing to meet TS requirements. This RIS requires no action or written response and, therefore, is not a backfit under 10 CFR 50.109, "Backfitting." Consequently, the staff did not perform a backfit analysis.

***FEDERAL REGISTER* NOTIFICATION**

A notice of opportunity for public comment on this RIS was not published in the *Federal Register* because it is informational and pertains to a staff position that does not represent a departure from current regulatory requirements and practice. The NRC intends to work with industry representatives, members of the public, and other stakeholders in developing final guidance and in modifying related guidance documents.

CONGRESSIONAL REVIEW ACT

This RIS is not a rule as designated by the Congressional Review Act (5 U.S.C. §§ 801–886) and, therefore, is not subject to the Act.

PAPERWORK REDUCTION ACT STATEMENT

This RIS does not contain any information collections and, therefore, is not subject to the requirements of the Paperwork Reduction Act of 1995 (44 U.S.C. § 3501, et seq.).

PUBLIC PROTECTION NOTIFICATION

The NRC may not conduct or sponsor, and a person is not required to respond to, a request for information or an information collection requirement unless the requesting document displays a currently valid OMB control number.

CONTACT

Please direct any questions about this matter to the technical contact listed below or to the appropriate Office of Nuclear Reactor Regulation (NRR) project manager.

Timothy J. McGinty, Director
Division of Policy and Rulemaking
Office of Nuclear Reactor Regulation

Technical Contact: Matthew Hamm, NRR
301-415-1472
e-mail: matthew.hamm@nrc.gov

Note: NRC generic communications may be found on the NRC public Web site, http://www.nrc.gov, under Electronic Reading Room/Document Collections.

PAPERWORK REDUCTION ACT STATEMENT

This RIS does not contain any information collections and, therefore, is not subject to the requirements of the Paperwork Reduction Act of 1995 (44 U.S.C. § 3501, et seq.).

PUBLIC PROTECTION NOTIFICATION

The NRC may not conduct or sponsor, and a person is not required to respond to, a request for information or an information collection requirement unless the requesting document displays a currently valid OMB control number.

CONTACT

Please direct any questions about this matter to the technical contact listed below or to the appropriate Office of Nuclear Reactor Regulation (NRR) project manager.

Timothy J. McGinty, Director
Division of Policy and Rulemaking
Office of Nuclear Reactor Regulation

Technical Contact: Matthew Hamm, NRR
301-415-1472
e-mail: matthew.hamm@nrc.gov
Note: NRC generic communications may be found on the NRC public Web site, http://www.nrc.gov, under Electronic Reading Room/Document Collections.

ADAMS ACCESSION No. ML083460664

OFFICE	ITSB:DIRS	Tech Editor	BC:ITSBDIRS	D:DIRS	PSPB DPR	BC:PSPB DPR
NAME	MHamm		RElliott	FBrown		
DATE	12/19/2008	12/15/2008	/ /2008	/ /2008	/ /2008	/ /2008
OFFICE	D:DSS	D:DORL	RI:DRP:DD	RII:DRP:DD	RIII:DRP:DD	RIV:DRP:DD
NAME						
DATE	/ /2008	/ /2008	/ /2008	/ /2008	/ /2008	/ /2008
OFFICE	D:DCI	BC:CHPB DCIP	D: DCIP/NRO	OE	OGC (NLO)	OGC (CRA)
NAME			GTracy			
DATE	/ /2008	/ /2008	/ /2008	/ /2008	/ /2008	/ /2008
OFFICE	PMDA	OIS	LA:PGCB	PGCB	BC: PGCB	D:DPR
NAME	LHill		CHawes	AMarkley	MMurphy	TMcGinty
DATE	/ /2008	/ /2008	/ /2008	/ /2008	/ /2008	/ /2008

OFFICIAL RECORD COPY

D R A F T