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Docket Nos. 50-352
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U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555

SUBJECT: Limerick Generating Station, Units 1 and 2
Reply to a Notice of Violation
NRC Combined Inspection Report Nos. 50-352/96-01 and
50-353/96-01

Attached is PECO Energy Company's reply to a Notice of Violation for Limerick Generating Station, Units 1 and 2, that was contained in your letter dated March 22, 1996. The violation concerned the Technical Specifications operability of the Residual Heat Removal System Shutdown Cooling Mode during reactor cavity draindown. The attachment to this letter provides a restatement of the violation followed by our reply.

If you have any questions or require additional information, please contact us.

Very truly yours,

GHS

Attachment

cc: T. T. Martin, Administrator, Region I, USNRC w/attachment
N. S. Perry, USNRC Senior Resident Inspector, LGS

Reply to a Notice of Violation

Restatement of the Violation

During an NRC inspection conducted on January 9 through March 4, 1996, a violation of NRC requirements was identified. In accordance with the "General Statement of Policy and Procedure for NRC Enforcement Actions," NUREG-1600, the violation is listed below:

Technical Specification 3.9.11.2 requires, in part, that two shutdown cooling mode loops of the RHR system shall be operable and at least one loop shall be in operation, with each loop consisting of at least: (a) one operable RHR pump, and (b) one operable RHR heat exchanger, in operational condition 5 when irradiated fuel is in the reactor vessel and the water level is less than 22 feet above the top of the reactor pressure vessel flange. Action (a) requires that with less than the above required shutdown cooling mode loops of the RHR system operable, within 1 hour and at least once per 24 hours thereafter, verify the availability of at least one alternate method capable of decay heat removal for each inoperable RHR shutdown cooling mode loop.

Contrary to the above, on February 22, 1996, with one shutdown cooling mode loop of the RHR system in operation and one loop inoperable, the reactor cavity was drained down to a level less than 22 feet above the top of the reactor pressure vessel flange. The action of verifying the availability of at least one alternate method capable of decay heat removal for each inoperable RHR shutdown cooling mode loop within 1 hour was not met. Specifically, the cavity draindown occurred at 9:42 a.m. on February 22, 1996, and the action of verifying the availability of at least one alternate method was not performed until 7:50 p.m. the same day.

This is a Severity Level IV violation (Supplement I).

RESPONSE

Admission of the Violation

PECO Energy Company acknowledges the violation.

Reason for the Violation

The Residual Heat Removal (RHR) system at Limerick Generating Station (LGS) is comprised of four (4) independent loops. Each loop contains a 100% capacity motor-driven pump, piping, valves, instrumentation, and controls. In addition, two (2) of the loops (i.e., "A" and "B") contain heat exchangers that are cooled by the Residual Heat Removal Service Water (RHRSW) system.

In the Shutdown Cooling (SDC) mode of operation, there is one suction line from the 'B' reactor recirculation system suction line. The "A" & "C" RHR pumps utilize the "A" RHR heat exchanger and return through a common discharge line to the "A" reactor recirculation system discharge line. The "B" & "D" RHR pumps utilize the "B" RHR heat exchanger and return through a common discharge line to the "B" reactor recirculation system discharge line. The functional design basis of the SDC mode is to have

the capability to remove decay and sensible heat from the reactor primary system in order to reduce reactor coolant temperature to 125°F, approximately 20 hours after the control rods have been inserted, and to permit refueling when the RHRSW temperature is 85°F. The plant can be shutdown using the capacity of a single RHR heat exchanger and related RHRSW cooling capability.

The SDC mode of the RHR system is manually initiated, and is not required for accident mitigation. Two (2) Shutdown Cooling heat exchanger loops are available, and although both loops may be employed for shutdown, the reactor coolant can be brought to 212°F in less than approximately 20 hours with only one (1) loop in operation.

The LGS, Units 1 and 2 Technical Specifications (TS) describe the RHR system SDC mode configuration in terms of "loops." Each "loop" consists of a single heat exchanger, two (2) pumps, and associated piping and valves. In October 1993, a 10CFR50.59 Review was performed to evaluate the SDC capabilities at LGS. The guidance provided in the Improved Technical Specifications (ITS), i.e., NUREG-1433, "Standard Technical Specifications General Electric Plants, BWR/4," was utilized in this review. The review determined that the ITS maintained these general descriptions, but introduced the concept of "subsystems" when describing the RHR SDC mode of operation in Operational Conditions (OPCONs) 4 and 5. NUREG-1443 indicates that RHR SDC is comprised of two (2) "loops," with each loop consisting of two (2) "subsystems" resulting in the availability of four (4) RHR SDC "subsystems." NUREG-1433 defines an RHR SDC "subsystem" as consisting of a heat exchanger (a passive component) aligned, or capable of being aligned, to a single RHR pump. These RHR SDC subsystems are described below.

"A" Loop Subsystems

- "A" Heat Exchanger and "A" RHR Pump
- "A" Heat Exchanger and "C" RHR Pump

"B" Loop Subsystems

- "B" Heat Exchanger and "B" RHR Pump
- "B" Heat Exchanger and "D" RHR Pump

To meet the ITS Limiting Condition of Operation (LCO), both pumps in one heat exchanger loop or one pump in each of the two heat exchanger loops must be operable. Since the piping and heat exchangers are passive components that are assumed not to fail, they are allowed to be common to both operable subsystems.

The 1993 Review noted that NUREG-1433 describes a physical RHR system design configuration similar to LGS. Additionally, the review noted that the LGS Suppression Pool Cooling and Suppression Pool Spray TS explicitly require "independent" loops and, thus, require the use of separate heat exchangers. This requirement for independent loops is not present in the LGS SDC TS. Therefore, the review determined that the LGS RHR SDC TS LCO for OPCON 5 (i.e., low reactor water level with two loops of SDC operable, one of which is in operation) could be met by the operability of one RHR heat exchanger and both associated RHR pumps, or by the operability of both RHR heat exchangers and one RHR pump associated with each heat exchanger.

As a result, the October, 1993, 10CFR50.59 Review concluded that the LGS TS were consistent with the NUREG-1433 guidance and, since independent loops were not required for the LGS SDC mode of operation, LGS had a total of four (4) RHR SDC loops available to satisfy the existing LGS RHR SDC TS requirements. Therefore, no TS change was considered necessary to implement the RHR SDC mode of operation described in NUREG-1433. This conclusion was proceduralized and implemented during the LGS refueling outages in 1994, 1995, and 1996.

Additionally, ambiguities in the terminology used in the LGS Updated Final Safety Analysis Report (UFSAR) to describe the RHR system configuration associated with the SDC mode of operation, in particular, the use of "loop(s)" to describe varying configurations of the RHR pumps and heat exchangers, contributed to the conclusions of the 1993 10CFR50.59 Review. In retrospect, LGS recognizes that the 1993 Review provided the opportunity to appropriately remove such ambiguities from the LGS UFSAR and clarify the LGS TS.

Corrective Actions Taken and Results Achieved

An alternate method of decay heat removal, i.e., the Reactor Water Cleanup (RWCU) system pumps and heat exchangers (cooled by the Drywell Chilled Water system), was verified available.

Corrective Actions to Avoid Future Noncompliance

By letter dated May 20, 1996, PECO Energy submitted proposed changes to the LGS, Units 1 and 2 TS that are consistent with the terminology in NUREG-1433, Revision 1. The proposed changes introduce the concept of "subsystems" when describing the RHR SDC mode of operation in OPCONs 4 and 5. The proposed changes will define an RHR SDC "subsystem" as consisting of a heat exchanger (a passive component) aligned, or capable of being aligned, to a single RHR pump. As a result, there will be four (4) RHR SDC "subsystems" available, i.e., two (2) "subsystems" comprising a single "loop." The proposed TS changes would, for example, allow the use of the "A" heat exchanger in conjunction with the "A" and "C" RHR pumps to satisfy the requirement for two operable RHR SDC subsystems. These proposed changes will result in the LGS TS using definitions that are identical to the NUREG-1433 terminology for the SDC system configuration.

Also, a UFSAR change has been initiated to revise the UFSAR, based on NRC approval of the requested TS changes described above, to remove the ambiguities in the terminology and more clearly describe the RHR system configuration associated with the SDC mode of operation that is consistent with the description provided in NUREG-1433, Revision 1.

Pending NRC approval of the requested TS changes described above, Outage Section Guideline, OSG-117, "Guideline for Outage Planning and Risk Management," was revised to indicate the availability of only two (2) SDC loops per unit consisting of one RHR heat exchanger and an associated pump per loop, and that two operable SDC loops require the use of two heat exchangers. Other procedures associated with the SDC mode of RHR system operation have also been reviewed. No other procedure changes were deemed necessary.

In addition, management expectations regarding increased attention to the quality and depth of review when performing 10CFR50.59 Reviews has been communicated to the appropriate station personnel.

Date When Full Compliance was Achieved

Full compliance was achieved the evening of February 22, 1996, when the alternate method of decay heat removal was verified available.