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DENTON,H.R. Office of Nuclear Reactor Regulation

SUBJECT: Responds to 790921 ltr re multiple equipment failures & surveillance testing errors.Review of 790523 inadvertent seactor scram completed.Sufficient level of defense against common made failures provided,validating assumed criteria.

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November 14, 1979
AEP:NRC:00275

Donald C. Cook Nuclear Plant Units 1 and 2
Docket Nos. 50-315 and 50-316
License Nos. DPR-58 and DPR-74

Mr. Harold R. Denton, Director
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Mr.Denton:

This letter responds to Mr. D. G. Eisenhut's letter of September 21, 1979 concerning multiple equipment failures and surveillance testing errors. The subject of this letter was an inadvertent reactor scram and safety injection which occurred during a surveillance test on May 23,1979 at the Zion Plant Unit No. 1. We have reviewed the events described in the attachments to Mr. Eisenhut's letter for their applicability to the Cook Plant. The discussions below present the results of this review.

The potential for common mode system failures is a primary concern throughout the engineering/design and review process. AEP design philosophy, design criteria and operating practices provide the objectives necessary to defend against such failures. The means for achieving these objectives and to avoid unnecessary challenges to the reactor trip and safeguards systems (RPS/ESFAS) at the Cook Plant are; redundancy, coincidence, diversity, independence, physical separation, quality control, proven design, administrative control, and testing. These factors, in varying degrees and combinations, play an important part in the overall defense-in-depth provided in system design which serves to protect against common mode system failure at Cook Plant. Our review indicates that a sufficient level of defense against common mode failures is provided such that the criteria assumed in our accident analysis are valid and system reliability is not reduced.

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A review of past Unit trips at Cook Plant shows that component failure and/or operator error have initiated challenges to the RPS/ESFAS. These events were thoroughly reviewed subsequent to their occurrence and necessary corrective actions were taken. Our review objective is to reduce unnecessary Unit trips. We have not had an event (Unit trip) involving multiple equipment failures similar to those which are described in the attachments to Mr. Eisenhut's letter. At Cook Plant we review every plant procedure against a quality assurance review checklist. This checklist includes:

a) Verification that the format of the procedure is correct. This encompasses procedure numbers; revision numbers; scope of change; identification of type of procedure, for example, "in hand" (must be followed step by step); or general information.

b) Purpose

c) References

d) Prequisities/Precautions/Initial Conditions

e) Limitations

f) Environmental Conditions

g) Data Collection/Signoff Sheets

h) Acceptance Criteria

i) Details

j) Restoration and Retesting

In response to Mr. Eisenhut's letter, we have conducted a review of all maintenance department safety-related procedures with attention given to Shift Operating Engineer signoffs as necessary to start work, acknowledging that work has been completed, inspection hold points, assembly and reassembly instructions, and final operability testing. Our review shows that the procedures contain these controls where necessary. Responsible personnel are aware of the job being performed, when the job is started, safety aspects, and are notified of completion. Applicable data is recorded and a comprehensive review and approval of completed procedures and associated data is made. These reviews give us assurance that errors similar to those described in Mr. Eisenhut's letter will not occur at Cook Plant.

We have also reviewed all instrumentation and control surveillance test procedures to ensure that appropriate cautions have been included to make all technicians aware that challenges to the RPS/ESFAS should be avoided. The RPS/ESFAS surveillances performed during reactor operation, contain two basic precaution statements. They are as follows:

1. If during the course of this test, any other protection channel annunciator is tripped, the test must be terminated immediately for inspection and evaluation.

2. If during the course of this test, a "Wrong Test Sequence" annunciator panel alarm is initiated, stop the test and review the proper test procedure sequence, than continue the test in proper sequence.

During the testing of the solid state protection system, test switches isolate the protection channel input actuation signals and prevent the actuation of the output slave relays. The solid state protection system logic is verified utilizing the manual or semiautomatic tester input signals. Prior to the testing of an SSPS train, the reactor trip bypass breaker is placed into service, which prevents inadvertent reactor trips. This is considerably different from the incident outlined in the attachments to Mr. Eisenhut's letter wherein the problems were encountered during the testing of a relay matrix type protection system. In addition, at Cook Plant three technicians are normally assigned to perform surveillance tests. One technician monitors the annunciators and status lights, a second technician verbally reads the procedure steps while the third performs the required instruction. Continuous communications between the technicians actually performing the test and the annunciator/status light observer are maintained throughout the surveillance testing. Of the 203 reactor protection and safeguard surveillance tests and calibration procedures, all provide detailed sequential steps which ensure the prevention of a reactor trip or safety injection actuation, while providing accurate instrument calibration data. This, coupled with the program of using multiple technicians as a cross-check to avoid inadvertant errors during performance of the procedure and the existing precaution status, provides adequate cautions to avoid unnecessary challenges to the protective features of the plant.

Management policies and procedures for evaluation of reportable occurrences have been reviewed against the incident described in the attachments to Mr. Eisenhut's letter. Procedures currently in use cover both Plant and American Electric Power Service Corporation (AEPSC) management review of Cook Plant Licensee Event Reports and Condition Reports. The Plant Quality Assurance Department issues to AEPSC a monthly and annual report which identifies repetitive occurrences as indicated in Condition Reports and Licensee Event Reports. The AEPSC engineering staff reviews these repetitive condition reports and takes necessary corrective

action to prevent recurrence. The AEPSC Nuclear Safety & Design Review Committee's Subcommittee on Plant Occurrences reviews all Cook Plant Licensee Event Reports, once again with a major objective to take corrective action to prevent repetitive events.

Our review effort covers the potential for multiple equipment interactions, as necessary, in order to determine the cause of events which occur at Cook Plant and the adequacy of subsequent corrective actions. Our review would have identified the equipment failures that occurred at the Zion Plant, if they occurred at Cook Plant. Further, our reviews would identify and evaluate the causes of each failure as well as their relationship to the sequence of events. Corrective actions are also evaluated in an effort to avoid any potential problems in the Cook Plant design. Current policies and practices are adequate to assure that there is no reduction in the ability of safety systems to function.

Very truly yours,

John E. Dolan

John E. Dolan
Vice President

JED:em

cc: R. C. Callen
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