



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

SUPPORTING AMENDMENT NO. 24 TO FACILITY OPERATING LICENSE NO. NPF-22

PENNSYLVANIA POWER & LIGHT COMPANY

SUSQUEHANNA STEAM ELECTRIC STATION, UNIT 2

DOCKET NO. 50-388

1.0 INTRODUCTION

By letter dated October 10, 1985, the Pennsylvania Power and Light Company requested changes to the Unit 2 Technical Specifications (TS) to support replacement of certain magnetic-only breakers with thermal-magnetic breakers.

This amendment makes the following changes: (1) Technical Specification 4.8.4.1.a.1 is modified to achieve a greater level of clarity for this surveillance, which was previously ambiguous in cases where no trip setpoint or response time was provided. This TS now specifies how acceptance criteria are met for each type of breaker, i.e., magnetic-only (HFB-M) and thermal-magnetic (HFB-TM, KB-TM). (2) Technical Specification Table 3.8.4.1-1 is revised to reflect the replacement of magnetic-only circuit breakers with thermal-magnetic circuit breakers. Changing the containment penetration overcurrent protection from magnetic-only to thermal-magnetic circuit breakers allows detection of substantially lower short circuit currents. (3) Additional changes to Table 3.8.4.1-1 are deletion of frame rating/UL, trip setpoint and response time. Other administrative changes have been made to Table 3.8.4.1-1 and are discussed below.

2.0 EVALUATION

Technical Specification 4.8.4.1.a.1: These changes achieved a greater level of clarity in that this revision specifies how the acceptance criteria shall be met for each type of breaker, i.e., magnetic-only (HFB-M) and thermal-magnetic (HFB-TM KB-TM). In reviewing this proposal the staff finds that these changes are preferable to the existing Technical Specification. Additionally, the staff finds that, since the degree of testing for any given breaker remains unchanged and no safety implications exist, the licensee's proposal is fully acceptable.

Table 3.8.4.1-1:

I. Replacement of magnetic-only with thermal-magnetic circuit breakers.

The as-built system of containment penetration overcurrent protection was designed to provide protection for "bolted" short circuits occurring at the terminals of 480-volt motors or other loads. However, since the as-built distribution system is a 480-volt, solidly grounded system, it is assumed that "arcing" short circuits could occur. The problem is that the phase to neutral voltage in a 480-volt system is high enough to allow re-striking after the arc extinguishes at a current zero.

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This re-striking may result in very low short circuit currents (that is, very high arc resistances) which approach full load currents. Usually, these small magnitude short circuit currents are detected by motor overloads and isolated. However, in this specific case, some overloads are bypassed to ensure completion of a safety function; and, even if the overloads were not bypassed, a redundant protector would not exist since only one overload has been installed.

Changing the containment penetration overcurrent protection from magnetic-only to thermal-magnetic circuit breakers allows detection of substantially lower short circuit currents. The NRC staff originally recommended that the licensee replace these magnetic-only circuit breakers with thermal-magnetic circuit breakers; therefore, the NRC staff finds the licensee's proposal acceptable.

II. Editorial Changes

- a. The NRC staff has reviewed the licensee's proposal to reduce the amount of information in this table and reorganize the table listing. The modified format of the table deletes the Frame Rating/UL, Trip Setpoint, and Response Time columns from the Table. The listing of breaker information has been grouped by system, rather than randomly.

Electrical equipment overcurrent protective relaying (devices) protect the electrical equipment including cable and the containment penetrations from fault current. The fault current for each penetration is derived based on the system voltage level, e.g. 480 volts, 4160 volts. The licensee has included this information by noting the type of breaker, e.g. (HFB, KB). Therefore, protective devices are classified in the technical specifications at a voltage level. Thus, it is unnecessary and serves no useful purpose to specify Frame Rating/UL information in the Technical Specifications for the overcurrent protective devices' surveillance requirement.

For overcurrent protective devices, the trip setpoint and response time are required to protect the equipment from the fault current. This information has been moved from the Table and, as a practical matter, placed in the surveillance test procedure in the revised Technical Specification 4.8.4.1.

The overcurrent protective relaying for Susquehanna has two elements, magnetic (instantaneous), and thermal (long term time delay). Testing of these breakers consists of injecting a current with a value equal to 300% of the setpoint of the thermal element, and verifying that the circuit breaker operates within the time delay bandwidth for the current specified by the manufacturer. The magnetic element shall be tested by injecting a current equal to 120% of the setpoint of the magnetic element and verifying that the circuit breakers trip instantaneously.

Conformance with these practical surveillance specifications will adequately demonstrate that protection of containment penetrations will be provided by the protective devices, at appropriate values.

- b. "Circuit Breaker Location" has been changed to "Circuit Breaker Designation."
- c. "Molded Case Circuit Breaker" headings were deleted. The need for this heading is tied to a need to differentiate test methods from those used for metal case circuit breakers. The surveillance is now tied to the types listed since no metal case breakers are now in use, therefore, the deleted information would no longer serve any purpose.
- d. Editorial descriptions of specific equipment have been deleted. System and equipment number is sufficient information to be included in the Technical Specifications.
- e. Footnotes referring to vendors have been deleted since they are unnecessary. The type definitions provided are covered by the revised surveillance.
- f. Footnote "+" was revised (new footnote *) to drop a reference to A and B, because this is not always the correct designation. Furthermore, such specific information is unnecessary; the key information is that two redundant breakers are to be OPERABLE.

The staff has reviewed all the changes proposed for Table 3.8.4.1-1 and finds that these changes are appropriate to support the replacement of the magnetic breakers with thermal-magnetic breakers. Additionally, the staff finds that the information which has been deleted in Table 3.8.4.1-1 was an unnecessary restriction which did not significantly increase safe operation, and, therefore, that this change is acceptable.

It should be noted that the identical change was approved on May 28, 1985, for Unit 1.

3.0 ENVIRONMENTAL CONSIDERATION

This amendment involves a change in the installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20. The staff has determined that the amendment involves no significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that this amendment involves no significant hazards consideration, and there has been no public comment on such finding. Accordingly, this amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b) no environmental impact statement nor environmental assessment need be prepared in connection with the issuance of this amendment.

4.0 CONCLUSION

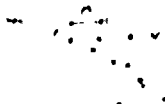
The Commission made a proposed determination that the amendment involves no

significant hazards consideration which was published in the Federal Register (50 FR 53234) on December 30, 1985, and consulted with the state of Pennsylvania. No public comments were received, and the state of Pennsylvania did not have any comments.

The staff has concluded, based on the considerations discussed above, that: (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, and (2) such activities will be conducted in compliance with the Commission's regulations and the issuance of this amendment will not be inimical to the common defense and security nor to the health and safety of the public.

Principal Contributors: Sang Rhew, Plant Systems Branch, DRL
Mari-Josette Campagnone, Project Directorate No. 3, DBL

Dated: ~~11/11/85~~ 11/11/85



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