



UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
101 MARIETTA STREET, N.W.
ATLANTA, GEORGIA 30323

Report Nos.: 50-413/89-20 and 50-414/89-20

Licensee: Duke Power Company
422 South Church Street
Charlotte, NC 28242

Docket Nos.: 50-413 and 50-414

License Nos.: NPF-35 and NPF-52

Facility Name: Catawba 1 and 2

Inspection Conducted: July 17-21, 1989

Inspector: N. Merriweather 8-11-89
N. Merriweather Date Signed

Approved by: T. E. Conlon 8-11-89
T. E. Conlon, Chief Date Signed
Plant Systems Section
Engineering Branch
Division of Reactor Safety

SUMMARY

Scope:

This routine, announced inspection was conducted to review, what actions, if any, the licensee had taken in response to previous inspection findings. The items inspected involved environmental qualification (EQ) of electrical equipment, Generic Letter 83-28, and NRC Bulletins 88-01 and 88-03.

Results:

In the areas inspected, violations or deviations were not identified.

The actions taken by the licensee in response to previous inspection findings were in most cases timely and complete. Two exceptions to the above were a noted deficiency in the EQ file for the Hydrogen Recombiner tape splice analysis and failure to install breather drains on the Hydrogen Skimmer Fan Motors in a timely fashion to meet an NRC commitment. The latter problem highlights a possible weakness in the licensee's handling and closeout of NRC commitments.

A chronology of the event clearly indicates that the Hydrogen Skimmer Fan Motors breather drains could have been installed much earlier had the licensee done a better job tracking the status of the item. Extenuating circumstances did exist which caused a delay in installation while a design fix

was investigated with the vendor. The fix was approved by the vendor in November 1988. Yet, no further action was taken until the licensee was informed of the impending NRC followup inspection.

Prior to the inspection, Variation Notices were issued for Units 1 and 2 authorizing the design change to allow stainless steel threaded pipe extensions to be used to install the breather drains. The pipe extensions were ordered on July 11, 1989 and the breather drains were finally installed on July 23, 1989.

Another area that appeared to be weak, although it was not previously identified as an open item, was the lack of EQ training provided to certain Construction Maintenance Department staff. This appears to be the result of a failure by the licensee to clearly identify which personnel must be cognizant of EQ issues and special considerations.

REPORT DETAILS

1. Persons Contacted

Licensee Employees

- *R. L. Dobson, Engineering Manager, General Office
- **R. M. Glover, Catawba Compliance Engineer, Catawba Site
- *T. P. Harrall, Design Engineering, Catawba Site Office Manager
- *R. J. Smith, Design Engineer, General Office
- *R. G. Sokal, Design Engineer, General Office

Other licensee employees contacted during this inspection included craftsmen, engineers, and administrative personnel.

NRC Resident Inspectors

- W. Orders, Senior Resident
- M. Lesser, Resident

*Attended exit interview

**Participated in exit interview by Telephone Conference Call

Acronyms and initialisms used throughout this report are listed in paragraph 6.

2. Action on Previous Inspection Findings (92701 and 92702)

- a. (Closed) IFI 50-413/86-26-01, Review Work Requests/Purchase Documents to Assess Equipment Classification Program For All Safety-Related Components

The NRC inspector had a concern regarding the adequacy of Duke's implementation of a program to properly classify work activities considering the lack of detail provided in the QSMSSC. At the time of the first inspection the licensee's procedure (Station Directive 3.3.1) required QA Checklists be completed where conflicts existed between the QA conditions shown in the manual list (QSMSSC) and design documents. During that inspection, the planners did not appear to be very knowledgeable of how to use the QA checklist and some confusion existed regarding the classification of work requests relating to maintenance of the CPDMs. Also it was observed that the QA Checklists were not always forwarded to manual holders by the Licensing Section to be incorporated into the manual. Thus, information developed from previous evaluations was not being distributed.

At that time, it was determined that a draft revision to the subject procedure would no longer require that the checklists be forwarded to the manual holders. Since that inspection SD 3.3.1 was revised (dated

July 3, 1986) to require that " the Compliance Engineer will ensure the equipment identified in the checklists is incorporated in the Manual at its next revision." The QSMSSC was last revised July 1, 1989, to incorporate the most recent QA Checklist data.

Recently, there have been several discussions within DPC, based on review of internal memorandum, regarding the format and content of information to be included in the QSMSSC. Discussions with representatives in the General Office, Licensing Section for Catawba Station, revealed that recent QA Checklists were provided containing information on specific parts and work request numbers.

The General Office Licensing staff believes that this clearly was not the intent of the QSMSSC. It was intended to aid the plant in classifying the safety function of major structures, systems and components.

Proposed changes to the procedure are to require that when a QA Condition Checklist is filled out to determine the QA condition of a piece of equipment, an Editorial SPR should be initiated to preserve for future reference the previous determination made. The SPR would also be reviewed by Design.

The original concern is now considered closed because the planners appear to be very knowledgeable of SD 3.3.1 and the QSMSSC. This was confirmed by interviewing personnel in the I&E Planning and Scheduling Section. The recent revisions to the QSMSSC have insured that appropriate information has been incorporated from QA Checklists.

Although the licensee identified what appears to be a deficiency in their program for performing parts evaluations, the recent changes proposed would provide a method for performing these evaluations and resolve all questions regarding what information will be included in the QSMSSC.

- b. (Closed) IFI 50-413/86-26-02 and 414/86-29-02, Resolution of Deficiencies in Reactor Trip Breaker Maintenance Procedure MP/O/A/2001/05

Duke committed to make certain changes to the above procedure which would both improve the procedure and make it more clear. The items committed by the licensee to be incorporated into the procedure were 1) add a list of tools required to perform the procedure, 2) make provisions to record UVTA trip force data, 3) add UVTA dropout voltage test requirement, 4) add low-voltage shunt trip test, and 5) add insulation resistance test (megger test). Additional changes made to the procedure were to add sign-offs for QC inspection verification steps and incorporate references to the latest vendor manual (CNM-1399.40-0016-010) and Drawings (693C350 and 538C785) for DS-416 Breakers.

The procedure was revised on June 28, 1988. The comment made to the licensee regarding this procedure was that there were three typographical errors noted (see procedure steps 11.5, 11.16.5, and 11.17.8). The licensee representative from the Transmission Department committed to have the errors corrected as soon as possible. This issue was also discussed in the exit and the licensee reaffirmed that errors would be corrected. Based on the above this item is now considered closed.

- c. (Closed) Unresolved Item 50-413/ 86-26-03 and 414/86-29-03, Tracking and Closeout of Vendor Technical Bulletins and Information Letters

Implementation of the OEP program, as it related to vendor technical information, was considered weak. The licensee failed to escalate items that were not evaluated in a timely manner to management for resolution. Duke at that time indicated that a planned revision to the procedure would address the timeliness requirements for evaluating and closeout of vendor technical bulletins and letters. DPC Nuclear Production Department Directive No. 4.8.1, Operating Experience Program Description, dated January 9, 1989 (on page 15 step 5.1) now requires a response due date be assigned to documents distributed under the OEP program. Response due dates will be assigned as "Immediate Attention" or "Normal Attention" items requiring a response within 30 days or 90 days, respectively. The program allows for extension of due dates under certain conditions which may require written justification.

Fifteen working days after a due date is exceeded ONSA will issue a letter to the responsible manager of the section identifying the overdue document number, title, individual responsible, original due date, and a summary of the outstanding commitment or recommendation. A reply to this letter is required within 10 days. If no response is received within 10 days a letter of escalation of overdue OEP Item will be forwarded to the General Manager level for assistance in obtaining a resolution. Based on the above this item is closed.

- d. (Closed) Violation 50-413/88-07-01, Inadequate Documentation For Qualification of Splices on Hydrogen Recombiners

The licensee responded to the violation in a letter to NRC dated November 23, 1988. In this letter the licensee admits the violation and states that the documentation to qualify the tape splice configuration was available. However, the documentation was in different files and not in an auditable form as required by 50.49.

The corrective actions taken by the licensee were to assemble and place in the proper file documentation which demonstrates the qualification of the tape splice. Duke Vendor Manual CNM-1354.00-0080-001, Environmental Qualification Package for Termination Method of Main Power Cables of the Westinghouse Model B Electric Hydrogen Recombiner is the EQ file which demonstrates qualification for the 4-to-1 tape

splice based on similarity to a V-type tape splice configuration and a shrink tubing configuration.

In addition the licensee obtained information from Westinghouse which indicated that some type of tape splice configuration was used to qualify the recombiners. The splice was made with a silicone tape in a 4-to-1 configuration. However, this information alone is clearly not sufficient to support qualification for the tape splice in that the vendor information does not describe the configuration used in the LOCA test. Furthermore there was no information on radiation conditioning and pre-aging. Therefore, to establish qualification for the splices the licensee obtained additional test data to support their claim that the 4-to-1 splice was qualified.

Based on review of the qualification analysis the inspector considered the analysis to be acceptable except the licensee did not indicate a qualified life for the tape splice configuration. The inspector informed the licensee and they committed to include an aging analysis into the file. The inspector reviewed a preliminary analysis which shows the splice materials are conservatively qualified for 40 years. Based on the above this item is considered closed.

- e. (Closed) Violation 50-413,414/88-07-02, RCS Wide Range RTDs Installed in an Unqualified configuration

The violation occurred because the RCS wide range (hot and cold leg) resistance temperature detectors (RTDs) (model RdF) were not installed similar to the tested configuration. The bellows or hydrostatic hose assembly which protected the RTD pigtail lead wires from moisture egress was removed during installation. Also the junction box where the RTD pigtail wires terminated could become submerged during a LOCA event and was not qualified for submergence operation.

The licensee acknowledged the notice of violation in a letter dated November 23, 1988. In this letter the licensee indicated that the violation occurred because of a misinterpretation of notes on drawings during initial installation.

The corrective action taken by the licensee was to replace the RTDs on Unit 1 and completely fill the termination junction boxes with Scotchcast 9 Epoxy. The Unit 2 RTDs were replaced by Station Work Request 11736 NSM using procedure TN/2/A/1629/CE/AL1. The work on Unit 1 was completed and reviewed during inspection 88-07. The work on Unit 2 was completed on February 14, 1988.

Considering the above, in conjunction with information previously reviewed and accepted during inspection 88-07, this item is considered closed.

The inspector noted one concern while reviewing the work request that replaced the RTDs on Unit 2. The work request had not been properly identified as "EQ Related" as required by station procedures. The "EQ Related" block on the form had not been checked.

This could have been the result of an oversight or the maintenance planner may not have clearly understood the EQ ramifications of the work required. This work request was initiated to put the RCS Wide Range RTDs in their tested configuration.

In order to determine which was the most probable cause for the omission, the inspector interviewed the planner identified on the work request and his immediate supervisor. The individual involved in planning the work could not recall the reason for leaving the space blank. His supervisor indicated that in late 1987 or early 1988 the procedure was revised to require the EQ Related designation. He indicated that there was confusion at that time regarding the proper use for this block by the CMD Planners.

Further review of this item as it related to EQ training revealed that the planner and the supervisory had not attended the last EQ training. At this point, it seemed evident that the licensee did not provide EQ training to all personnel that could have an effect on EQ equipment. The licensee agreed with this concern and agreed to provide better coordination between departments to identify those people required to have knowledge of the EQ program.

f. (Closed) Violation 50-413/88-07-03, Use of Unqualified Limitorque Motor Operated Valves Inside Unit 1 Containment

The violation occurred because the licensee had used unqualified limitorque motor operated valves in the Containment Air Return and Hydrogen Skimmer System (valve nos. 1VX1A, 1VX2B, 2VX1A, and 2VX2B). The licensee had previously claimed that these valves were qualified for outside containment. However, at the time of the inspection the licensee could not support qualification for these valve operators for either inside or outside containment.

The licensee responded to the violation in a letter to NRC dated November 23, 1988. The licensee indicates in this letter that the subject valve operators were replaced with qualified valves. The valves operators on Unit 1 (1VX1A and 1VX2B) were replaced in February of 1986 and the Unit 2 valves were replaced prior to Unit 2 initial criticality. The violation only applied to Unit 1. The Unit 1 valve operators were replaced by Mechanical Work Request Nos. 2889 MNT and 2890 MNT. The valves were rewired in accordance with Design Drawing CN-1735-01.02 by I&E under approved work requests and variation notices. Based on the above this item is considered closed.

- g. (Closed) Violation 50-414/88-07-04, Joy/Reliance Fan Motors Not Installed In Accordance with the Tested Configuration

The issue relates to the fact that the Hydrogen Skimmer Fan motors did not have breather drains installed. The violation was written against Unit 2, however, it also applies to Unit 1. At the time of the inspection the violation was believed to be isolated to Unit 2 only because the motors on Unit 2 had been replaced.

The licensee responded to the notice of violation in a letter dated November 23, 1988. In this letter the licensee identifies the cause for the violation as due to vendor maintenance error and a lack of adequate inspection by Duke upon receiving the spare motors from the vendor.

The interim corrective action taken by the licensee after identification of the problem was to remove one condensate plug on each motor. Subsequently, Variation Notices CE-1748 and CE-1749 were issued to install the breather drains on both units. At or around the same time purchase orders were issued to the vendor to supply the drain plugs. As discussed earlier in this report, the breather drains were not replaced until July 23, 1989 (Work Request Nos 2831 NSM and 2832 NSM) shortly after this inspection ended. The chronology of the events point out a weakness in the licensee's handling and closeout of NRC commitments, although technical problems existed which required the licensee to obtain additional information from the vendor. These concerns were resolved in November 1988. However, the proposed fix was not documented in a revision to the Variation Notices (CE-1748 and CE-1749) until July 1989, shortly after the licensee was informed of the NRC followup inspection. Although the corrective action was not as timely as it possibly could have been, the licensee has met the commitment stated in their letter. Based on the above this item is considered closed.

- h. (Closed) Violation 50-413/88-07-05, Inadequate Documentation For Qualification of Minco RTDs

In response to this item the licensee has assembled data and reports in a file (CNM 1399.03-0357-002, RVLIS Equipment, RTD Submergence Qualification) which demonstrates qualification for the Minco RTD installations at Catawba. The proprietary file was reviewed and found to be acceptable. Based on this review this item is closed.

- i. (Closed) Violation 50-414/88-07-06, Unqualified Namco Limit Switch

The cover gasket on a Namco Limit Switch (tag No. 2NCLL0251) was found folded under at one end of the Namco cover. The licensee initiated Problem Investigation Report 2-C88-0054 which evaluated the unqualified limit switch for operability and reportability. The cover gasket was replaced by Work Request 8889 and the installation procedure (IP/O/A/3820/20) was revised to include a visual inspection of cover gaskets for proper seating. This action was taken to

prevent further recurrence of the problem. The licensee also performed visual inspections of all Namco Limit switches listed on the EQRI to verify proper cover gasket seating, screws, and washer installation. This item is now considered closed.

- j. (Closed) Violation 50-413,414/88-07-07, Plugged or Missing T-Drains on Limitorque Valve Motor Operators

The violation involved Limitorque valves on Unit 2 that were observed to have their T-Drains painted over and plugged. Two out of the three Limitorques inspected exhibited some kind of obstruction. A walkdown by the licensee identified further examples of T-Drains obstructed or their ability to properly drain was uncertain. In addition, some limitorque operators located inside containment on Units 1 and 2 were discovered without any T-Drains installed.

The licensee response to the above violation is dated November 23, 1988. In this response the licensee admits the violation occurred as stated and discussed the reasons for the violation. The licensee attributed the violation to inadequate installation and painting procedures. All Limitorque valve operators requiring T-Drains were inspected and the required T-Drains were installed or unplugged. The inspections and repairs were documented on Station Work Requests (see Nos. 8903 thru 8906 IAE and 8890 thru 8893 IAE). To prevent further recurrences, the licensee revised the Limitorque maintenance procedures (IP/O/A/3820/01 and 04, and MP/O/A/7300/61) and coatings procedure (MP/O/A/7650/96) to clarify T-Drain installation requirements. Additionally, Duke provided training for painters and technicians on the proper T-Drain maintenance and installation requirements. This item is now closed.

- k. (Closed) Unresolved item 50-414/88-07-08, T-Drain on Limitorque Operator Not Installed at Low Point

The concern was that T-Drains on Limitorque valve No. 2NI-122B were not installed at the low point. The licensee addressed this concern in a letter to the NRC dated June 15, 1988. The licensee reviewed this concern and concluded that the installation was bounded by the vendor test report B0058 and was consistent with guidance provided by the Nuclear Utility Group regarding installation of T-Drains on motors when the principal axis is vertical. The licensee further states in the letter that Limitorque has no restrictions on operator orientation other than to minimize motor down positions. The licensee indicated that valve operator 2NI-122B met all of the required guidelines to be qualified. Based on the above this item is considered closed.

3. Followup on NRC Bulletins 88-01 and 88-03 (92703)

a. (Closed) IEB 88-01, Defects in Westinghouse Circuit Breakers

Duke Power responded to the bulletin in a letter to NRC dated April 5, 1988. In this letter Duke stated that the pole shafts were replaced on all four of the main Reactor Trip Breakers at Catawba. The licensee also stated that the four bypass breakers were inspected per the Westinghouse Technical Bulletin and NRC Bulletin 88-01, resulting in the pole shaft being replaced on Unit 1 Bypass Reactor Trip Breaker No. B (Work Request 0050 TRD). The licensee also commits in the letter to revise the breaker maintenance procedure by July 1, 1988 to include the weld and mechanism alignment verification inspections contained in the NRC Bulletin 88-01 and Westinghouse Technical Bulletin 87-11. The work records associated with the main Reactor Trip Breakers pole replacements and Bypass Breakers inspections were reviewed and found acceptable. A list of records reviewed are contained in paragraph 5 below. The maintenance procedure for the Reactor Trip Breakers (MP/O/A/2001/05) was revised June 28, 1988 to require weld and alignment inspections. Based on the above, this item is now considered closed.

b. (Closed) IEB 88-03, Inadequate Latch Engagement in HFA TYPE Latching Relays Manufactured by General Electric (GE) Company

The licensee responded to the bulletin in a letter to NRC dated July 13, 1988. The licensee determined that the subject GE HFA relays with latching mechanisms are not used in any safety-related applications at McGuire, Catawba or Oconee Nuclear Stations. Based on the above this item is closed.

4. Exit Interview

The inspection scope and results were summarized on July 21, 1989, with those persons indicated in paragraph 1. The inspector described the areas inspected and discussed in detail the inspection results as described in paragraphs 2 and 3 above. Although reviewed during this inspection, proprietary information is not contained in this report. Dissenting comments were not received from the licensee.

5. In reviewing the above items, the following documents were reviewed:

- a. Procedure No. MP/O/A/7650/96, approved August 31, 1988, titled Administrative Control of Applied Coatings
- b. Procedure No. 1P/O/A/3820/01, approved November 30, 1982, titled Limitorque Operator Preventive Maintenance
- c. Procedure No. 1P/O/A/3820/04, approved December 3, 1986 titled Operating Checkout of Limitorque and Rotork Valve Actuators
- d. Procedure No. MP/O/A/2001/05, approved June 29, 1988 titled Westinghouse DS-416 Air Circuit Breaker Inspection and Maintenance

- e. Nuclear Production Department Directive No. 4.8.1, approved January 9, 1989 titled Operating Experience Program Description
- f. Procedure No. IP/O/A/3820/20, approved September 7, 1985 titled Namco 1E Limit Switch Installation Requirements
- g. Procedure No. TN/2/A/1629/CE/AL1, approved February 5, 1988 titled Procedure for Implementation of Variation Notice CE-1629
- h. Work Request Nos. 11736 NSM, 8903 IAE, 8904 IAE, 8905 IAE, 8906 IAE, 8890 IAE, 8891 IAE, 8892 IAE, 8893 IAE, 8894 IAE, 8895 IAE, 8897 IAE, 0048 TRD, 0050 TRD, 0051 TRD, 005195 SWR, 005196 SWR, 0025 TRD, 0013 TRD, 0014 TRD, 8889 IAE, 2890 MNT, 2889 MNT, 1591 NSM, and 2890-MNT-1.
- i. Variation Notice CE-0499 (dated January 24, 1986) for Actuator changeout of Limitorque valve operator 1VX001A.
- j. Connection Diagram CN-1735-01.02, Containment Air Return and Hydrogen Skimmer System (VX) Valves and Dampers, Revision 7.
- k. Problem Investigation Reports 1-C88-0207 and 2-C88-0054.
- l. NRC Inspection Reports: 50-413/86-26 and 414/86-29; and 50-413 and 414/ 88-07.
- m. Catawba Nuclear Station Directive No. 3.3.1, approved July 3, 1986 titled Determination of QA Condition For Structures, Systems and Components
- n. Duke Power letter to NRC dated November 23, 1988 responding to the Notice of Violation.
- o. Duke letter to NRC dated April 5, 1988, regarding NRC Bulletin 88-01.
- p. Duke letter to NRC dated July 13, 1988, regarding NRC Bulletin 88-03.
- q. Duke letter to NRC dated June 15, 1988, providing additional information regarding NRC Unresolved Item 50-414/88-07-08.
- r. Vendor Manual CNM-1354.00 - 0030-001. Environmental Qualification Package for Termination method of Main Power Cables of the Westinghouse Model B Electric Hydrogen Recombiner
- s. Vendor Manual CNM-1399.03 - 0357 - 002, RVLTS Equipment, RTD Submegence Qualification

6. Acronyms and Initialisms

CMD	Construction Maintenance Department
CRDM	Control Rod Drive Mechanism
DPC	Duke Power Company
EQ	Environmental Qualification
GE	General Electric Company
I&E	Instrumentation and Electrical
IP	Inspection Procedure
MP	Maintenance Procedure
NRC	Nuclear Regulatory Commission
NSM	Nuclear Station Modification
OEP	Operating Experience Program
ONSA	Operational Nuclear Safety
QA	Quality Assurance
QC	Quality Control
QSMSSC	Quality Standards Manual for Structures, Systems and Components
SPR	Special Problem Report
TRD	Transmission Department
UVTA	Undervoltage Trip Attachment