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DUKE POWER

October 29, 1996

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

Subject: Catawba Nuclear Station
Dockets 50-413 and 50-414
Reply to Notice of Violation (NOV)
Inspection Report 50-413, 414/96-12

Attached is Duke Power Company's response to the three (3) Level IV violations cited in Inspection Report 50-413, 414/96-12, dated September 30, 1996. These violations were identified during inspections conducted August 4 through August 31, 1996.

If there are any questions concerning this response, please contact K. E. Nicholson at (803) 831-3237.

Sincerely,

A handwritten signature in dark ink, appearing to read 'W. R. McCollum, Jr.'.
W. R. McCollum, Jr.

\\KEN:RESP96.12

xc: S. D. Ebnetter, Regional Administrator
P. S. Tam, ONRR
R. J. Freudenberger, SRI

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**CATAWBA NUCLEAR STATION
REPLY TO NOTICE OF VIOLATION
413, 414/96-12-01**

Notice of Violation

10 CFR 50, Appendix B, Criterion V, Instruction Procedures and Drawings, as implemented by Duke Power Company Topical Report, requires that activities affecting the quality be accomplished in accordance with appropriate procedures.

To assure weld quality, the licensee has established Process Specification L-100, Welding Program, and L-900, Weld Heat Treatment.

Specification L-100, paragraph 4.3.3 states, in part, that a copy of the Field Weld Data Sheet (FWDS) shall be available in the work area of that particular weld. Also, Nuclear System Directive 704, Rev. 4, paragraph 704.6 states, in part, that a copy of the procedure shall be in the possession of the performer(s) at the job site.

Specification L-900 states, in part, that the entire joint to be welded shall be preheated to the temperature specified in on the FWDS...and shall be maintained throughout welding of the applicable joint. Also, paragraph 5.2.2 of the subject document requires that resistance heating elements (blankets), used for preheat and interpass temperature control operations, will be placed as closely as practical to the weld preparation on each side of the weld joint.

Contrary to the above, on August 5-9, 1996, activities affecting quality were not being accomplished in accordance with procedures in that:

1. Weld process control packages were not being kept at the location where welds were being fabricated.
2. Only one resistance heating blanket was applied on one side of weld CFO 40-10 instead of on each side of the weld joint. Also, preheat was not being maintained on partially completed welds where welding had been interrupted.

This is a Severity Level IV violation (Supplement I).
(Applicable to Unit 1 only.)

CATAWBA NUCLEAR STATION
REPLY TO NOTICE OF VIOLATION
413, 414/96-12-01

RESPONSE:

1. Reason for Violation

Duke Power acknowledges this violation. This violation was caused by insufficient attention to detail by the workers, unclear procedures and insufficient supervisory oversight.

- 1) The first example cited was related to weld process control packages not being kept at the work location. The welders were familiar with the applicable Field Weld Data Sheets and were recording the appropriate information for the weld process control. However, due to concerns about original records being contaminated or damaged in the work environment, the workers were only taking copies of certain sections of the process control package which they considered necessary to the work location. This did not meet the intent of the NSD 704, "Procedure Use and Adherence", or the Weld Process Specification (WPS) L-100. Even though this practice did not meet the intent of the directive, the welders had access to and were aware of all data pertinent to the performance of quality welds.
- 2) The procedure for pre-heat and post weld heat treating, WPS L-900, allowed an alternative for providing pre-heat with either flame or resistance heaters. The specific guidance for use of resistance heaters was, paragraph 5.2.2 which states, "the heating elements will be placed as closely as practical to the weld preparation on each side of the joint". In cases where there were physical interferences with use of resistance heaters on one side of the joint, flame heat was being used as an alternative. The workers considered this to be consistent with the alternatives allowed in the procedure for using either source of heat.

In addition, the requirement to maintain preheat during welding was being interpreted to mean that when welding was stopped for some reason, such as shift change, preheat could be stopped as long as it was re-established before welding was resumed. The requirements of WPS L-900 did not specifically address this case, leaving opportunity for varying interpretations about the intent.

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2. Corrective Actions Taken and Results Achieved

- 1) The requirements of NSD-704 and WPS L-100 were reviewed and the requirements to have Field Weld Data Sheets and applicable procedures available at the work location was re-enforced to the workers.
- 2) It was determined that additional guidance was needed to assure proper preheat practice was used consistently, in addition to revising the wording of existing requirements to better address field conditions.
 - A procedure to control preheat, MP/O/A/7650/147, "Preheat and Interpass Temperature Control" was originated and approved on 08/13/96. This procedure requires that whenever resistance heaters cannot be used, specific process control must be developed for the weld joint. This process provided specific directions and controls for the use of flame heating. Process Specification L-900 was also revised to clarify existing requirements for the use of flame heating.
 - The welders, fitters and supervisors were trained on the new and revised procedures to assure awareness and understanding of the procedure and process control requirements.
- 3) Additional Quality Control (QC) in-process inspections were initiated to monitor the effectiveness of the corrective actions and to confirm that other requirements were being met. These inspections found that welders were in compliance with all preheat requirements.

3. Corrective Action to be Taken to Avoid Future Violations

As part of a project to improve the Corporate Welding Program, the Site welding manuals, procedures and Corporate Welding program documents are being reviewed and restructured. The intent is to clarify requirements and simplify the documents that welders are required to follow thus improving the welders ability to understand and comply with all requirements. This corrective action has been assigned to SGM (Steam Generator Maintenance) to be completed by 01/31/97, with completion of this commitment documented in corrective action #3 of PIP 0-C96-2066.

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These changes will be accompanied by appropriate training to further improve the welders understanding of the welding program and associated procedures. This corrective action has been assigned to SGM to be completed by 07/01/97, with completion of this commitment documented in corrective action #4 of PIP 0-C96-2066.

Implementation of these corrective actions will strengthen our existing programs. All actions necessary to support quality welding were implemented immediately.

4. Date of Full Compliance

Duke Power Company is now in full compliance.

**CATAWBA NUCLEAR STATION
REPLY TO NOTICE OF VIOLATION
413, 414/96-12-02**

Notice of Violation

10 CFR 50, Appendix B, Criterion II, Quality Assurance Program, as implemented by Duke Power Company Topical Report (applicable to Unit 1 only), requires that a program be provided for indoctrination and training of personnel performing activities affecting quality to assure that suitable proficiency is achieved and maintained.

Contrary to the above, on August 5-9, 1996, formal training or indoctrination on welding program requirements and mockup training to achieve suitable proficiency in the fabrication of production welds had not been provided to welder fabricating safety-related welds.

This is a Severity Level IV violation (Supplement I).
(Applicable to Unit 1 only.)

CATAWBA NUCLEAR STATION
REPLY TO NOTICE OF VIOLATION
413, 414/96-12-02

RESPONSE:

1. Reason for Violation

Duke Power acknowledges this violation. The cause of the violation is that Steam Generator Replacement Project (SGRP) management failed to recognize the need to provide sufficient welding technical support and training for secondary side system welds. SGRP management did not provide formal training on welding program requirements to the welders assigned to the project. In addition, due to the belief that secondary side welding required no special preparation for Duke welders, no mock-up training on these welds was provided.

Contrary to that belief, problems with these welds occurred. These problems were primarily; difficulty with CrMo and dissimilar metal (INCONEL) root pass welds on the main feedwater, blowdown and layup systems.

2. Corrective Actions Taken and Results Achieved

See reply to violation 96-12-01 for discussion of formal training on the Duke Welding Program provided to welders assigned to the SGRP.

An experienced welding engineer was brought 08/12/96 in as issue manager for SGRP welding problems.

Beginning 08/12/96, additional welding expertise (Duke and Consultant) was focused on developing solutions to reject issues. INCONEL and CrMo problems were reviewed and additional guidance on joint preparation and welding technique was developed. The technical content of pre-job briefings for welders was enhanced to assure effective communications between the welders and technical support. Welding problems were reviewed with four outside welding contractors to gain benefit of their experience and confirm that procedures and processes were appropriate.

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The pre-fab assessment that weldability of the TIG filler material with the base metal, was a significant contributor to the repair rate occurring on the Main Feedwater System low alloy (CrMo) pipe was confirmed. An alternative TIG filler material for CrMo pipe was located and obtained for some of the last repairs. It was too late to be able to evaluate the benefits.

The pipe layout for 3-inch INCONEL nozzles was revised to add a spool piece allowing access for surface preparation of the ID of the root pass. The welding plan for remaining INCONEL nozzle welds was revised to include use of "slope control" welding machines and to provide mock-up practice. Additional Duke and specialty welding contractors with INCONEL experience were brought in for the remaining INCONEL nozzle welds.

All welds are acceptable and meet code requirements for the Catawba SGRP outage. All auxiliary feedwater nozzle welds and twelve in-line welds were completed with no repairs following addition of specialized equipment and mock-up practice. Socket welds were completed with no rejects.

In summary, more problems were encountered than was anticipated with secondary welding. Duke recognized the significance and responded to correct weld process and training issues. Reject issues were attacked using all available expertise and resources.

3. Corrective Action to be Taken to Avoid Future Violations

A welding technical support group will be formed at each nuclear site whose functions will include: a) weldability and constructability reviews, b) mock-up training requirements, c) inspection requirements, and d) review of rejected welds and repair strategy. This corrective action will be assigned to SGM to be completed by 01/31/97, with completion of this commitment documented in corrective action #19 of PIP 0-C96-2392.

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Recognizing that welding is a highly skilled craft, Duke will institute a limited access testing requirement for applicable process piping welders, will require annual Jaegar eye exams for all process piping welders, and will ensure welder proficiency levels are maintained. This corrective action will be assigned to SGM to be completed by 07/01/97, with completion of this commitment documented in corrective action #20 of PIP 0-C96-2392.

Implementation of these corrective actions will strengthen our existing program. All actions necessary to support quality welding were implemented immediately.

4. Date of Full Compliance

Duke Power Company is now in full compliance.

**CATAWBA NUCLEAR STATION
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413, 414/96-12-03**

Notice of Violation

10 CFR 50, Appendix R, Criterion III, Design Control requires that design control measures shall provide for verifying or checking adequacy of design.

Contrary to the above, on July 31, 1996, design verification measures were not adequate to ensure the as-built configuration of screens utilized in containment crane wall pipe sleeves and floor drains implemented design requirements for minimizing sump screen loading due to paint chips or blanket insulation material. Specifically, the bottom row of crane wall penetrations consisting of three penetrations per unit had not been covered with any screens since initial operation and containment floor drains inside the crane wall had not been covered with the screen size specified in calculation CNC-1223.11-00-0005, Justification for Using Flexible Blanket Insulation Inside Containment, for approximately the last two years.

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

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413, 414/96-12-03

RESPONSE:

1. Reason for Violation

Duke Power Company acknowledges this violation. The root cause for this violation is attributed to lateral integration which caused an incomplete use of reference material for research as well as causing technically inaccurate information to be cascaded from the Updated Final Safety Analysis Report (UFSAR) to the modification package which changed the floor drain screens. The issue with the bottom row of crane wall penetrations not covered with screen as stated in UFSAR Section 6.3.4.1 is attributed to lateral integration when a general update to the UFSAR was performed by a General Office employee using erroneous design information instead of performing a plant walk down.

2. Corrective Actions Taken and Results Achieved

Prior to Unit One startup, screens, sized to match the sump screen size with 1/8 inch holes, were installed in the eight floor drains inside the crane wall per minor modification CNCE-8186. Previously the screens were sized to match 1/4 inch holes.

Upon discovery that the bottom row of crane wall penetrations were not covered by screen as stated in UFSAR Section 6.3.4.1, minor modifications CNCE-8139 (Unit 1) and CNCE-8116 (Unit 2) were executed to fill these pipe sleeves to preclude any flow through them. Filling these pipe sleeves was determined to be acceptable and more expedient than installing screening material.

For clarification it should be pointed out that in UFSAR Section 6.3.4.1 the reference to:

... the bottom row of pipe sleeves closest to the floor being covered with screen of 1/4 inch mesh - the same size as that of the sump screen itself.

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is in fact incorrect. The sump screen size has been verified to have 1/8-inch holes as opposed to 1/4-inch mesh. The UFSAR was updated in 1993 to incorporate this verbiage based on the misunderstood design requirement and a lack of proper system walkdown to verify compliance with this requirement. Calculation CNC-1223.11-00-0005 (Justification for Using Flexible Blanket Insulation Inside Containment) initially in 09/03/87 had a requirement which stated:

The installation of screening over the eight floor level crane wall penetrations is required.

This was corrected in 12/03/87 to read:

The eight floor drains inside the crane wall are covered with screen of the same or finer mesh as the sump screen.

The UFSAR Section 6.3.4.1 has been marked up per the minor modification mentioned above to properly reflect the current condition of the plant.

The Department restructuring which has taken place since 1993 eliminated the lateral integration/organizational concern that contributed to this problem.

The operability evaluation documented in PIP 2-C96-1958 has determined that the current size of the floor drain screens are acceptable for sump screen blockage issues.

3. Corrective Action to be Taken to Avoid Future Violations

During the next Unit Two refueling outage the screens, sized to match the sump screen size, will be installed in the eight floor drains inside the crane wall. This corrective action will be assigned to CER to be completed during 2EOC8 refueling outage in 1997, with completion of this commitment documented in corrective action #1 of PIP 2-C96-1958.

The UFSAR Section 6.3.4.1 will be updated per previously mentioned Minor Modification CNCE-8139 and CNCE-8116. This corrective action will be assigned to RGC to be completed during the next UFSAR update cycle, currently scheduled for submittal in 08/97, with completion of this commitment documented in corrective action #5 of PIP 2-C96-1958.

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Detailed discussion of the sump screen size will be added to the Residual Heat Removal System Design Basis Documentation. This will provide the information in a more human factored location thus helping preclude future referencing problems with this issue. This corrective action will be assigned to MSE to be completed by 01/31/97, with completion of this commitment documented in corrective action #6 of PIP 2-C96-1958.

4. Date of Full Compliance

Duke Power Company is now in full compliance.