1400 Opus Place
Downers Grove, IL 60515

ComEd

March 16, 1998

Document Control Desk
United States Nuclear Regulatory Commission
Washington, D.C. 20555-001

Subject: Dresden Nuclear Generating Station Units 2&3
NRC Dockets: 50-237 and 50-249
LaSalle County Nuclear Generating Station Units 1&2
NRC Dockets: 50-373 and 50-374
Quad Cities Nuclear Generating Station Units 1&2
NRC Dockets: 50-254 and 50-265

10CFRPart 21 Notification
SBM Control Switch Binding

Reference: GE Nuclear Energy January 23, 1998 Transfer of Information Pursuant to 10CFR Part 21.21(b) re: "Spring Return Binding in GE Type SBM Control Switches"

Applicability

This notification is submitted in accordance with the requirements of 10CFR Part 21.

Identification of Facilities and Components

Dresden Nuclear Generating Station Units 2 and 3
LaSalle County Nuclear Generating Station Units 1 and 2
Quad Cities Nuclear Generating Station Units 1 and 2

GE Type SBM Control Switches with the spring return function manufactured since March 1996. Applicable date codes: PL, RL, SL, TL, UL, VL, WL, XL, YL, ZL, NM, OM, PM, RM, SM, UM, VM, WM, XM, YM, ZM, NN.

Identification of Component Manufacturer/Supplier

Manufactured by: GE Electrical Distribution and Control Power Management
Malvern, Pennsylvania
as commercial grade items

IE19

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Dedicated by: GE-Nuclear Energy
175 Curtner Ave,
San Jose, California 95125

Nature of Defect

As described more fully in the referenced GE transfer of information submittal in accordance with 10CFR Part 21.21(b), SBM switches identified above are susceptible to binding which may prevent spring return to reset (return to normal position). The cause of binding is attributed to failure to account for "post mold cure" shrinkage in the design tolerance of the clearance between the phenolic rear bearing support hole and the bearing. This design error did not become apparent until the molds experienced wear to the extent that resulting parts were at the extremes of dimensional tolerances. The post mold cure is normal for the phenolic material and has been shown to take place over a period up to two years after molding is completed. Consequently switches which are constructed from components that are within specification and function fully during acceptance testing may exhibit sluggish return or binding up to two years after assembly. This root cause is supported through GE examination of failed switches which, in each instance, has found the bearing support hole to be undersized (less than minimum inside diameter) and the bearing at or near its maximum allowable diameter. GE testing has also confirmed that switches with bearings that are at their nominal diameter will function properly, even when the support hole is undersized; consequently the failure is not seen in every switch.

Time of Discovery

Commonwealth Edison determined that the failure was a potential defect subject to the provisions of 10CFR Part 21 on January 27, 1998. Final determination that the defect was reportable per 10CFR Part 21 was made on March 16, 1998.

Number and Location of All Defective Components

Commonwealth Edison has determined that suspect SBM switches are not installed at its Braidwood, Byron or Zion Nuclear Generating Stations. Commonwealth Edison Nuclear Generating Stations which have the suspect safety related spring return switches include Dresden, LaSalle County and Quad Cities with two (2), two hundred forty six (246), and three (3) switches installed respectively. LaSalle County Station is currently experiencing binding in 21 of these switches.

Corrective Actions

Commonwealth Edison facilities having the suspect safety related SBM switches have established Operability Determinations which demonstrate affected systems remain operable while prompt corrective action is pursued. Measures have been taken at Dresden and Quad Cities Stations, which have only 2 and 3 switches susceptible to binding respectively, to heighten operator awareness of the condition through placement of caution cards on the affected switches. Additionally, these facilities have initiated Action Requests to replace the switches with switches not subject to the identified condition at the first available opportunity. Both of the LaSalle County Station units are currently in extended maintenance outages.

LaSalle County Station has established operability by heightening operator awareness through communication and is currently establishing the scope of additional compensatory and corrective action plans to demonstrate operability as applied to future plant operating conditions.

10CFR Part 21 Evaluation

In the course of evaluating the condition reported by GE in the referenced transfer of information notice, Commonwealth Edison has concluded that, in the absence of compensatory action, the reported deviation substantially increases the likelihood of switch failure when compared to a nominal base case switch failure rate without the reported condition. Since the switches control the operation of various equipment important to plant safety, this increase in failure rate without compensatory action has been determined to constitute a defect representing a substantial safety hazard per the requirements of 10CFR Part 21 and is reportable to the NRC.

Contacts

Questions pertaining to this notification should be addressed to this office or by contacting:

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Bolingbrook, Ill 60446
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Sincerely,

John B. Hosmer
Engineering Vice President
Nuclear Generation Group
Commonwealth Edison Company

cc: A. Bill Beach, Regional Administrator – Region III
Senior Resident Inspector, Dresden Station
Senior Resident Inspector, LaSalle County Station
Senior Resident Inspector, Quad Cities Station
NRR Project Manager, Dresden Station
NRR Project Manager, LaSalle County Station
NRR Project Manager, Quad Cities Station
Office of Nuclear Facility Safety - IDNS
Irene Johnson
DCD Licensing

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10CFR PART 21 EVALUATION CHECKLIST

1. Engineering Part 21 File Number 98-01

2. Document Generated By General Electric

3. Date of Document 1/23/98
4. Document Identification Number(s) if any GE Notification Number SC98-01
5. Deviation Identified Spring Return Binding in GE Type SBM Control Switches
6. Vendor notified: N/A
   Date: N/A
   Person Contacted: N/A

7. Has vendor assume responsibility for evaluating for Part 21 applicability, and has the vendor reported the defect to NRC ? **YES** ☐ **NO** ☒

   Completion date N/A

   If **YES**, the evaluation is closed.

   N/A _____ N/A
   Evaluating Engineer Date

   N/A _____ N/A
   Evaluating Engineer Supervisor Date

   If **NO**, then proceed by completing the remainder of the checklist.

8. Is there a *Deviation* as defined in Section 4.4?

   Yes ☒ **No** ☐

   Provide basis for above conclusion.
   Notification of possible failure of certain GE Type SBM Control Switches with spring return function was issued by GE as a transfer of information pursuant to 10 CFR 21.21(b). The possible failure was determined to meet the threshold for a substantial safety hazard based on failure analysis indicating a substantial increase in likelihood of switch failure where switches control the operation of various equipment important to plant safety.

Commonwealth Edison Company
Nuclear Operations Division

10CFR PART 21 EVALUATION CHECKLIST

9. Does the *Deviation* have the potential for impacting system, structure, or component Operability as defined in the Technical Specification? **YES** ☒ **NO** ☐

If **NO**, provide reason N/A.

If **YES**, Notify the appropriate Supervisor to determine if an Operability Evaluation must be completed. Operability Assessments have been established for all affected ComEd facilities.

10. Is 10CFR21 notification to NRC required. **YES** ☒ **NO** ☐

If **YES**, explain why, and which item of paragraph 5.1.1 occurred/could occur. A major deficiency involving replacement parts which could adversely affect the capability to shutdown the reactor and maintain it in a safe shutdown condition. (Paragraph 5.1.1.A.3.)

If **NO**, provide basis for conclusion.
N/A.

Corrective Action which has been, is being, or will be taken.
Dresden & Quad Cities will be replacing switches at first available opportunity. LaSalle will be replacing binding switches at first available opportunity and is currently evaluating scope of additional corrective action.

This information is applicable to the following Station(s):

☐ Braidwood	☒ Dresden	☒ Quad Cities
☐ Byron	☒ LaSalle	☐ Zion

This evaluation was not performed for the following Stations:

☒ Braidwood	☐ Dresden	☐ Quad Cities
☒ Byron	☐ LaSalle	☒ Zion

Provide explanation for each station not evaluated.
Braidwood, Byron & Zion evaluated the concern and determined they have no SBM switches of the subject population

Evaluation conducted by _____ Date 3/13/98
Evaluating Engineer

Concur with evaluation and evaluation is closed.

_____ Date 3/16/98
Evaluating Engineer Supervisor

NEP 10-02 Attachment 1 Item 98-01

March 16,1998

PART 21 EVALUATION SUMMARY
GE Type SBM Control Switch Binding

- On January 23, 1998, GE issued a 10CFR Part 21.21(b) transfer of information concerning the possible failure of certain GE Type SBM Control Switches with the spring return function to reset properly after operation. GE determined it was not possible for them to evaluate the safety functions of the switches which are supplied to several nuclear power plants for unspecified safety related applications. As such, GE concluded it was not possible for them to evaluate the safety significance of possible failures to determine if a defect exists in the context of 10CFR Part 21.

- Commonwealth Edison determined the scope of applicability of the reported issue to affect Dresden, LaSalle County, and Quad Cities Stations which have two (2), two hundred forty six (246), and three (3) of the suspect switches installed in the plant. None of the suspect switches have been installed at Braidwood, Byron or Zion stations.

- Dresden and Quad Cities Stations have evaluated the condition in accordance with their site Operability Determination procedures, have placed caution cards on the subject switches and initiated action to replace the switches at the first available opportunity.

- LaSalle County Station evaluated the condition in light of current plant status, with both units shutdown for extended maintenance outages, and established operability by heightening operator awareness through communication and is currently establishing the scope of additional compensatory and corrective action plans to demonstrate operability as applied to future plant operating conditions.

- In the course of evaluating the condition reported by GE, Commonwealth Edison concluded, in the absence of compensatory action, the reported deviation may substantially increase the likelihood of switch failure when compared to a nominal base case switch failure rate without the reported condition. Since the switches control the operation of various equipment important to plant safety, this increase in failure probability without compensatory action has been determined to constitute a defect representing a substantial safety hazard per the requirements of 10CFR Part 21 and is reportable to the NRC.

Approval of this summary and the attached notification letter to the NRC signifies appropriate notification to a Commonwealth Edison Officer as require by 10CFR Part 21.

R.N. Cascarano
NES – Design Basis Programs

P.C. LeBlond
NES – Chief, Design Basis Programs

Approved: _____ Date: 3/17/98
J. B. Hosmer
Engineering Vice President

Attachments

1) GE Transfer of Information Letter SC98-01 dated January 23, 1998
2) March 16, 1998 Commonwealth Edison Part 21 Notification to NRC with NEP 10-01, Exhibit A, "Part 21 Evaluation Checklist" dated March 16, 1998