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ComEd

July 17, 1996

JSPLTR 96-0112

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

Subject: Amendment to Dresden Nuclear Power Stations Units 2 and 3 Response to Notice of Violation; Inspection Report 50-237/96002.

Reference: a. J. S. Perry letter 96-0095 to U. S. NRC, dated Junc 19, 1996, transmitting Dresden Response to Notice of Violation; Inspection Report 50-010/96002; 50-237/96002; 50-249/96002 NRC Docket Numbers 50-010, 50-237, and 50-249.

b. Telecon July 5, 1996 between P. L. Hiland and Dresden P. Holland and R.S. Holbrook

The purpose of this letter is to amend information on corrective actions associated with the subject inspection report. This information is provided as requested during the telecon (reference b).

On June 19, 1996 Dresden Unit 3 was shut down (Unit 2 was already shut down) to address reliability concerns relating to 4 kV breakers. These concerns were raised following receipt of preliminary results of an investigation into failure of the 3A LPCI pump to trip on demand. The concerns caused management to broaden the scope of the original 4 kV breaker investigation. As a result of these further investigations and subsequent corrective actions, additional weaknesses, both technical and programmatic, were apparent. This letter addresses the additional weaknesses and corrective actions. Amended information is indicated by revision lines in margins.

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Any questions concerning this letter, please refer them to Frank Spangenberg, Dresden Station Regulatory Assurance Manager, at (815) 942-2920, extension 3800.

Very Truly Yours,

FOR
J. Stephen Perry
Site Vice President
Dresden Station

Attachment

cc: H. J. Miller, Regional Administrator, Region III
P. L. Hiland, Branch, Chief, Division of Reactor Projects, Region III
J. F. Stang, Project Manager, NRR (Unit 2/3)
C. L. Vanderniet, Senior Resident Inspector, Dresden
Office of Nuclear Facility Safety - IDNS
File: Numerical

ATTACHMENT

AMENDMENT ONE TO NOTICE OF VIOLATION

NRC INSPECTION REPORT

50-237/96002

Violation: (237/96002)

Criterion XVI of Appendix B to 10 CFR Part 50 states, in part, that measures shall be established to assure that conditions adverse to quality 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, the licensee failed to identify and take prompt corrective actions for multiple 4 kV breaker problems which occurred since 1989. In addition, the corrective actions taken to prevent recurrence for a similar violation issued in 1989 were not effective.

This is a Severity Level IV violation.

Reason for Violation:

On January 18, 1996, an adverse trend relating to the performance of horizontal 4 kV breakers was identified by Dresden Station Engineering personnel. This trend was identified by a review of Performance Improvement Forms (PIF) which documented problems experienced during recent refueling outage activities and a review of data in the Integrated Reporting Program (IRP) database. An interdisciplinary team was assembled to investigate this trend. Overall, the investigation concluded that previous corrective actions were ineffective for several previous occurrences.

Contributing to ineffective corrective actions was the lack of technical documentation which led to inadequate preventive maintenance on the breakers. Additionally, inadequate control of breaker location changes resulted in breakers being moved from cubicle to cubicle.

The failure to recognize this trend prior to January of 1996 has been attributed, in part, to inconsistency in the generation of PIF's which are used to identify individual failures and reviewed to identify adverse trends.

The January 1996 adverse 4 kV breaker trend dealt exclusively with breaker and cubicle alignment problems associated with racking the breakers in and out. These failures were attributed to electrical switches and associated linkages that connect the breaker to the breaker cubicle and not the internal breaker mechanical sections. On June 11, 1996, 3A LPCI breaker failed to trip on signal. This was the first noted trip failure caused by breaker internal mechanical malfunctions since 1989.

Corrective Actions Taken and Results Achieved:

Immediate corrective actions were to restrict the interchanging of breakers and to impose enhanced testing requirements whenever breakers were installed in the plant. These practices, which are now being performed, ensure the proper operation of cubicle auxiliary contacts which provide logic signals to plant equipment. This process is documented in Dresden Operations Procedure (DOP) 6500-7, "Racking in 4160 Volt Manual Operated Air Circuit Breaker (ACB), Magne-Blast Hybrid (AMHG) or SF6 Gas Circuit Breaker (GCB)."

Following failure of 3A LPCI breaker to open on signal June 11, 1996, it was replaced with a spare breaker and troubleshooting commenced. When hardened grease was found to make operation of the trip latch roller unreliable, four additional spare breakers were inspected. Two of those four were found to also have hardened grease conditions, but operationally tripped at rated undervoltage of 70 volts. On June 19, 1996, the decision was made to shut down Unit 3 (Unit 2 was already shut down due to an unrelated problem) to perform corrective maintenance on similar 4 kV breakers and associated cubicles. This includes 10 breakers on Bus 33-1, 13 breakers on Bus 34-1, 11 breakers on Bus 23-1 and 11 breakers on Bus 24-1.

An event response team was established on June 20, 1996. This team was chartered to establish root cause, verify current technical information, resolve discrepant conditions found during testing, recommend appropriate corrective actions, track as found conditions in breakers and recommend retests to assure reliable operation.

GE and Dresden personnel combined to prepare and implement a comprehensive breaker inspection, maintenance and test procedure. Cubicles, linkages, auxiliary switches and breakers were examined and refurbished as required. Fundamentally, this work included all maintenance previously planned for upcoming refuelings, work identified during the February 1996 4 kV breaker investigation and breaker overhaul recommended by the vendor SAL 352.1. This work is to be completed prior to start up of affected units and includes:

* Installation of breakers restored to OEM standards including part replacements recommended in vendor SAL 352.1 dated July 7, 1995.

* Inspection of affected cubicles. Repair or replacement of switches, linkages and guides as necessary.

* Alignment of breaker to cubicle.

Monitoring of as found breaker conditions is continuing. To date one additional failure has been noted. On July 16, 1996 the former Bus 33 feed to Bus 33-1 breaker tripped at 82 volts vice the required 70 volts. Root cause was hardened grease. Investigation into reasons for hardened grease is continuing.

Additional information and corrective actions are as follows:

* The root cause of 3A LPCI failure was determined to be hardened grease in the trip latch roller bearing. The breaker had been in service since plant construction. No indication that the grease has ever been changed has been located. Investigation into reasons for grease hardening continues. The investigation is focusing on past maintenance practices such as the possible improper use of degreasers and/or use of an incorrect light weight lubricant or penetrating oil. Additionally, elevated temperatures in specific cubicles may have contributed to accelerated grease deterioration. These bearings are being replaced or are being disassembled, cleaned and repacked with new, approved grease during current maintenance.

* The event response team reviewed events at Salem nuclear facility regarding vertical GE Magne-Blast 4 kV breakers. Salem experienced failures to latch closed. Mechanical alignment and clearance issues associated with the Salem breakers do not apply to Dresden's horizontal breakers because of design differences.

* Based on additional information resulting from maintenance listed above, a supplemental root cause analysis to the February 1996 Level 2 investigation is being performed. Mechanical linkages from the breaker to auxiliary switches on the cubicle had been installed improperly and misaligned. This caused the linkages to either bind up or damage auxiliary switches. Dresden does not hold GE proprietary drawings showing this installation. Additionally, alignment procedures are made more difficult as breaker and cubicle alignment deteriorates with age and breaker cycling. On July 17, 1996, station management decided that the existing linkage mechanism will not provide the required breaker reliability. Alternative assemblies are being pursued. (NTS Item 237-100-96-00212)

* All GE technical manuals in the Recontact program of VETIP and GE technical bulletin guidance associated with safety related equipment were reviewed to ensure the latest revisions are held. GE SIL's and RICSIL's are controlled by GE Nuclear and are regularly received and entered into the stations OPEX program and appropriately tracked. GE SAL's are not similarly controlled by GE or the station. It was therefore necessary to obtain and then review for applicability 481 SAL's. Each applicable GE manual change and GE SAL was

reviewed for content. Changes and SAL's containing administrative information only were logged as such for action in the VETIP program. Publications having technical changes were further screened by a subject matter expert to determine if immediate action was required to implement information into the maintenance or preventive maintenance program.

- These reviews concluded there were no significant issues that require immediate action or immediate change to the maintenance or preventive maintenance programs. A plan for clearing the backlog of administrative action required by these publications will be provided by July 29, 1996. (NTS Item 237-100-96-00213)

* All Recontact program vendor manuals in the VETIP program were reviewed to ensure the latest revisions are held. The 793 manuals with previously unreviewed changes in the VETIP program were then technically reviewed by a team of over 20 engineering personnel to identify items requiring immediate action for inclusion in maintenance or preventive maintenance procedures.

- These reviews concluded there were no significant issues that require immediate action or immediate change to the maintenance or preventive maintenance programs. A plan for clearing the backlog of action required by these publications will be provided by July 29, 1996.

* A Just-In-Time Dresden Administrative Procedure (DAP) was implemented on July 8, 1996 which will ensure that Work Analysts developing procedures utilize the latest vendor technical manual revision as determined by the VETIP program.

* Maintenance and preventive maintenance practices on other plant breakers was reviewed. For the reasons listed below, breaker reliability is considered adequate for unit startups.

- Review of LER and PIF databases for other than 4 kV breaker failures (28) shows random causes associated with switches, wiring, overloads, etc.

- A review of Motor Control Center (MCC) PM's was conducted. MCC clean and inspect PM's were implemented in 1992 following an RCM analysis. Accomplishment of these PM's is ongoing with 281 of 435 MCC's complete. No MCC PM's are currently overdue.

- A review of other than 4 kV breaker PM's was conducted. Whereas the GE Technical Manual and associated SAL's recommend a complete teardown and overhaul every 5 years, Dresden conducts a thorough inspection, cleaning and repair as required PM every 6 years or 3 refuels. No breakers are overdue on this PM.

- A review of NPRDS data (updated for Dresden in December, 1995) on normally closed DC molded-case circuit breakers was performed in March, 1996 to support a PRA analysis. The review found no pertinent Dresden failures during the past 11 years.

Corrective Actions Taken to Avoid Further Violations:

A new Dresden Electrical Procedure (DEP), supported by technical information supplied by design engineering, will be developed for the alignment of the cubicle - breaker interface. It will include as a minimum: alignment criteria, drawings of the aux switch linkages, replacement instructions for breaker and cubicle sub components, and a table describing requirements to operate the aux switch for PMV. This will be completed by August 15, 1996.

Preventive Maintenance procedures for 4 kV breakers and cubicles (DES 6700-04, 09 and 11) will be revised by August 15, 1996 to instruct the worker to perform a specified sub-component replacement and line-up, per the new DEP any time it is replaced or requires adjustment.

* PM requirements and procedures for the 4 kV breakers as well as all plant breakers requires additional review. The Performance Centered Maintenance (PCM) process is systematically reviewing PM adequacy for each plant system. Each component in a system is reviewed for PM requirements based on vendor recommendation, maintenance history, ComEd expert panel review, etc. Reviews started mid-1995 and will complete late in 1997. AC and DC distribution systems will complete review in 1996. Breakers and MCC's will be reviewed first.

Action Requests have been written for the performance of breaker to cubicle alignment. Alignment will be performed during the scheduled Preventive Maintenance on the breakers.

* Bus 33-1, 34-1 and 23-1 and 24-1 cubicle alignments are being addressed prior to startup of the respective units. Alignments of other (non safety related) breakers will occur during their PM's.

Electrical Maintenance Department and High Voltage Operator training lesson plans for 4 kV breakers have been revised to include the results of the station investigation on 4 kV breaker performance.

Additional guidance has been included in Operations Procedure DOP 6500-7 on when the generation of a PIF is required.

An effectiveness review of 4 kV performance will be performed by November 30, 1996.

As a result of the 3A LPCI breaker failure on June 11, 1996, the following additional actions are being taken:

* Root cause determination of programmatic issues in the 3A LPCI breaker failure. These include PM type and frequency and ability to conduct breaker maintenance on line. Additionally, reviews of similar incidents at other ComEd stations and industry applications are being conducted to apply applicable corrective actions. Completion by July 29, 1996. (NTS Item 237-100-96-00214)

* Root cause determination of failure to have all required vendor technical bulletins (SAL's in particular). Completion by July 29, 1996. (NTS Item 237-100-96-00215)

* Review of station compliance with NRC Generic Letter 83-28 relating to vendor information and communications with vendors. The objective of this review will be to outline a plan of action to bring the Dresden Station VETIP Program up to industry standards as soon as practicable. Review to complete by July 29, 1996. (NTS Item 237-100-96-00216)