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

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SUBJECT: Responds to NRC 970602 ltr re violations noted in insp repts
50-269/97-02, 50-270/97-02 & 50-287/97-02. Corrective actions:
operations returned all equipment to normal lineup.

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DUKE POWER

July 2, 1997

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

Subject: Oconee Nuclear Site
Docket Nos. 50-269, -270, -287
Inspection Report 50-269, -270, -287/97-02
Reply to Notices of Violation

Gentlemen:

By letter dated June 2, 1997, the NRC issued four Notices of Violation as described in Inspection Report No. 50-269/97-02, 50-270/97-02, and 50-287/97-02.

The first violation involved a failure to perform procedure prerequisites prior to entering the procedure. The second violation involved welds which were undersized or not inspected by procedure. The third violation involved receipt and installation of a purchased component which was not in accordance with Duke's purchase requirements. The fourth violation addressed inadequate corrective actions and design controls regarding Reactor Building Cooling Unit fuses.

Duke acknowledges these violations and agrees that in each case, a violation of the requirements of 10CFR50 occurred. For each of these violations, Duke has performed a comprehensive root cause analysis and is implementing appropriate corrective actions to address these issues.

Lee

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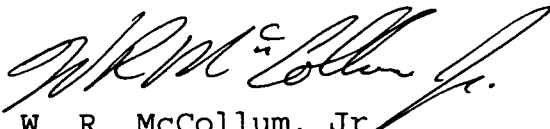
NRC Document Control Desk

July 2, 1997

Page 2

Pursuant to the provisions of 10 CFR 2.201, Attachments 1, 2, 3, and 4 provide written responses to the violations identified in the subject Inspection Report.

Very truly yours,



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

Attachments

NRC Document Control Desk

July 2, 1997

Page 3

cc (w/att):

Mr. L. A. Reyes, Regional Administrator
U. S. Nuclear Regulatory Commission, Region II

Mr. D. E. LaBarge, Project Manager
Office of Nuclear Reactor Regulation

Mr. M. A. Scott
Senior Resident Inspector
Oconee Nuclear Site

Attachment 1
Reply to Notice of Violation
Violation 97-02-03, Severity Level IV

Restatement of Violation 97-02-03:

10CFR50, Appendix B, Criterion V, Instructions, Procedures, and Drawings, as implemented by the Duke Power Company Topical Report Quality Assurance Program (Duke 1-A), requires that activities affecting quality shall be prescribed by documented procedures and activities shall be accomplished in accordance with these procedures.

Nuclear Policy Manual, NSD 703 Administrative Instructions for Station Procedures, Conduct of Mechanical Maintenance Procedures, Section C.16 states: "Each procedure shall list those items which are to be completed and those conditions which are to exist prior to performing the specified maintenance. Appropriate provisions shall be made to document compliance with the prerequisites listed.

Contrary to the above, on April 9, 1997, during the performance of Maintenance Procedure MP/0/B/1800/121, Elevated Water Storage Tank Civil Inspection, the prerequisites, of which included maintenance of lake levels, were not completed before entering and completing steps in the procedure. This could have had an impact on low pressure service water/condenser circulating water siphon flow (on a loss of power) had lake levels been low.

This is a Severity Level IV Violation (Supplement I)

RESPONSE:

1. The reason for the violation:

Duke Power acknowledges the violation.

The cause of this event was a combination of inappropriate

Attachment 1
Reply to Notice of Violation
Violation 97-02-03, Severity Level IV

actions by the engineer who originated the Maintenance procedure and the Operations personnel who performed the activities in support of the Maintenance procedure.

When an emergent maintenance activity is added to the operations worklist, the worklist will identify the procedure(s) under which the maintenance activity is to be performed. Operations procedures are frequently used to align equipment to meet the plant configuration requirements requested by a Maintenance procedure identified in the worklist. The worklist identified the Maintenance procedure and the Operations procedure(s) appropriately. In this event, Operations configured the plant equipment per the procedures identified on the worklist. The items from the Maintenance procedure that needed to be swapped or isolated were performed using Operations procedures. Once this was completed, the Unit Supervisor signed off the worklist and the Maintenance procedure without recognizing that the engineer had not signed off the prerequisite conditions in the Maintenance procedure.

The inappropriate action by the engineer was the failure to ensure that the Maintenance procedure prerequisites were appropriately completed prior to requesting Operations support to perform actions inside this procedure. The inappropriate action by the Unit Supervisor was the failure to review the Maintenance procedure to ensure that the prerequisites were completed prior to performing steps in the body of the procedure. These inappropriate actions appear to be attributable to a failure to perform the appropriate self checking (STAR and QV&V) during the review and performance of the Maintenance procedure.

Attachment 1
Reply to Notice of Violation
Violation 97-02-03, Severity Level IV

2. Corrective steps taken and the results achieved:

- 1) On April 9, 1997 (Day Shift) it was recognized that the maintenance procedure had been incorrectly performed and the procedure was immediately stopped. Operations returned all equipment to its normal lineup per the appropriate Operations procedures.
- 2) A procedure change was made to the maintenance procedure to appropriately relocate the equipment configuration requirements into the prerequisite conditions section of the procedure.
- 3) The responsible Operations personnel involved in the event have been counseled on procedure use and adherence.
- 4) Operations identified and addressed five areas that needed management emphasis. They are: 1. Monitoring the Plant. 2. STAR and QV&V. 3. Pre-job briefings. 4. Procedure use and quality. 5. Log keeping. The importance of these five items are routinely addressed in the daily Operations shift briefings.

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

Training is currently being conducted with all the Operations shifts, as part of requalification training, on management expectations regarding procedure use and adherence. This training will be completed by August 28, 1997.

4. The date when full compliance will be achieved:

Duke Power is in full compliance.

Attachment 2
Reply to Notice of Violation
Violation 97-02-05, Severity Level IV

Restatement of Violation 97-02-05:

10CFR50, Appendix B, Criterion V and the licensee's accepted Quality Assurance Program, Updated Final Safety Analysis Report Chapter 17 Quality Assurance Topical Report (Duke 1-A), Instructions, Procedures, and Drawings, states in part, that activities affecting quality shall be prescribed by documented procedures or drawings.

Contrary to the above, on March 25, 1997, two examples were identified that violated the above requirements:

1. Several fillet welds at the connections between a rail beam web and the stiffener plates on both sides of the web for installed Horizontal Storage Module (HSM) E21 of the Phase III of the Independent Spent Fuel Storage Installation were measured to be approximately 1/8" less than the 3/16" prescribed on Drawing 9-354-6105, Ocone Phase III NUHOMS ISFSI Horizontal Storage Module DSC Support Structure, Rev. 0.
2. Several existing fillet welds at the connections between the columns and the base plates of the Unit 3 Upper Surge Tank Supports were not inspected or verified to have a minimum of 5/16" fillet weld sizes as prescribed by the Step 4.12.4 and the attached drawing sheet 11 of 18 of Procedure TN/3/A/8979/MM/01C, Minor Modification OE-8979.

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

RESPONSE:

- 1) The reason for the violation, or if contested, the basis for disputing the violation:

Attachment 2
Reply to Notice of Violation
Violation 97-02-05, Severity Level IV

Duke Power Company acknowledges the violation as it pertains to both examples.

A detailed root cause analysis was performed for both of the examples. A summary of the results of these investigations is provided for each example below:

Example 1 (ISFSI HSM welds):

During the construction of ISFSI Phase III, Duke received HSMs from Vectra Services. Vectra Services provides the oversight of vendors which manufacture the components of the HSMs. In the case for the most recent HSMs, the manufacturers were Hi-Tech and Bayshore.

A detailed root cause analysis has been completed. The analysis revealed that the primary cause of the undersized HSM welds being received at Oconee was the decision not to perform shop fabrication inspections at Hi-Tech Manufacturing. These shop fabrication inspections were optional per the applicable Duke specifications and purchase order. The new HSMs for ISFSI Phase III were manufactured by Hi-Tech and Bayshore. Surveillance inspections were performed at Bayshore since they were a first-time supplier and were not on the approved suppliers list. However, Duke chose not to perform inspections at Hi-Tech since they are an approved supplier, with whom Duke has had previous acceptable procurement experience.

Example 2 (Upper Surge Tank Welds):

The root cause of this event is a communication error between the Electrical Systems Services (ESS) technician who performed the modification implementation procedure and the modification Accountable Engineer. This communication error resulted during Step 4.12.4 of minor modification implementation procedure TN/3/A/8979/MM/01C, Minor Modification OE-8979, which was improperly marked

Attachment 2
Reply to Notice of Violation
Violation 97-02-05, Severity Level IV

N/A. Under Step 4.12.4 of the procedure, it was necessary to examine existing adjacent welds between the Upper Surge Tank (UST) legs and baseplate to verify their size per specifications. As a result, the welds were not properly verified to meet the required specifications. Contributing causes to this event are failed barriers due to less than adequate supervisor review and technical review.

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

Example 1:

- As a result of a recent NRC Demand for Information and associated Vectra production halt, Vectra has generated a list of tasks required to resume production of HSMS.
- The Vectra Horizontal Storage Module Owners Group (NUHOG) has selected specific tasks from Vectra's list of tasks which must be satisfactorily completed prior to NUHOG approval to restart HSM production by Vectra. These items are documented in Duke Power Company Supplier Verification Section Surveillance Report No. VS 97081 dated April 14, 1997.
- The subject welds were inspected by Vectra and the results were evaluated. Vectra concluded that no operability issues existed with the welds based on a preliminary engineering analysis.

Attachment 2
Reply to Notice of Violation
Violation 97-02-05, Severity Level IV

Example 2:

- Expectations were stated in "Maintenance Quality Feedback" and "Maintenance Team Notes" on the importance of clear and effective communications.
- The subject welds were inspected and the results were provided to engineering for evaluation. Engineering concluded that no operability issues existed with the welds based on engineering analyses.
- The responsible maintenance personnel were counseled regarding the inappropriate documentation reviews.

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

Example 1:

- Duke will confirm Vectra's satisfactory completion of the NUHOG action items from the VS 97081 Surveillance Report prior to Vectra production restart.
- Completion of root cause analysis by Vectra for this event.
- Duke will initiate shop inspection of the fabrication vendor when Vectra resumes HSM production for the initial fabricated items to be shipped. The frequency of inspection of the balance of the HSM fabrication is to be determined from the results/trends of the earlier inspections.
- Duke will revise spent fuel storage specifications to require random shop fabrication inspection of initial fabrication shipments (and subsequent shipments as warranted by the results of these inspections) of vendor-supplied items.

Attachment 2
Reply to Notice of Violation
Violation 97-02-05, Severity Level IV

- Duke will notify in writing Vendor Surveillance/Procurement Engineering to suspend/remove Hi-Tech Manufacturing from the Approved Suppliers List until their program can be verified to be in conformance with Duke requirements.
- Duke will confirm that Vectra incorporates appropriate tolerances and inspection criteria into their fabrication and installation documents to preclude recurrence of discrepancies of this nature and magnitude.
- Duke will verify that Vectra will evaluate the need to perform weld augmentation repairs on the subject HSM welds.

Example 2:

- Non-assigned supervisors from the central maintenance division (ESS) will be evaluated from a training enhancement perspective. Each ESS non-assigned supervisors' training is being updated to be qualified to the Oconee Station's INPO accredited program.
- Management will reinforce their expectations for supervisor and technical review of completed packages via the quarterly continuing training sessions by citing this event as an example.
- Engineering will evaluate the need to perform weld augmentation repairs on the subject UST welds.

4) The date when full compliance will be achieved:

Oconee Nuclear Station is in full compliance.

Attachment 3
Reply to Notice of Violation
Violation 97-02-06, Severity Level IV

Restatement of Violation 97-02-06:

10CFR50, Appendix B, Criterion VIII, Control of Materials, Equipment, and Services, and the licensee's Quality Assurance Program (Duke 1-A) requires that measures shall be established to assure that purchased material, equipment, and services, whether purchased directly or through contractors and subcontractors, conform to the procurement documents.

Contrary to the above, adequate measures were not established to assure that purchased safety-related equipment and services conformed to the procurement documents, in that Purchase Order (PO) 8575, dated March 26, 1996, purchased an eight inch globe valve from Anchor Darling Company which did not conform to the requirement that the valve meet the Duke Power Valve Specification CNS 1205.00-0001. The specification required that the valve be designed for clockwise rotation to close; however, the procured valve was designed as counter clockwise to close. The valve was installed in the Unit 3 Low Pressure Injection System and contributed to a shutdown loss of reactor coolant inventory event on February 1, 1997.

This is a Severity Level IV Violation (Supplement I)

RESPONSE:

- 1) The reason for the violation, or if contested, the basis for disputing the violation:

Duke Power Company acknowledges this violation. Specifically, Duke concurs that the eight inch ball valve 3LP-40 did not conform to the requirements of Duke Power Company Specification CNS 1205.28-00-0001.

Attachment 3
Reply to Notice of Violation
Violation 97-02-06, Severity Level IV

The root cause analysis was performed by an Event Investigation Team (EIT) and the results are contained in their report, "Decrease in Unit 3 Reactor Coolant System Inventory", dated March 19, 1997. In addition, the event and resulting corrective actions are contained in PIP 3-097-0439.

The root cause was identified as:

- * The vendor's less than adequate error detection program,

with contributing causes of:

- * Less than adequate communication related to the discovery of the reverse acting valve during the valve's functional test by Maintenance.
- * ONS methodology for manual valve position verification is; 1) not consistent with industry norms and, 2) insufficient to assure proper manual valve positioning.
- * Ineffective review or utilization of operating experience.

The report by the EIT concluded that due to the low incidence of this type of event, and the level of resources involved in setting up a facility capable of detecting this type of problem in all types and sizes of valves, that the most efficient area for Duke Power to focus on to detect this problem would be during factory testing or installation, and post maintenance testing.

Attachment 3
Reply to Notice of Violation
Violation 97-02-06, Severity Level IV

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

1. The Supplier Verification program has been strengthened in the supplier evaluation process to increase the amount and quality of information available to the auditor for his audit/ surveillance preparation. The Nuclear Procurement Engineering Program (NPP) directive, NPP 410, "Supplier Performance Review", was revised in March 1997 to add a section on annual re-evaluation of Appendix B suppliers and implemented a new supplier evaluation process. Other steps include:
 - a) The NPP 311, "Receipt Inspection and Testing of QA Condition Commodities" electronic database was established in November 1995, and has been through several recent enhancements to provide more thorough information on problems identified during the receipt inspection process. This information is collected from all three nuclear sites and is available to the auditor to use during his NPP 410, "Supplier Performance Review" process.
 - b) Management expectations for the use of the Operating Experience Program have been re-emphasized.
 - c) A New Approved Supplier List (ASL) has been implemented which provides Procurement Engineering access to more information concerning supplier performance.
2. A follow-up assessment of the subject supplier's corrective actions for this event has been satisfactorily completed.

Attachment 3
Reply to Notice of Violation
Violation 97-02-06, Severity Level IV

3. A review has been performed of methods for verifying correct valve positions, and the appropriate procedures have been revised to use alternate and/or redundant methods as available.
 4. Enhancements have been implemented in the pre-job briefing process to address applicable components that could affect Reactor Coolant System (RCS) inventory.
 5. Communications have been completed with maintenance personnel of management's expectations for identifying reverse acting valves or any unconventional conditions to their supervisor.
- 3) The corrective steps that will be taken to avoid further violations:
1. The Duke Power Company audit and surveillance procedures will be revised to include guidelines to the auditors to:
 - a) Communicate supplier identified problems to the site Procurement Engineering group.
 - b) As appropriate, place suppliers on restriction, document on the ASL, and perform notifications to Procurement Engineering, Purchasing, and supplier management.
 - c) Perform a follow-up review with the supplier to ensure adequate corrective actions are implemented at the supplier level.

Attachment 3
Reply to Notice of Violation
Violation 97-02-06, Severity Level IV

- d) Clarify expectations to ensure the suppliers have the current Duke Power specification to perform their work as appropriate. This is currently contained indirectly in the checklists.
2. Applicable maintenance procedures will be reviewed for inclusion of statements or cautions to ensure that maintenance personnel report discoveries of reverse acting valves and/or conditions that appear to be unconventional.
- 4) The date when full compliance will be achieved:
Oconee Nuclear Station is in full compliance.

Attachment 4
Reply to Notice of Violation
Violation 97-02-08, Severity Level IV

Restatement of Violation 97-02-08:

10CFR50 Appendix B, Criterion XVI, Corrective Action, and the licensee's Quality Assurance Program (Duke 1-A) requires significant conditions adverse to quality be identified, cause of condition determined and corrective actions taken to preclude repetition.

10CFR50 Appendix B, Criterion III, Design Control, and the licensee's Quality Assurance Program (Duke 1-A) requires that measures be established for the selection and review for suitability of application of material, parts, equipment and processes that are essential to the safety-related functions of structures, systems, and components.

Contrary to the above, during the period of March 24 - April 4, 1997, it was identified that the corrective action for a significant condition adverse to quality involving Reactor Building Cooling Unit (RBCU) fuse failures was inadequate in that adequate measures were not established for the selection and review for suitability of application of parts (fuses) that are essential to the safety-related function of the RBCU Systems. Specifically, Problem Investigation Process report (PIP) 0-095-0267, dated February 27, 1995, identified a trend of Unit 3 RBCU failures due to blown fuses, but did not identify the issue as a significant condition adverse to quality in that the potential RBCU inoperability due to common mode failure was not addressed. The cause determination incorrectly determined the cause was the fuse type (instantaneous vs. time delay) and did not address fuse rating; therefore, the review for fuse application suitability did not adequately evaluate the circuit design conditions. Consequently, the corrective action was inadequate in that the change in fuse type did not resolve the problem, as circuit evaluations following repeat Unit 3 RBCU fuse failures occurring in October 1996 demonstrated

Attachment 4
Reply to Notice of Violation
Violation 97-02-08, Severity Level IV

that the fuse rating was too low for the circuit conditions. The design is identical for the control circuits of the RBCUs for Units 1, 2, and 3.

This is a Severity Level IV Violation (Supplement I)

RESPONSE:

1. The reason for the violation, or if contested, the basis for disputing the violation:

Duke Power Company acknowledges the violation.

A detailed root cause analysis was performed for this event. The root cause investigation revealed that engineering failed to properly select the fuse type and rating required to make the RBCU fan power fuses adequate for all required service applications. This failure resulted from a series of personnel errors due to inadequate self-checking practices, with a programmatic deficiency as a contributing cause. These items can be grouped into two areas:

- a. A failure to consider all potential fuse failure mechanisms and scenarios prior to issuing the initial corrective actions on the issue;

The failure of the individual to consider all fuse failure mechanisms and scenarios was a result of two root causes. These root causes are; a) failure of the responsible person to objectively seek the facts and evidence (mindset), and b) failure of the responsible individual to utilize a questioning attitude (QV&V). Use of either of these two barriers would have precluded this event since the conclusions drawn

Attachment 4
Reply to Notice of Violation
Violation 97-02-08, Severity Level IV

regarding the cause of the fuse failure would not have been biased by the opinion of peer engineers.

- b. A failure to properly screen the PIP as a More Significant Event (MSE), which would have required an operability evaluation and a more detailed cause analysis.

The root cause of the failure to properly screen the PIP as an MSE was due to inadequate self-verification process by the responsible individual. Nuclear Systems Directive (NSD) 208, Problem Investigation Process, allowed for some judgement in deciding whether a series of equipment errors constituted an adverse trend, however, there was sufficient screening criteria to have permitted proper screening of the PIP as an MSE. However, no peer consultation and verification of the screening decision was performed by the responsible individual, nor did the NSD require it at that time.

2. The corrective steps that have been taken and the results achieved:
 - a. A detailed root cause analysis was completed for this event.
 - b. Modifications were implemented to replace the inappropriately selected fuses on all three units with fuses that met the available inrush currents.
 - c. Since the time of the occurrence of the subject inappropriate PIP screening events, the corporate and site corrective action (PIP) programs have undergone several improvements that will help preclude

Attachment 4
Reply to Notice of Violation
Violation 97-02-08, Severity Level IV

recurrence of insular screening activities. These include:

- 1) NSD 208 has been revised to further define and clarify PIP screening criteria and individual responsibilities.
 - 2) A dedicated site screening team, which includes representation from Engineering, Operations, Maintenance, and Safety Assurance areas, has been formed to conduct a daily screening of all new site PIPs. This team provides a broad range of perspectives and experience to the screening process.
 - d. Oconee Electrical Systems/Equipment (ESE) Engineering management has communicated expectations that lead engineers review assigned problems with appropriate groups within and outside the company to ensure the significance of the problem is fully evaluated and appropriate corrective actions are taken.
 - e. Oconee ESE management has clarified responsibilities in the engineering section for fuse selection.
3. The corrective steps that will be taken to avoid further violations:
- No additional corrective steps are planned.
4. The date when full compliance will be achieved:
- Oconee Nuclear Station is in full compliance.