



SERIAL: HNP-01-065
10 CFR 21.21

APR 24 2001

United States Nuclear Regulatory Commission
ATTENTION: Document Control Desk
Washington, DC 20555

SHEARON HARRIS NUCLEAR POWER PLANT
DOCKET NO. 50-400/LICENSE NO. NPF-63
10 CFR 21 REPORT - SIEMENS RLN/RLNF BREAKER CUBICLE MECHANISM OPERATED
CELL (MOC) SWITCHES

Dear Sir or Madam:

On March 26, 2001, Carolina Power & Light Company (CP&L) determined that a deficiency with Siemens RLN/RLNF breaker cubicle Mechanism Operated Cell (MOC) switches, supplied to the Harris Nuclear Plant (HNP), was reportable under 10 CFR 21. The deficiency is an improper push bar length and configuration on the MOC switch, which can result in the MOC switch not actuating upon breaker closure as designed. These parts were received commercial grade and dedicated onsite by CP&L for use in safety-related applications. Although no substantial safety hazard occurred at HNP due to this deficiency, HNP has identified a potential application where, had the subject MOC switch been installed, safety related functions designed to help mitigate the consequences of design basis events could have been lost.

If you have questions or need additional information regarding this report, please contact Mr. E. A. McCartney at (919) 362-2661.

Sincerely,

R. J. Field
Manager, Regulatory Affairs
Harris Nuclear Plant

MGW

Enclosure

c: Mr. J. B. Brady (NRC Senior Resident Inspector, HNP)
Mr. Rich Laufer (NRR Project Manager, HNP)
Mr. L. A. Reyes (NRC Regional Administrator, Region II)

Harris Nuclear Plant
5413 Shearon Harris Road
New Hill, NC 27562

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CAROLINA POWER & LIGHT COMPANY
SHEARON HARRIS NUCLEAR POWER PLANT
5413 SHEARON HARRIS ROAD
NEW HILL, NORTH CAROLINA 27562

DEFECTIVE MECHANISM OPERATED CELL SWITCHES
FOR RLN/RLNF BREAKER
CUBICLE

APRIL 25, 2001

REPORTABLE UNDER 10CFR21

SUBJECT:

Harris Nuclear Plant, 10CFR21 reportable deficiency: Defective Mechanism Operated Cell (MOC) Switch

ITEM WHICH FAILS TO COMPLY:

Mechanism Operated Cell (MOC) switch (manufacturer part number 18-398-289-574)

SUPPLIED BY:

Siemens Energy & Automation, Inc, Distribution Products Division, Wendell, NC 27591

NATURE OF DEFICIENCY:

Siemens RLN/RLNF breaker cubicle Mechanism Operated Cell (MOC) switches were supplied to the Harris Nuclear Plant (HNP) as replacements; however, the MOC switches do not match design specifications. The parts procured were received with improper push bar length and configuration. The length and configuration are critical characteristics for this component for certain applications. These parts were received commercial grade and dedicated onsite by CP&L for use in safety related applications. CP&L's inspection of critical characteristics failed to identify that the component was not manufactured in accordance with the approved design specifications. As a result, two defective MOC switches were installed in safety related applications; however, further evaluation determined that there were no adverse impacts on safety related functions. Further, additional defective MOC switches were available in HNP stores for installation in safety-related applications. HNP has identified a potential application where, had the subject MOC switch been installed, safety related functions designed to help mitigate the consequences of a design basis event could have been lost (see safety implications below).

In May 1999, a purchase order was processed for two MOC switches. In accordance with the dedication sample plan, both of the MOC switches were tested and inspected. The Test Data Sheet indicates that both were found to be acceptable and were processed into stock. These MOC switches were subsequently issued for installation into the plant in April and May 2000. Equipment testing subsequent to installation in one of these applications indicated the absence of an expected alarm in a non-critical function, and troubleshooting was initiated. In January 2001, it was concluded that the problem was due to a faulty MOC switch, and further investigation was initiated. As part of this investigation, both installations were inspected and it was determined that in both instances, the MOC switch is not in accordance with the manufacturer's specifications. Specifically, the bend in the arm was not at the correct location, which resulted in the pushbar arm being shorter than manufacturer's specification. It was determined that these parts were accepted based partially on the Receipt Inspector's prior experience with MOC switches and his belief that the arm would be bent in the field to the correct angle/dimension. The defective MOC switch does not support safety related functions in either of these installations and does not impact operability.

In December 2000, an additional shipment of six MOC switches was received in response to two separate purchase orders for three MOC switches each. The six MOC switches were received in one box without indication as to which MOC switches were associated with which of the two Purchase Orders. Using conservative practice, the receipt inspector split the lot into two lots of three and proceeded with the inspection and dedication of the two lots. In accordance with the dedication sample plan two of the three items in each lot were selected for testing. Configuration and push bar length were included on the commercial grade dedication plan as critical characteristics for acceptance. Using this process four of the six MOC switches received were tested. The four selected met design requirements (as re-confirmed by subsequent inspection); however, it was later determined that the two not selected for testing were defective (i.e. push bar length was insufficient).

While the investigation concluded that there were no adverse impacts on safety related functions for the applications with installed defective MOC switches, there are other applications in which the MOC switch contacts may be relied upon to support safety related functions. A specific potential application was identified (Containment Spray Pump breaker) such that if the defective MOC switch had been installed, it could have caused a significant safety problem. Therefore, it was concluded that this item is reportable under 10CFR21 based on the Safety Implications stated below.

SAFETY IMPLICATIONS:

A defective MOC switch installed in the Containment Spray Pump circuitry could have resulted in failure of the RWST lo-lo level swap over to Containment Sump, which would prevent the Spray Pumps from having the required suction supply water volume. The Containment Spray Pumps would then not be able to supply cooling spray to mitigate the consequences of an accident in containment which releases high-energy steam to containment atmosphere. This condition could potentially result in jeopardizing Containment Integrity and could ultimately result in a release of radioactive material to the environment.

DATE PROBLEM WAS CONFIRMED:

The need to evaluate this deviation was identified on January 25, 2001. It was evaluated and determined to be reportable on March 26, 2001.

PROBLEM REPORTED:

On March 28, 2001 the NRC Operations Center was notified of this reportable item under 10CFR21.

CORRECTIVE ACTION:

The two defective MOC switches were removed from stock. Subsequent investigation found no additional defective MOC switches in stock. Evaluation of installations in the plant found no instances where MOC switches with this defect could have caused a significant safety problem.

The receipt inspector who accepted the two defective MOC switches was counseled. A sample of his previously accepted shipments was re-inspected by a plant QC inspector not affiliated with the receipt inspection group, and no problems were noted. Expectations for receipt inspection testing were reinforced to receipt inspection personnel.

It was confirmed by letter from Siemens that this product is supplied exclusively to the Harris Nuclear Plant and that there are no other users of this part.

A representative of CP&L visited the Siemens facility and met with responsible personnel to investigate the cause of the problem and evaluate whether or not this appears to be a pervasive quality problem or one specific to this circumstance. It was concluded by Siemens management and the CP&L representative that the problem was caused by a misinterpretation of a shop drawing by both a shop mechanic and a shop inspector resulting in some of the MOC switches produced being defective. Storage bins at the shop were inspected, and a mix of good and defective MOC switches were found. The defective MOC switches were removed from stock. The shop drawing was revised to be clearer. Also, the vendor agreed to implement additional inspections for future work. It was concluded that this was a problem specific to circumstances verses a pervasive quality problem.

No further corrective action is planned with regard to this 10CFR21 report.