



PERRY NUCLEAR POWER PLANT

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VICE PRESIDENT - NUCLEAR

December 7, 1992
PY-CEI/NRR-1581 L

U.S. Nuclear Regulatory Commission
Document Control Desk
Washington, D.C. 20555

Perry Nuclear Power Plant
Docket No. 50-440
Reply to Notice of Violation

Gentlemen:

This letter acknowledges receipt of the Notice of Violation contained within Inspection Report 50-440/92018 dated November 5, 1992. The report identifies areas examined by Region III inspectors from August 25 through October 1, 1992. This letter also acknowledges your request that Perry provide an updated Generic Letter (GL) 89-10, Supplement 3 response which addresses NRC concerns identified during the referenced inspection. The requested GL 89-10, Supplement 3 response will be transmitted to the NRC under a separate cover.

It is recognized that improvements to the Perry MOV Program are needed to appropriately implement GL 89-10 requirements. A plant staff reorganization was recently completed in order to provide a more proactive approach to resolving issues involving MOVs and to improve the ability to focus resources. This reorganization combined personnel from the MOV testing organization with design group personnel responsible for design basis and test results evaluations. The newly formed group will re-analyze assumptions utilized in establishing MOV program attributes. Actions will be taken to correct any deficiencies identified during this review. The group will also conduct a detailed review of weakness identified in Inspection Report 92018 and recommend appropriate actions for implementation. We believe the changes will result in an overall improvement in the Perry MOV Program.

If you have any question, please feel free to call.

Sincerely,

R. A. Stratman

110027

RAS:RWG:ss

Attachments

cc: NRC Project Manager
NRC Resident Inspector
NRC Region III

Response To
Notice of Violation

Due to the dissimilar nature of the examples described in the Notice of Violation under sections 1.a, 1.b, and 1.c the reasons for the respective violation examples and the associated corrective actions will be addressed separately.

50-440/92018-01A
Restatement of the Violation

10 CFR 50, Appendix B, Criterion V, requires that activities affecting quality shall be prescribed by documented instructions, procedures, or drawings, of a type appropriate to the circumstances and shall be accomplished in accordance with these instructions, procedures, or drawings. Instructions, procedures, or drawings shall include appropriate quantitative or qualitative acceptance criteria for determining that important activities have been satisfactorily accomplished.

Contrary to the above, as of September 3, 1992, the combination of a generic instruction and the design drawing used for setting the shutdown cooling suction valve limit switches did not have the necessary level of detail to ensure appropriate limit switch settings and contributed to the failure of the RHR system "A" pump to start on demand on May 5, 1992.

Reason for the Violation

The program deficiency described above was previously identified by Perry personnel and reported to the NRC in Licensee Event Report (LER) 92-012 dated June 4, 1992.

The inappropriate limit switch setting resulted in a loss of the Shutdown Cooling Mode of the Resident Heat Removal (RHR) system and a violation of Technical Specification 3.9.11.2 Action a. The cause for the event, as stated in LER 92-012, was a program weakness. The identified weakness involved a lack of detailed guidance for properly adjusting the third and fourth train rotor limit switches for limit torque valve operators.

Technicians who experienced difficulty over the previous years in setting this type of limit switch had resolved their problems with engineering personnel on an as needed basis and did not document any generic concerns. Therefore no procedural remedies were pursued.

Corrective Actions Taken and Results Achieved

The corrective actions detailed in LER 92-012 consisted of the following steps. The RHR pump suction valve limit switch which initiated the event described in LER 92-012 was reset satisfactorily following the event. Engineering personnel performed an evaluation to determine which four train rotor positioners used in control/interlock applications were subject to potential previous misadjustments. The appropriate valve limit switches were subsequently re-adjusted.

Additionally, the associated design drawings used for setting limit switches on four train rotors were revised to incorporate enhanced guidance. These drawing revisions were verified complete on August 24, 1992. Generic Electric Instruction (GEI)-0014, "Limitorque Limit/Torque Switch Adjustment," was also revised. The procedure revision, which included appropriate detailed guidance, became effective on September 15, 1992.

Actions to Avoid Further Violations

A memo will be distributed to remind site personnel to initiate procedure changes when problems are identified.

Date When Full Compliance Will Be Achieved

Full compliance with the cited 10 CFR 50, Appendix B criterion was achieved on September 15, 1992 upon implementation of the referenced revision to procedure GEI-0014.

50-440/92018-01B

Restatement of the Violation

10 CFR 10, Appendix B, Criterion V, requires that activities affecting quality shall be prescribed by documented instructions, procedures, or drawings, of a type appropriate to the circumstances and shall be accomplished in accordance with these instructions, procedures, or drawings. Instructions, procedures, or drawings shall include appropriate quantitative or qualitative acceptance criteria for determining that important activities have been satisfactorily accomplished.

Perry Administrative Procedure (PAP)-201, "Conduct of Operations," Revision 6 through 8, dated October 22, 1990 and April 21, 1992, respectively, stated "Since safety-related MOV fuses are substantially oversized by design, trouble-shooting should normally be initiated in response to blown MOV main power fuse events."

Contrary to the above of September 3, 1992, troubleshooting steps had not been taken to address MOV main line fuse failures that occurred in April 1991 and May 1992 (MOV 1B21-P0065A/B).

Reason for the Violation

Administrative Procedure PAP-0201 delineates the responsibilities of the Control Room Unit Supervisor (US) with regard to determining whether trouble-shooting will be required prior to replacement of blown fuses. If the US determines that blown fuses may be replaced without trouble-shooting, PAP-0201 requires that a Blown Fuse Replacement Checklist be completed to document the replacement of the correct fuse size and type.

For the motor operated valves (MOV) referred to in Violation 50-440/92018-01B (1B21-P0065A/B), the cause was known prior to fuse replacement. The blown

fuses were replaced utilizing a Blown Fuse Replacement Checklist in each instance since the apparent cause for the fuse failures had been determined and no trouble-shooting was deemed necessary.

In addition to the Blown Fuse Replacement Checklist, PAP-0201 also requires the initiation of a Work Request for the purpose of trending fuse replacement frequency, when no trouble-shooting is required. PAP-0905, "Work Order Process," includes the specific instructions for processing Blown Fuse Work Orders. These instructions previously included a requirement to investigate the cause when it was determined that the fuse had blown within the previous thirty days or an incorrect fuse was installed. Since the blown fuses discussed in the Notice of Violation had an occurrence frequency of greater than a year no investigation was required. This apparent weakness in the blown fuse administrative process contributed to the failure to further investigate the cause of the blown fuses.

Corrective Action Taken and Results Achieved

PAP-0905 has been revised to remove the "30 day" criteria when reviewing for indications of trendable/recurring fuse failures and to require a troubleshooting work order be initiated for any main line fuse failures involving safety-related MOV fuses. These steps will assure that an investigation is performed and corrective actions taken when appropriate to address MOV blown fuse failures.

Actions to Avoid Further Violations

A review will be conducted to determine whether other trendable conditions, similar to those noted in violation 92018-01B, exist. Appropriate actions will be taken to address any recurring problems identified during this review.

Date When Full Compliance Will Be Achieved

Full compliance with the 10 CFR 50, Appendix B, Criteria V was achieved on December 3, 1992, upon approval of the described revisions to PAP-0905.

50-440/92018-01C

Restatement of the Violation

10 CFR 50, Appendix B, Criterion V, requires that activities affecting quality shall be prescribed by documented instructions, procedures, or drawings, of a type appropriate to the circumstances and shall be accomplished in accordance with these instructions, procedures, or drawings. Instructions, procedures, or drawings shall include appropriate quantitative or qualitative acceptance criteria for determining that important activities have been satisfactorily accomplished.

Contrary to the above, as of September 3, 1992, the licensee did not have an adequate procedure with appropriate acceptance criteria to evaluate data from design basis differential pressure testing to ensure that the MOVs could perform their design basis functions.

Reason for the Violation

Perry participates in several industry groups involved in the development of guidance associated with MOV test programs. Perry has performed evaluations of MOV Program test results on a case-by-case basis while reviewing applicable industry recommendations regarding acceptance criteria for evaluating differential pressure testing. No generic guidance for evaluating the referenced test results has been developed.

Corrective Actions Taken and Results Achieved

Perry is currently participating with the Boiling Water Reactors Owner's Group (BWROG) to complete a position paper on differential pressure testing acceptance criteria. A draft position paper recently issued by the group is under evaluation for incorporation into the Perry MOV program.

Actions to Avoid Further Violations

Perry will develop a procedure with appropriate acceptance criteria for evaluating data from design basis differential pressure testing prior to January 1, 1993. No additional differential pressure testing is anticipated prior to that date.

Data When Full Compliance Will Be Achieved

Full Compliance with the cited 10 CFR 50, Appendix B criterion will be by January 1, 1993, upon approval and implementation of the referenced procedure for evaluating test results.

50-440/92018-02

Restatement of the Violation

10 CFR 50, Appendix B, Criterion III requires, in part, that measures shall be established to assure that applicable regulatory requirements and the design basis, as defined in 10 CFR 50.2, are correctly translated into specifications, drawings, procedures, and instructions. These measures shall include provisions to assure that appropriate quality standards are specified and included in the design documents and that deviations from such standards are controlled.

Contrary to the above, as of September 3, 1992, an inappropriate equation (Limitorque's "stall thrust" equation) was used in calculations to evaluate the design basis capability of safety-related MOVs and resulted in at least two inoperable valves (the outboard reactor core isolation cooling and reactor water cleanup containment isolation valves) going undetected until appropriate calculations were performed in response to the NRC inspection.

Reason for the Violation

Stall torque is one of several values calculated to determine the approximate loads the operator and the valve may experience under a stall condition. Calculation of this value is required since Perry utilizes a by-pass torque

switch design for at least 95 percent of the stroke for safety related valve in close direction and does not utilize the torque switch in the open direction. During the close cycle, the MOV is running at the rated speed and the inertia of the drive train adds significantly to the transfer of thrust into the valve seat. This control circuitry allows the valve operator to exert torque/thrust up to and including stall torque for design basis event conditions. Other parameters such as pull-out torque/efficiency were also evaluated for the purpose of determining loads experienced by the valves during operation.

Per discussion with motor the manufacturer, Reliance Electric, any MOV motor should be capable of producing the stall torque shown on the associated motor performance curve when required. Stall efficiency and run efficiency for most of the MOVs are the same including the Supplement 3 MOVs. Our own limited static testing has demonstrated that Limitorque's stall efficiency values may be conservative. Test results have shown an increase of torque and thrust over what is calculated.

The degraded voltage calculation uses highly conservative locked rotor current for deriving voltage at the motor terminal. This is the current that produces the highest motor torque (stall torque) and the greatest voltage drop.

As noted during the NRC inspection, Perry engineering personnel were aware of information provided by Limitorque and the Electric Power Research Institute (EPRI) which recommended against using stall efficiency to evaluate MOV capability. However, since there was additional industry and site specific information available to justify use of the stall equations, Perry engineering personnel believed that it was appropriate to use stall torque equations as a means of measuring MOV performance.

It is recognized that the use of the stall efficiencies for sizing applications is considered to be improper. The use of stall efficiency in MOV capability equations has therefore been discontinued.

Actions Taken and Results Achieved

Perry performed a preliminary evaluation to determine the reduced voltage capability of valves included in the GL 89-10 program based on the following equations per Limitorque letter dated September 17, 1992 from Limitorque and found that the MOVs are acceptable.

1) Capability in the opening direction

(Motor Start Torque) X (Overall Ratio) X (Pullout Efficiency) X
(Application Factor) X (Reduced Voltage Factor)

2) Capability in the closing direction

(110% of Motor Start Torque) X (Overall Ratio) X (Run Efficiency) X
(Application Factor) X (Reduced Voltage Factor)

All future MOV capability evaluations will be performed using the above equations.

Actions to Avoid Further Violations

Since use of the referenced stall thrust equation has been discontinued, no additional corrective actions are deemed necessary to preclude similar violations.

Date When Full Compliance Will Be Achieved

Full compliance with the cited 10 CFR 50, Appendix B criterion was achieved upon discontinuation of the use of the referenced stall thrust equation.