



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

October 8, 2013

Mr. Mark A. Satorius  
Executive Director for Operations  
U.S. Nuclear Regulatory Commission  
Washington, DC 20555-0001

**SUBJECT:** REGULATORY GUIDE 1.79, "PREOPERATIONAL TESTING OF EMERGENCY CORE COOLING SYSTEMS FOR PRESSURIZED-WATER REACTORS," REVISION 2, AND REGULATORY GUIDE 1.79.1, "INITIAL TEST PROGRAM OF EMERGENCY CORE COOLING SYSTEMS FOR NEW BOILING-WATER REACTORS," REVISION 0

Dear Mr. Satorius:

During the 608<sup>th</sup> meeting of the Advisory Committee on Reactor Safeguards on October 2-5, 2013, we completed our review of Draft Final Revision 2 of Regulatory Guide (RG) 1.79, "Preoperational Testing of Emergency Core Cooling Systems for Pressurized-Water Reactors," and Revision 0 of RG 1.79.1, "Initial Test Program of Emergency Core Cooling Systems for New Boiling-Water Reactors." Our Regulatory Policies and Practices Subcommittee also reviewed this matter on December 3, 2012. During these meetings, we had the benefit of discussions with representatives of the NRC staff. We also had the benefit of the documents referenced.

**RECOMMENDATION**

Revision 2 of RG 1.79 and Revision 0 of RG 1.79.1 should be issued.

**BACKGROUND AND DISCUSSION**

Criterion XI, "Test Control," of 10 CFR Part 50 Appendix B, "Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants," provides the regulatory basis for establishing test programs to demonstrate that the safety-related systems, structures, and components satisfactorily perform their safety function. Regulatory Guides (RGs) 1.79 and 1.79.1 relate to the preoperational and startup testing of emergency core cooling systems (ECCS) for Pressurized Water Reactors (PWRs) and Boiling Water Reactors (BWRs). These regulatory guides identify the ECCS functions that are to be tested as those necessary to ensure the specified design functions of the ECCS are met during conditions of normal operation, anticipated operating occurrences and postulated accident conditions.

Revision 2 of RG 1.79 updates the 1975 guidelines for PWRs. The revised regulatory guide adds preoperational testing guidelines for new PWR designs licensed under 10 CFR Part 52 (e.g., *Advanced Pressurized Water Reactors, AP1000 and Evolutionary Pressurized-water Reactors*) and for new PWR designs licensed under Part 50.

Regulatory Guide 1.79.1 Revision 0 provides guidance for new BWR designs licensed under 10 CFR Part 52 (e.g. *Advanced Boiling Water Reactors and Economic Simplified Boiling-Water Reactors*) and new BWR designs licensed under Part 50.

These two regulatory guides incorporate experience from the current fleet and from ongoing Part 52 licensing efforts that will improve the effectiveness of the initial preoperational, startup and power ascension testing programs in addressing potential ECCS vulnerabilities in these new plant designs. The updated regulatory guides address issues such as the effects of debris strainer/sump blockage and gas accumulation on the ECCS.

The regulatory guides rely on and augment other regulatory guides, including RG 1.68, "Initial Test Programs for Water-Cooled Nuclear Power Plants;" RG 1.82, "Water Sources for Long-Term Recirculation Cooling Following a Loss-of-Coolant Accident;" and RG 1.205, "Risk-Informed, Performance-Based Fire Protection for Existing Light-Water Nuclear Power Plants."

Regulatory Guides 1.79 and 1.79.1 delineate preoperational or initial startup testing of the emergency core cooling systems and components including instrumentation, valves, pumps, motors, system piping and supports, controls, and power supplies.

Stakeholder comments on the draft regulatory guides have been satisfactorily addressed. Regulatory Guides 1.79, Revision 2 and 1.79.1, Revision 0 should be issued as final.

Sincerely,

/RA/

J. Sam Armijo  
Chairman

## REFERENCES

1. Regulatory Guide 1.79, "Preoperational Testing of Emergency Core Cooling Systems for Pressurized Water Reactors," U.S Nuclear Regulatory Commission, Washington, D.C, September 2013 (ML113540071).
2. Regulatory Guide 1.79.1, "Initial Test Program of Emergency Core Cooling System for New Boiling Water Reactors," U.S Nuclear Regulatory Commission, Washington, D.C, September 2012, (ML12300A323).
3. Regulatory Guide 1.68, "Initial Test Programs for Water-Cooled Nuclear Power Plants," U.S. Nuclear Regulatory Commission, Washington, DC (ML13051A027).

4. IAEA Safety Standard Series Safety Guide No. NS-G-1.9, "Design of the Reactor Coolant System and Associated Systems in Nuclear Power Plants," International Atomic Energy Agency, Vienna, Austria, 2004.
5. Regulatory Guide 1.82, "Water Sources for Long-Term Recirculation Cooling Following a Loss-of-Coolant Accident," Revision 4, U.S. Nuclear Regulatory Commission, Washington, D.C, September 2011 (ML111330278).
6. USNRC Draft Document, "The use of containment accident pressure in reactor safety analyses," (ML1021101671).
7. USNRC Draft Document, "NRO Response to ACRS Comments on Regulatory Guide 1.79.1, 'Initial Test Program of Emergency Core Cooling Systems for New Boiling Water Reactors'," Revision 0, (ML113540071).
8. USNRC Draft Document, "NRO Response to ACRS Comments on Regulatory Guide 1.79, 'Preoperational Testing of Emergency Core Cooling Systems for Pressurized Water Reactors'," Revision 2 (ML12300A323).
9. Nuclear Energy Institute (NEI) report 09-10, Revision 1a-A, "Guidelines for Effective Prevention and Management of System Gas Accumulation," Project No. 689, April 2013 (ML13136A129).

4. IAEA Safety Standard Series Safety Guide No. NS-G-1.9, "Design of the Reactor Coolant System and Associated Systems in Nuclear Power Plants," International Atomic Energy Agency, Vienna, Austria, 2004.
5. Regulatory Guide 1.82, "Water Sources for Long-Term Recirculation Cooling Following a Loss-of-Coolant Accident," Revision 4, U.S. Nuclear Regulatory Commission, Washington, D.C, September 2011 (ML111330278).
6. USNRC Draft Document, "The use of containment accident pressure in reactor safety analyses," (ML1021101671).
7. USNRC Draft Document, "NRO Response to ACRS Comments on Regulatory Guide 1.79.1, 'Initial Test Program of Emergency Core Cooling Systems for New Boiling Water Reactors'," Revision 0, (ML113540071).
8. USNRC Draft Document, "NRO Response to ACRS Comments on Regulatory Guide 1.79, 'Preoperational Testing of Emergency Core Cooling Systems for Pressurized Water Reactors'," Revision 2 (ML12300A323).
9. Nuclear Energy Institute (NEI) report 09-10, Revision 1a-A, "Guidelines for Effective Prevention and Management of System Gas Accumulation," Project No. 689, April 2013 (ML13136A129).

Accession No: **ML13280A235**

Publicly Available **Y**

Sensitive **N**

Viewing Rights:  NRC Users or  ACRS Only or  See Restricted distribution

<b>OFFICE</b>	ACRS	SUNSI Review	ACRS	ACRS	ACRS
<b>NAME</b>	ZAbdullahi	ZAbdullahi	CSantos	EMHackett	EMH for JSA
<b>DATE</b>	10/09/13	10/09/13	10/09/13	10/09/13	10/09/13

**OFFICIAL RECORD COPY**