



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

March 25, 2010

The Honorable Gregory B. Jaczko
Chairman
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

SUBJECT: DRAFT FINAL REVISION 1 OF REGULATORY GUIDE 1.141, "CONTAINMENT ISOLATION PROVISIONS FOR FLUID SYSTEMS"

Dear Chairman Jaczko:

During the 570th meeting of the Advisory Committee on Reactor Safeguards, March 4 – 6, 2010, we reviewed the Draft Final Revision 1 of Regulatory Guide (RG) 1.141, "Containment Isolation Provision for Fluid Systems." Our Subcommittee on Regulatory Policies and Practices also reviewed this matter during its meeting on December 1, 2009. In these reviews, we had the benefit of discussions with representatives of the NRC staff. We also had the benefit of the documents referenced.

RECOMMENDATIONS

1. Revision 1 of RG 1.141 should be issued as final after recommendation 2 has been addressed.
2. RG 1.141 endorses ANSI N271-1976, "Containment Isolation Provisions for Fluid Systems," as providing a generally acceptable and adequate basis for use, subject to specific additional requirements. These additional requirements should include provisions similar to those included in Section 4.7.5 of 1989 ANSI/ANS 56.2, "Relief Valves in the Forward Flow Direction," regarding the use of relief valves for containment isolation:
 - a) Minimize such use and limit it to only when there is no satisfactory alternative to either the system design or the selection of valve type;
 - b) Specify the seating pressure of the relief valve to be at least 95 percent of the set pressure;
3. Appropriate portions of the Standard Review Plan (SRP), NUREG-0800, should be revised for application to future reviews, consistent with Recommendation 2.

BACKGROUND

10 CFR 50, Appendix A, General Design Criteria 16, and 54 through 57 provide the design criteria for containment isolation and establish the requirements for the design, testing, and functional performance of isolation barriers in lines penetrating the primary containment

boundary. The requirements reflect the importance to safety of isolating these piping systems and, in general, require two isolation valves in series to maintain the isolation function, assuming any single active failure in the containment isolation provisions. RG 1.141 provides additional guidance on acceptable methods to demonstrate that containment isolation requirements are met during normal, transient, postulated accidents and special events conditions.

RG 1.141 endorses ANSI N271-1976, "Containment Isolation Provisions for Fluid Systems," and this endorsement is not changed in Revision 1 to RG 1.141. The 1976 ANSI Standard does not allow relief valves serving the containment isolation function in the forward flow direction. Revision 1 to RG 1.141 incorporates a 2007 addition to SRP Section 6.2.4, which does allow relief valves to serve this function, provided they have a lift setpoint of at least 50 percent greater than the containment design pressure. However, Revision 1 to RG 1.141 does not incorporate other recommendations in the Standards such as those in Section 4.7.5 of 1989 ANSI/ANS 56.2, "Relief Valves in the Forward Flow Direction," for relief valves serving the containment isolation function.

DISCUSSION

Use of relief valves in the forward flow direction to perform a containment isolation function creates a potential for containment bypass. Such use should, therefore, be minimized and limited to situations in which overpressure protection is required and cannot be provided by valves located within containment or by other means. This is recognized in the 1989 edition of ANSI/ANS 56.2, Section 4.7.5, which contains the following guidance:

"When a relief valve is used in the forward (relief) flow direction for fluid system protection while at the same time serving as a containment isolation provision, the set pressure of the relief valve shall be at least 50 percent greater than the containment design pressure. The reseating pressure of the relief valve shall be at least 95 percent of the set pressure. The use of relief valves in this manner should be minimized and should be used only when there are no satisfactory alternatives to either the system design or the selection of valve type."

This guidance for the use of relief valves to provide a containment isolation function is appropriate. Therefore, before issuance, Revision 1 of RG 1.141 should be revised to include the guidance in the 1989 edition of ANSI/ANS 56.2, Section 4.7.5. Such guidance should also be reflected in the applicable SRP sections.

Sincerely,

/RA/

Said Abdel-Khalik
Chairman

References:

1. U.S. Nuclear Regulatory Commission, "Containment Isolation Provisions for Fluid Systems," Regulatory Guide 1.141, Revision 1, 06/2009 (ML090230478)
2. Regulatory Guide 1.141, "Containment Isolation Provisions for Fluid Systems," 04/1978 (ML080420172)
3. Generic Letter Number 96-06, "Assurance of Equipment Operability and Containment Integrity During Design Basis Accident Conditions," 09/30/1996
4. ANSI N271-1976, "Containment Isolation Provisions for Fluid Systems," American Nuclear Society, La Grange Park, IL, 06/1976
5. ANSI/ANS 56.2, "Containment Isolation Provision for Fluid Systems After a LOCA," 1984; (Reaffirmed into 1989 ANSI/ANS 56.2)
6. U.S. Nuclear Regulatory Commission, "Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants," NUREG-0800
7. Regulatory Guide 1.7, "Control of Combustible Gas Concentrations in Containment following a Loss-of-Coolant Accident," Revision 3, 03/2007, (ML070290080)
8. Letter to Mr. David A. Christian, Virginia Electric and Power Company, concerning "Closeout for Generic Letter (GL) 96-06, "Assurance of Equipment Operability and Containment Integrity, During Design-Basis Accident," for North Anna Power Station, Units 1 and 2, and Surry Power Station, Units 1 and 2, 09/13/2000 (ML003749635)
9. Letter Mr. Paul D. Hinnenkamp, River Bend Station Unit 1, Completion of Licensing Activities for Generic Letter (GL) 96-06, "Assurance of Equipment Operability and Containment Integrity During Design Basis Accident Conditions," 03/29/2002, (ML020850136)
10. Letter to Mr. Harold B. Ray, San Onofre Nuclear Generating Station, Units 2 and 3 – Evaluation of Responses to Generic Letter 96-06, "Assurance of Equipment Operability and Containment Integrity During Design-Basis Accident," 05/01/2000, (ML003709382)
11. Letter Mr. John Paul Cowan, Florida Power Corporation, "Review of Florida Power Corporation's Response to Generic Letter 96-06 Concerning Waterhammer, Two-Phase Flow, and Expansion of Entrapped Water in Piping for Crystal River Unit 3," 4/27/2000 (ML003708462)
12. Letter to Mr. Ronald DeGregorio, AmerGen Energy Company, LLC, "Oyster Creek Nuclear Generating Station-Review of Licensee Responses to Generic Letter (GL) 96-06, "Assurance of Equipment Operability and Containment Integrity During Design-Basis Accident Conditions," 03/02/2001 (ML010530153)
13. Letter to Mr. Gregg R. Overbeck, Arizona Public Service Company, "Palo Verde Nuclear Generating Station, Units 1, 2 and 3 - Generic Letter 96-06, "Assurance of Equipment

Operability and Containment Integrity During Design-Basis Accident Conditions,”
03/06/2001 (ML010650223)

14. Letter to Carl F. Lyons, Exelon Nuclear, “Quad Cities Nuclear Power Station, Units 1 and 2 – Completion of Licensing Action for Generic Letter (GL) 96-06, “Assurance of Equipment Operability and Containment Integrity During Design-Basis Accident Conditions,” 05/8/2002 (ML021200044)

14. Letter to Carl F. Lyons, Exelon Nuclear, "Quad Cities Nuclear Power Station, Units 1 and 2 – Completion of Licensing Action for Generic Letter (GL) 96-06, "Assurance of Equipment Operability and Containment Integrity During Design-Basis Accident Conditions," 05/8/2002 (ML021200044)

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