

November 20, 2000

Dr. William D. Travers
Executive Director for Operations
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555-0001

Dear Dr. Travers:

SUBJECT: BWROG PROPOSAL TO USE SAFETY RELIEF VALVES AND LOW PRESSURE SYSTEMS AS A REDUNDANT SAFE SHUTDOWN PATH TO SATISFY THE REQUIREMENTS OF 10 CFR 50, APPENDIX R

During the 477th meeting of the Advisory Committee on Reactor Safeguards, November 2-4, 2000, we reviewed a proposal by the BWR Owners Group (BWROG) which seeks staff's endorsement of using safety relief valves (SRVs) and low pressure systems (LPS) as a redundant method to achieve safe shutdown as required by 10 CFR 50, Appendix R. During our review, we had the benefit of discussions with representatives of the BWROG and the staff. We also had the benefit of the documents referenced.

We believe that the analysis being used by the staff to review the BWROG proposal is appropriate. We would like, however, to review the staff's safety evaluation report when it becomes available.

Section III.G.1 of Appendix R requires that one train of systems necessary to achieve and maintain hot shutdown conditions be free of fire damage. The use of SRVs for reactor pressure control coupled with the use of a low pressure system (i.e., core spray or residual heat removal/low pressure coolant injection) for inventory makeup meets this requirement. This is because the affected unit will achieve hot shutdown upon initial blowdown using SRVs. Following this initial blowdown, the bulk reactor coolant temperature will be around 212°F. At this point, hot shutdown conditions could be maintained for an extended period by closing the SRVs and allowing the reactor to repressurize to a level below the shutoff pressure of the available low pressure system. In this mode of operation, injection flow would be throttled to maintain reactor water level within a specified, safe range and an SRV would be used to control pressure within a specified band. An operator might elect to maintain hot shutdown in this manner, if repairs were required to systems necessary to achieve and maintain cold shutdown. An operator, however, would not normally elect to do this if the ability to proceed directly to cold shutdown were available.

In using SRVs/LPS, the potential does exist for the collapsed reactor water level to drop below the top of the core depending on reactor level conditions and the time at which the reactor depressurization is initiated and the rate at which the depressurization is performed. This could be interpreted to imply that the proposal does not meet the requirements of Section III.L of Appendix R. Because the uncollapsed reactor water level is above the top of the active core, adequate core cooling is maintained which is consistent with the technical objective of Section III.L.

The BWROG proposal states that use of SRVs and LPS, in support of Appendix R safe shutdown requirement, is consistent with the original design basis for the BWRs. The proposal specifies a technically acceptable and safe means of achieving and maintaining either hot or cold shutdown. The same method is specified in the emergency operating procedures as a means to achieve cold shutdown upon the occurrence of small break loss of coolant accidents in BWRs. Its use to achieve safe shutdown for fire initiators is consistent with the plant design and normal operator training and expected response. Since fire-initiated sequences that require this shutdown method are rare, there will not be frequent undue stress on safety systems. Using the SRVs/LPS in the manner described in the BWROG report will not damage fuel cladding or rupture the reactor coolant system pressure boundary or the primary containment.

Sincerely,

/RA/

Dana A. Powers
Chairman

References:

1. Letter dated September 1, 1999, from W. Glenn Warren, BWR Owners' Group, to U.S. Nuclear Regulatory Commission, Document Control Desk, Subject: BWR Owners' Group Appendix R Fire Protection Committee Position on SRVs + Low Pressure Systems Used as "Redundant" Shutdown Systems Under Appendix R.
2. Letter dated July 20, 2000, to U.S. Nuclear Regulatory Commission, Document Control Desk, from James M. Kenny, BWR Owners' Group, Subject: BWR Owners' Group Appendix R Fire Protection Committee, Use of Safety Relief Valves and Low Pressure Systems as Redundant Safe Shutdown Paths.
3. Memorandum dated June 23, 1999, from Michael J. Davis, NRC, to Cynthia A. Carpenter, NRC, Subject: Summary of May 19, 1999, Meeting between the NRC staff and the Boiling Water Reactor Owners Group (BWROG) Appendix R Committee.