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May 15, 2003

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555-0001

Quad Cities Nuclear Power Station, Units 1 and 2
Facility Operating License Nos. DPR-29 and DPR-30
NRC Docket Nos. 50-254 and 50-265

Subject: Additional Information Supporting the Request for Amendment to Technical Specifications Surveillance Requirements for the Main Steam Line Relief Valves and Relief Request RV-30E

Reference: Letter from P. R. Simpson (Exelon Generation Company, LLC) to U. S. Nuclear Regulatory Commission, "Request for Amendment to Technical Specifications Surveillance Requirements for the Main Steam Line Relief Valves and Relief Request RV-30E," dated May 1, 2003

In the referenced letter, Exelon Generation Company, LLC (EGC) requested an amendment to the facility operating licenses for Quad Cities Nuclear Power Station (QCNPS), Units 1 and 2. The proposed changes modify Technical Specifications Surveillance Requirement (SR) 3.4.3.2, SR 3.5.1.10, and SR 3.6.1.6.1 to provide an alternative means for testing the Unit 1 main steam Electromatic Relief Valves (ERVs), including those that provide the Automatic Depressurization System and the low set relief functions. In addition, the proposed changes provide an alternative means for testing the Units 1 and 2 dual function Target Rock safety/relief valves (S/RVs). The proposed changes will allow either the testing of the ERVs and S/RVs such that full functionality is demonstrated through overlapping tests, or by cycling the valves.

In addition, the referenced letter included Relief Request RV-30E. This relief request provides an alternative to the requirement of the American Society of Mechanical Engineers/American National Standards Institute, Operation and Maintenance of Nuclear Power Plants, OM-1987, Part 1, Section 3.4.1.1(d) to remotely actuate the ERVs and S/RVs following installation or maintenance.

In a telephone call between EGC and the NRC on May 15, 2003, the NRC requested additional information regarding the proposed alternative testing of the ERVs. The Attachment provides the requested information.

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EGC has reviewed the information supporting a finding of no significant hazards consideration that was previously provided to the NRC in Attachment 1 of the referenced letter. The supplemental information provided in this submittal does not affect the bases for concluding that the proposed license amendment does not involve a significant hazards consideration.

If you have any questions or require additional information, please contact Mr. Kenneth M. Nicely at (630) 657-2803.

I declare under penalty of perjury that the foregoing is true and correct.

Respectfully,

May 15, 2003
Executed on

Patrick R. Simpson
Manager – Licensing
Mid-West Regional Operating Group

Attachment:
Response to Request for Additional Information

cc: Regional Administrator – NRC Region III
NRC Senior Resident Inspector – Quad Cities Nuclear Power Station
Office of Nuclear Facility Safety – Illinois Department of Nuclear Safety

ATTACHMENT
Response to Request for Additional Information

NRC Request 1

Explain why the proposed testing for Electromatic Relief Valves (ERVs) is adequate and not detrimental to the pilot valves in light of the Nine Mile Point events described in the NRC Inspection Report for Nine Mile Point dated December 22, 2000, and NRC Event Notification Report 39779, dated April 21, 2003.

Response

The NRC inspection report for Nine Mile Point states that the spurious operation and sticking of valve ERV-111 most probably was caused by a bent stem and partial disk-stem separation. The inspection report describes that dry cycling of pilot valves can cause the partial disk-stem separation.

Although Exelon Generation Company, LLC (EGC) proposes to dry cycle pilot valves at Quad Cities Nuclear Power Station (QCNPS), the proposed testing alternative can detect partial disk-stem separation. Under the proposed testing, ERVs will be tested at a steam test facility, where it will be installed on a steam header in the same orientation as the plant installation. The test conditions in the test facility will be similar to those in the plant installation, including ambient temperature, valve insulation, and steam conditions. The valve will then be leak tested, functionally tested using a slave solenoid to actuate the valve to ensure the valve is capable of opening and closing, and leak tested a final time. The valve will then be shipped to QCNPS without any further disassembly or alteration of the valve components. A receipt inspection will be performed in accordance with the requirements of the EGC Quality Assurance Program upon arrival of the valve at QCNPS. The storage requirements in effect at QCNPS ensure the valves are protected from exposure to the environment, airborne contamination, acceleration forces, and physical damage. Prior to installation, the valve will be inspected for foreign material and damage. The valve will be installed, insulated, and electrically connected. Proper electrical connections will be verified per procedure. Electrical power to the control panel and signals causing application of power to the ERV solenoids will be verified to be present at the control panel per procedure. In addition, ERV limit switches will be tested.

The post-installation testing includes manual dry cycling of the pilot valve to verify that the stem travel and lever arm adjusting screw gap are within limits. Following this verification, the ERV solenoid will be energized to manually stroke the pilot valve. The stem travel and lever arm adjusting screw gap will then be rechecked to verify that these parameters are within limits following the dry cycling. Partial disk-stem separation caused by dry cycling of the pilot valve will be detected during this recheck. Discussions with the ERV manufacturer, Dresser, concluded that this recheck would detect partial disk-stem separation caused by dry cycling of the pilot valve. In addition, EGC has performed dry cycling of the pilot valves at QCNPS for many years, with no signs of partial or full disc detachment. Therefore, the proposed testing is adequate to detect the partial disk-stem separation experienced at Nine Mile Point during the simulated bench test described in the NRC inspection report.

The EGC maintenance procedures for the ERV pilot valves include appropriate inspections of the stem, pilot valve bushing, and disc to identify any nicks, gouges, or other damage that could impair free movement. The EGC procedure checks the gap at the end of the stem that has the thinnest cross section. This is the area most likely to be bent if not properly handled. In addition, free movement of the stem in the bushing and of the disc to stem connection are

checked. This check assures that the stem is straight, the pilot can travel freely, and the pilot disc can seat properly.

The Nine Mile Point event described in NRC Event Notification Report 39779 was a failure of an ERV to open when actuated. The failure was reportedly due to inadequate solenoid force caused by high resistance in the cutout switch, such that the output force was not adequate to overcome the pilot spring force. The proposed testing for QCNPS ERVs will include manual actuation of the electrical circuitry, solenoid actuator, pilot operating lever, and pilot plunger after installation in the plant. However, since this test will be performed prior to establishing the reactor pressure needed to overcome main valve closure forces, the main valve will not stroke during the test. Since the proposed testing for QCNPS ERVs includes a manual actuation of the solenoid and pilot valve, the test will demonstrate that the solenoid force is adequate to overcome the pilot spring force. Resistance checks of the cutout switch will assure the solenoid is capable of producing its full output force.

NRC Request 2

Summarize the proposed testing for the ERVs.

Response

The proposed testing for the ERVs is described in response to NRC Request 1 above.

NRC Request 3

Provide assurance that the proposed test will demonstrate that the solenoid will be capable of overcoming both spring force and force due to reactor steam pressure when actuated.

Response

The solenoid actuator is designed to operate the pilot valve under all design conditions. The actuator includes two coils. One coil can be considered a pull-in coil, and the second considered a hold-in coil. The pull-in coil provides sufficient force to actuate the pilot, and then the hold-in coil provides sufficient force to maintain the pilot in an open position. Contacts designated as cutout contacts control the energization of these coils during solenoid motion.

During inspection of the operator prior to testing, specific attention is given to maintenance and testing of the cutout contacts. An as found contact resistance value is measured, the contacts are cleaned, the associated springs and mechanisms are inspected, and as left contact resistances are verified to be less than one ohm (i.e., closed) and greater than one megohm (i.e., open). Resistance checks and meggar tests are then performed on both coils. Finally, during electrical actuation, operating voltages and currents are verified to be within acceptance criteria limits. These steps provide substantial indication that the solenoid operator is capable of functioning as designed.

In addition, operating experience indicates that a solenoid that is capable of actuating the pilot in cold conditions is capable of actuating the pilot under normal operating conditions. Pilot actuation and verification of coil and contact performance provides additional assurance that the ERVs will actuate when required.