

# CATEGORY 1

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50-270 Oconee Nuclear Station, Unit 2, Duke Power Co.      05000270  
50-287 Oconee Nuclear Station, Unit 3, Duke Power Co.      05000287

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SUBJECT: Forwards response to violations noted in Insp Repts  
50-269/97-05, 50-270/97-05 & 50-287/97-05. Corrective actions:  
RSO involved in event removed from licensed duties until he  
completed listed training.

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August 18, 1997

U.S. Nuclear Regulatory Commission  
Attention: Document Control Desk  
Washington, DC 20555

Subject: Oconee Nuclear Site  
Docket Nos. 50-269, -270, -287  
Inspection Report 50-269, -270, -287/97-05  
Reply to Notices of Violation

Gentlemen:

By letter dated July 18, 1997, the NRC issued four Notices of Violation as described in Inspection Report No. 50-269/97-05, 50-270/97-05, and 50-287/97-05.

Duke Power acknowledges these violations. Accordingly, Duke is proposing corrective actions, as described in the attachments, to address the root causes.

Pursuant to the provisions of 10 CFR 2.201, the attachments provide written responses to the subject violations as identified in the subject Inspection Report.

Very truly yours,

W. R. McCollum, Jr.  
Site Vice President  
Oconee Nuclear Station

Attachments (4)

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PDR ADOCK 05000269  
G PDR

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NRC Document Control Desk  
August 18, 1997  
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U. S. Nuclear Regulatory Commission, Region II

Mr. D. E. LaBarge, Project Manager  
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Mr. M. A. Scott  
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Commitments

Attachment 1  
Reply to Notice of Violation (Reply)  
Violation 97-05-01

Restatement of the Violation

Technical Specification 6.4.1 requires that the station shall be operated and maintained in accordance with approved procedures.

PT/2/A/0203/04, Low Pressure System Leakage Test, Enclosure 13.3, Leakage Test of Low Pressure Injection (LPI) Discharge Piping and High Pressure Suction Piping During Unit Startup, is used to identify any leaks in the Unit 2 LPI system. Enclosure 13.3 step 2.3 states "When Steam Generators are controlling Reactor Coolant System (RCS) temperature and the LPI system is not needed to maintain RCS temperature, secure all operating LPI pumps." Step 2.4 verifies RCS pressure at approximately 310 psig and then step 2.5 opens 2LP-10 to leak check 2B piping.

Contrary to the above, on May 18, 1997, the station was not maintained and operated in accordance with approved procedures in that: during the performance of PT/2/A/0203/04, Enclosure 13.3, step 2.5 was performed out of sequence, in that, valve 2LP-10 was opened with the 2C LPI pump still in operation (to have been shutdown by previous step 2.3). This resulted in overpressurizing the Unit 2 "B" train of the LPI system.

Reply to the Notice of Violation

1. The reason for the violation:

Duke Power acknowledges the violation.

A detailed root cause analysis was performed for this event. The cause of the event was a procedure adherence issue due to a human error involving a wrong assumption during the performance of the Low Pressure Injection (LPI) leakage test (PT/2/A/203/04). The SRO signed off the procedure without performing the required action because he incorrectly assumed that the step was a conditional step. This was not in compliance with Operations Management Procedure 1-9 (Use of Procedures) and caused the overpressurization of the LPI system.

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Reply to Notice of Violation (Reply)  
Violation 97-05-01

2. The corrective steps that have been taken and the results achieved:

The SRO involved in this event was removed from licensed duties until he completed the following training:

- Remedial training on the LPI system. Included in this training was the modification that covered the high pressure mode of decay heat removal.
- Remedial training on management guidance for procedure usage. Included in this training was specific guidance addressed in OMP 1-9 and NSD 704, Technical Procedure Use and Adherence.

The individual involved in this event has successfully completed remedial training on the two above topics and has returned to licensed duties.

Disciplinary actions were taken regarding this event.

The Superintendent of Operations has addressed the control room crew involved in this event and emphasized the proper use of procedures. Communications through the proper chain of command (Unit Supervisor to SRO to RO) and a proper questioning attitude were stressed.

Procedure use and questioning attitude have been strongly communicated to all of Operations as "Core Values".

3. The corrective steps that will be taken to avoid further violations:

The 1997/1998 operator requalification training cycle will include enhanced training on procedure use and adherence. This training will be completed by May 31, 1998.

4. The date when full compliance will be achieved:

Duke Power Company is in full compliance.

Attachment 2  
Reply to Notice of Violation (Reply)  
Violation 97-05-02

Restatement of the Violation

10 CFR 50, Appendix B, Criterion V, Instructions, Procedures and Drawings, requires 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.

Contrary to the above, on January 7, 1997, the bolts for the emergency sump cover plates had not been reinstalled prior to plant operation as required by drawings O-67-A and O-67-J. This condition had existed on all three units since approximately 1991.

Reply to the Notice of Violation

1. The reason for the violation:

Duke Power Company acknowledges this violation.

The root cause of this violation is a lack of guidance in Maintenance Procedure MP/0/A/1800/105, Reactor Building Emergency Sump LPI Suction Line Flange - Installation, Removal and Screen Inspection Procedure, due to a past decision that the bolting was not required to reinstall the sump covers. The station drawings and the maintenance procedure were not changed to reflect the decision to eliminate the need for the bolting. All sump cover bolting for all three units were absent and it was understood by the craft that the bolting for the covers was not required. The sump covers were evaluated to be past operable without the bolting. Current maintenance practice is normally to replace all bolting material and to get additional bolting material if bolting material is missing. In order to be consistent with plant drawings and for increased margin for operability, the decision was made to require specific minimum bolting for the emergency sump covers in the maintenance procedure.

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Reply to Notice of Violation (Reply)  
Violation 97-05-02

2. The corrective steps that have been taken and the results achieved:
- a) The Emergency Sump cover plate bolts were installed prior to restart of the respective Oconee units, thus restoring the cover plates to conditions specified in the design drawings.
  - b) A past operability evaluation was performed which considered the applicable design loads on the cover plates with the cover plates unbolted. This evaluation concluded that the Emergency Sumps were operable during that period of time.
  - c) Maintenance Procedure MP/0/A/1800/105 was revised to provide clear direction to install sump cover plate bolts in accordance with appropriate design drawings.
  - d) Maintenance personnel have received a "Maintenance Quality Feedback" notification on this incident to increase awareness that past decisions may not have been properly documented and could be discovered by having a questioning attitude.

3. The corrective steps that will be taken to avoid further violations:

Maintenance personnel will include this issue in the continuing training program by September 30, 1997.

4. The date when full compliance will be achieved:
- Oconee Nuclear Station is in full compliance.



Attachment 3  
Reply to Notice of Violation (Reply)  
Violation 97-05-03

Restatement of the Violation

10 CFR 50, Appendix B, Criterion XVI, Corrective Actions, states that measures shall be established to assure that conditions adverse to quality such as failures, malfunctions, deficiencies, deviations, defective material, and equipment, and non-conformances are promptly identified and corrected. In the case of significant conditions adverse to quality, the measures shall assure that the cause of the condition is determined and corrective action taken to preclude repetition.

Contrary to the above:

1. Corrective actions taken in 1975 with respect to severe pressure boundary wall erosion problems on High Pressure Injection (HPI) pump mini-flow (recirculation) orifice assemblies were inadequate to preclude repetition of problems. Specifically, in May 1997, the mini-flow orifice assemblies associated with HPI pumps A and B in all three units were discovered to be severely damaged internally by flow induced erosion, requiring replacement or repair, similar to the problems identified in 1975.
2. Corrective actions taken for Violation 50-269,270, 287/96-17-09 (October 1996) with respect to returning systems back to service prior to meeting applicable code case requirements were inadequate to preclude repetition. Specifically, on June 6, 1997, the Authorized Nuclear Inservice inspector found that the radiographs of weld 3HP-262-45 on one of the repaired Unit 3 "A" HPI pump mini-flow orifice assemblies did not reflect 100 percent coverage as required under ASME Section XI, Code Case N-416-1, for this Class 2, ANSI B31.7 weld. Similar to the situation in Violation 96-17-09 where Code Case N-416-1 was also invoked for Low Pressure Service Water welds, the affected systems in both situations had been returned to service prior to meeting the non-destructive examination requirements of the code case.

Attachment 3  
Reply to Notice of Violation (Reply)  
Violation 97-05-03

Reply to the Notice of Violation

1. The reason for the violation:

Duke Power Company acknowledges both examples of this violation.

In response to the first example of the violation:

In 1975, High Pressure Injection (HPI) pump mini-flow orifice assemblies were found to be eroded.

Oconee personnel performed inspections of these orifice assemblies looking for deterioration until newly designed pump vendor orifices were installed. Once the new orifices were installed the program to monitor for erosion by radiography test (RT) was discontinued. Since the orifices were not being monitored by radiography test (RT), it was not known that the new replacement orifices continued to erode. The cause for the violation was a wrong assumption that the newly designed orifice assemblies would not deteriorate.

The cause for this deterioration of the orifice assembly was inadequate design. The orifice assembly was built such that the orifice plates and spacer pieces were allowed room for movement. This looseness allowed the inlet spacer to move and erode due to the interaction of two pieces of metal. As the spacer eroded, the gap between components became greater so the wear could continue.

In response to the second example of the violation:

The cause of the second example of the violation was inadequate communication between Engineering and Non-Destructive Examination (NDE) inspection personnel concerning the NDE inspections to be performed and alternative plans if the NDE inspections could not be performed as intended. At the time the inspections were specified, it could not be determined if the radiography test (RT) would be acceptable. In

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Reply to Notice of Violation (Reply)  
Violation 97-05-03

addition, the decision to perform an ultrasonic test (UT) was not formally documented on the weld ticket and was not communicated effectively between Engineering and NDE inspection personnel. A contributing factor was that the information concerning fabrication of the original HPI orifice sections was limited and did not indicate what inspections were performed originally or which code applications were invoked. The drawings did not reflect the actual dimensions of the orifice plate in relation to the weld to be made. It was not until the orifice shell was cut and the new plate installed, that the ability to perform an acceptable code RT was questioned. By this time, the weld ticket was already in the field.

2. The corrective steps that have been taken and the results achieved:

In response to the first example of the violation:

The orifice assemblies have been replaced with new orifice assemblies.

In response to the second example of the violation:

- a) An ultrasonic examination was completed on the weld to satisfy the requirement for volumetric examination.
- b) A present operability review was completed by Engineering which determined that the Unit 3 High Pressure Injection System was operable.
- c) A relief request was submitted to the NRC on June 17, 1997, to address the NDE requirements of the RT.

3. The corrective steps that will be taken to avoid further violations:

In response to the first example of the violation:

A regular inspection program for Units 1, 2 and 3 will

Attachment 3  
Reply to Notice of Violation (Reply)  
Violation 97-05-03

begin with the Unit 1 End of Cycle 17 refueling outage. Baseline RTs will be performed on A and B HPI pump recirculation orifice assemblies.

In response to the second example of the violation:

- a) The Nuclear Generation Department Welding manual will be revised to give direction regarding the use of detailed process control to ensure detailed direction is given for non routine or complex work evolutions.
- b) The existing NDE procedures will be reviewed and revised accordingly to ensure procedural guidance is given for situations where acceptance criteria are not met for required inspections.
- c) A method for requesting NDE service inspections which are not required for code applications will be developed. These inspections are to be used for investigation purposes or studies conducted by Engineering. The method should include detailed information concerning the scope of the inspection to be performed, the type of inspection to be performed, the acceptance criteria to be used and any additional information necessary to perform the inspections.

These corrective actions will be completed by February 15, 1998.

4. The date when full compliance will be achieved:

Oconee Nuclear Station is in full compliance.

Attachment 4  
Reply to Notice of Violation  
Violation 97-05-06

Restatement of the Violation

10 CFR 50, Appendix B, Criterion XVI, Corrective Actions, states that measures shall be established to assure that conditions adverse to quality such as failures, malfunctions, deficiencies, deviations, defective material, and equipment, and non-conformances are promptly identified and corrected. In the case of significant conditions adverse to quality, the measures shall assure that the cause of the condition is determined and corrective action taken to preclude repetition.

Contrary to the above, Calculation OSC-6548 (dated July 22, 1996), a measure taken in response to a previously identified valve operability concern, was inadequate to assure valve inoperability would be promptly identified and corrected. Specifically, Calculation OSC-6548 was established for determining the operability of specified containment isolation valves, but operability evaluations contained in the calculation and subsequent evaluations were inadequate due to the failure of the calculation to consider instrument error and other uncertainties. This inadequacy was identified on April 23, 1997.

Reply to the Notice of Violation

1. The reason for the violation:

Duke Power Company acknowledges this violation.

It was Oconee's intention to use the EPRI Motor Operated Valve (MOV) Performance Prediction Program (PPP) as the primary operability basis for a large number of Generic Letter (GL) 89-10 MOVs. To this end, Oconee contracted a vendor to perform the PPP calculations. The vendor which was selected to perform the PPP calculation was the same vendor who had helped EPRI develop the PPP.

The EPRI PPP is made up of many modules that model the piping system, valve, and actuator. The system model calculates differential pressure, flow rate, water inertia effects, flashing, etc. The valve model uses the system data and valve internal dimensional data to calculate the valve's maximum expected required thrust under dynamic

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Violation 97-05-06

conditions. The actuator model determines the design basis output thrust/torque. The PPP combines the modules listed above to determine overall MOV operability. In applying the PPP, Oconee did not use the actuator model because site specific data was available. Instead, the output of the valve model termed "required thrust" was used. At this point, a terminology difference between Oconee and the PPP caused the overall problem. At Oconee, the term "required thrust" relates to the bottom of the static set-up thrust window. As such, it already includes uncertainties like rate-of-loading, measurement error, and torque switch repeatability. However, the valve model output (or required thrust) is the minimum required actuator output thrust during a design basis event. Uncertainties such as rate-of-loading, measurement error, and torque switch repeatability are considered elsewhere within the PPP.

Oconee was one of the first plants to use the EPRI PPP to support the operability of a substantial portion of our GL 89-10 MOV population. At the time of Oconee's GL 89-10 closure audit (December 1995), the NRC had not completed their review of the PPP; however, use of the PPP was received favorably. It was generally understood that the PPP produced sufficiently conservative results such that no additional conservatism was necessary. This is reflected in the NRC's GL 89-10 Inspection Report by the following statement:

The licensee typically assumed valve factors of 0.6 for gate valves and 1.1 for globe valves. The licensee supported these valve factors with actual plant data, grouping of test data, or the application of the EPRI MOV Performance Prediction Methodology.

During the closure audit, Oconee compared a calculated required thrust based on a 0.6 valve factor and all uncertainties to a raw PPP output that did not include uncertainties. The greater of the two was used. The NRC found this approach to be acceptable for GL 89-10 closure.

When Oconee reviewed the NRC Safety Evaluation (SE) of the EPRI MOV PPP, it was reviewed section by section due to its complexity. Oconee reviewed the system model, the gate valve model, and the globe valve model sections of the

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Violation 97-05-06

computer model as well as the Anchor/Darling double disk gate valve hand calculation model and the Westinghouse flexible-wedge gate valve hand calculation model. Appropriate adjustments to the Oconee PPP calculations were made. The butterfly valve model and the motor actuator (load sensitive behavior) model sections of the computer model were reviewed, but it was felt they did not apply since Oconee did not run those portions of the PPP. The following condition/limitation is listed in the motor actuator model section only:

EPRI states, and the staff agrees, that uncertainties associated with rate-of-loading measurement together with other uncertainties such as diagnostic error and torque switch repeatability must be considered.

Partial use of the PPP, or use of intermediate results, led to a misapplication of the PPP within the Oconee MOV Program.

2. The corrective steps that have been taken and the results achieved:
  - a) Oconee relied on the EPRI MOV PPP results as justification for MOV operability for 84 MOVs. At the time of the MOV audit that identified this violation, the PPP results for 35 MOVs had incorporated uncertainties such as rate-of-loading, measurement error, and torque switch repeatability in a manner acceptable per the NRC SE. By May 16, 1997, the remaining MOVs had their PPP results adjusted by uncertainties such as rate-of-loading, measurement, and torque switch repeatability in a manner acceptable per the NRC SE.
  - b) Oconee MOV personnel and NGO MOV personnel were informed of the NRC expectations concerning the NRC SE and Supplemental SE of the EPRI MOV PPP.
  
3. The corrective steps that will be taken to avoid further violations:

Attachment 4  
Reply to Notice of Violation  
Violation 97-05-06

No additional corrective actions are required to prevent further violations.

4. The date when full compliance will be achieved:

Oconee Nuclear Station is in full compliance.