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SUBJECT: Responds to NRC 970815 ltr re violations noted in insp repts
 50-315/97-09 & 50-316/97-09 on 970505-23. Corrective actions:
 calculation DC-D-1-SI-F101 revised & revised safety review
 incorporating correct MDAFW pump start time approved.

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September 15, 1997

AEP:NRC:1260H
10 CFR 2.201

Docket Nos.: 50-315
50-316

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

Gentlemen:

Donald C. Cook Nuclear Plant Units 1 and 2
NRC INSPECTION REPORTS NO. 50-315/97009 (DRP)
AND 50-316/97009 (DRP) REPLY TO NOTICE OF VIOLATION

This letter is in response to a letter from G. E. Grant, dated August 15, 1997, that forwarded a notice of two violations of NRC requirements to Cook Nuclear Plant. The violations were identified during the operational safety team inspection (OSTI) conducted by the NRC from May 5, 1997, to May 23, 1997. The attachment contains our response to these violations.

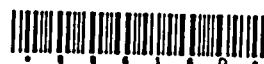
Commitments were made by Cook Nuclear Plant personnel to the NRC OSTI. The inspectors identified concerns related to valve descriptions on labels, drawings, and in procedures, and they had concerns related to our program for sealed valves. The characterization and detail of these commitments in the inspection report reflects our intent when the commitments were made.

The second violation relates to the issue of design control. While reviewing the OSTI report and preparing this response, Cook Nuclear Plant underwent an NRC architect engineering (AE) team inspection. The AE inspection identified design control issues, some that are similar to those cited in this violation. Resolution of the overall design control issue will require action beyond that which is committed to here. Those actions will be defined in the course of addressing the AE team inspection issues.

The nuclear engineering organization, along with our entire nuclear generation group, understands the importance of error free human performance and attention to detail, and to having a design basis that is clear, understandable, and retrievable. We believe that a first step was taken on September 2, 1997, when standards for technical information exchange and use in the nuclear engineering

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organization were formally established. The objective of the guidance is to provide assurances that technical information is accurate, based on sound engineering principles, properly conveyed, and properly documented.


Sincerely,



E. E. Fitzpatrick
Vice President

SWORN TO AND SUBSCRIBED BEFORE ME

THIS 15th DAY OF September, 1997



Notary Public

My Commission Expires _____

vlb

JAN WATSON
NOTARY PUBLIC, BERRIEN COUNTY, MI
MY COMMISSION EXPIRES FEB. 10, 1999

Attachments

c: A. A. Blind
 A. B. Beach
 MDEQ - DW & RPD
 NRC Resident Inspector
 J. R. Padgett



ATTACHMENT TO AEP:NRC:1260H

REPLY TO NOTICE OF VIOLATION:
NRC INSPECTION REPORT NOS. 50-315/97009 (DRP)
AND 50-316/97009 (DRP)

On May 23, 1997, the NRC completed an operational safety team inspection (OSTI) of Cook Nuclear Plant units 1 and 2 reactor facilities. Two violations of NRC requirements were identified during this inspection. In accordance with the 60 FR 34381, "General Statement of Policy and Procedures for NRC Enforcement Actions", dated June 30, 1995, the violations and our responses are provided below.

NRC Violation I

"10 CFR 50, Appendix B, Criterion V, 'Instructions, Procedures, and Drawings,' requires, in part, that activities affecting quality be prescribed by procedures of a type appropriate to the circumstances and be accomplished in accordance with these procedures.

Contrary to the above,

- A. On May 10, 1997, the inspectors identified that safety related Temporary Modification (TM) 1-95-1, which did not require an outage for restoration, had been assigned a (administrative) date of August 27, 1996, but had not been made a permanent installation through a design change or been removed as of May 10, 1997 as required by Plant Managers Procedure (PMP) 5040.MOD.OO1, 'Temporary Modifications,' Revision 7.
- B. On May 7, 1997, the inspectors identified that an activity affecting quality, the deenergization of the DG2AB inverter, was completed without placing 2-DGAB-INV-CB2 and 2-DGAB-INV-CB1 to off, contrary to steps 2.1.2 and 2.1.3 of procedure 02-OHP 4021.032.008 'Aligning DG2AB Subsystems For Standby Operation,' Revision 4, Attachment 7.

This is a Severity Level IV violation (Supplement I)."

Response to NRC Violation I

The letter from Mr. Grant, and the notice of violation, state that Cook Nuclear Plant's staff provided the NRC with satisfactory information regarding the reasons for the violation, and the corrective actions taken and planned to correct both examples of the violation and prevent recurrence. The letter goes on to say that, unless our corrective actions or our position are not accurately reflected in the inspection report, we are not required to further respond to this violation.

We have reviewed inspection report no. 50-315/316)-97009 and determined that it reflects the circumstances of the examples in the violation as cited, as well as the corrective actions taken for each.

Notwithstanding, for consistency in understanding, there is information in the discussion section of the inspection report that we wish to clarify. Several condition reports (CRs) are listed as having been reviewed in conjunction with the 2AB EDG voltage regulator work. In particular, CR 97-1452 is listed with the title "Partial Clearance Addition Determined As Root Cause for Blown Fuse On 2AB EDG Inverter." We would like to clarify that the failure to deenergize the EDG inverter using the appropriate procedure is not



considered to be the root cause for the inverter fuse blowing during reenergization.

Subsequent investigation has determined that the failure to follow the deenergization procedure was recognized before actions were taken to reenergize. Prior to using the procedure to reenergize the inverter and place it back in service, the inverter circuit alignment was corrected and the integrity of the fuse was verified. The fuse did blow coincident with performance of the procedure to reenergize the inverter.

NRC Violation II

"10 CFR 50, Appendix B, Criterion III, requires, in part, that measures be established to assure that the design basis are correctly translated into specifications, drawings, procedures, and instructions. Design control measures shall provide for verifying or checking the adequacy of design.

Contrary to the above, design control measures were not adequate to assure that the design basis was correctly translated into design modification documents:

- a. On May 7, 1997, the inspectors identified that calculation DC-D-1-SI-F101, 'Stress Analysis & Load Generation for System 1-SI-F101 Per 12-MM-590,' used the wrong moment arm and had a missing reaction force and moment.
- b. On May 13, 1997, the inspectors identified that incorrect and non-conservative design input was used for the motor-driven auxiliary feedwater pump start time in the Safety Review Memorandum for the Setpoint Values for the Time Delay Pickup Relays in the AFW Flow Retention Circuits, dated January 15, 1997, for design change package 12-DCP-0817, 'Revise Aux. Feedwater Flow Retention Circuit.'
- c. On May 13, 1997, the inspectors identified that a calculation for the seismic design adequacy of minor modification 12-MM-337 was not performed. The design package for 12-MM-337 indicated this calculation existed as DC-D-12-ES-116.

This is a Severity Level IV violation (Supplement I)."

Response to NRC Violation II

1. Admission or Denial of the Violation

We admit to violation II as cited in the NRC notice of violation.

2. Reasons for the Violation

The examples cited in the violation represent issues in the area of design control.

Concurrent with the review of the OSTI report and preparation of this response, Cook Nuclear Plant underwent an NRC architect engineering (AE) team inspection. This inspection identified design control issues, some that are similar to those cited in the violation. It is recognized that the three examples cited in this notice of violation must be



considered along with any new issues identified by the AE team inspection, relative to the overall issue of design control.

The circumstances of each issue cited in this notice of violation are discussed below.

- a. Calculation DC-D-1-SI-F101, "Stress Analysis and Load Generation for System 1-SI-F101 per 12-MM-590", was performed in support of adding a permanent vent line to the safety injection system (SIS) piping. The inspector's review of the design change package identified errors made by the authors and overlooked by the calculation reviewers. The errors are characterized as insufficient attention to detail on the part of the engineers performing and reviewing the design change package.

When calculating reaction forces, the length value of a piping span, used as a moment arm in the calculation, was transcribed from the input data presentation to the actual algebraic presentation incorrectly, from 37-5/8" to 35-5/8". This discrepancy caused the maximum reaction force result to be incorrect, but in a conservative direction.

In another section of the package, values for reaction force and moment were omitted from a summary format. These discrepancies consisted of numbers correctly derived in the body of the calculation on one page, but omitted from the summary on the following page. This problem was administrative in nature; no incorrect information was presented or used as a result.

A third discrepancy related to this design change package was noted in the body of the inspection report, but not specified in the notice of violation. The inspector made an observation that incorrect design information was stated in the safety review documentation.

Our investigation concluded there was no discrepancy in the safety review input information. The values of design temperature and pressure used by the safety reviewer were correct for the specific location where the new vent valve was to be installed. The engineer performing the design calculation conservatively used the highest bounding design temperature and pressure for the SIS as a whole.

This approach is often adopted when the inherent safety margin of a design is such that the more stringent design requirements can be accommodated. The thought process involved in taking this approach was not clearly documented in the calculation package.

- b. Design change 12-DCP-0817 was developed to add a time delay relay to the auxiliary feedwater (AFW) flow retention actuation circuit to prevent spurious actuation from momentary outlet pressure spikes, especially those that occur when the AFW pumps



automatically start. A safety review was performed by the design engineering organization for the addition of the time delay pick-up relay to the AFW system circuits.

The nuclear safety and analysis section was asked to perform an evaluation of the setpoint value for the time delay relay. The review performed by this group was intended to demonstrate that the magnitude of the time delay in the flow retention circuits would not adversely impact related accident analysis assumptions or safety margins.

In order to complete this review, the engineer needed to know how quickly the motor driven AFW pumps would start. An incorrect value of thirty seconds was used, based on a telephone conversation with the AFW system engineer at the plant site.

The system engineer communicated that the turbine driven AFW (TDAFW) pumps start and come up to speed within thirty seconds. Surveillance data on the TDAFW pumps was available on the system engineers desk at the time. What the system engineer intended was that thirty seconds would bound the start time on the motor driven pumps. Most often, in relation to safety analysis or T/S surveillance, the information of concern is a time which bounds the pump start time.

However, the safety reviewer understood that the thirty seconds would characterize the start time for the motor driven auxiliary feedwater (MDAFW) pumps. Based on surveillance measurements, the correct start time for the motor driven pumps is three seconds. Investigation into the reason for this incorrect input to the safety review concluded that it was poor communications between the involved engineers, and an incomplete understanding on the part of the system engineer as to the intended use of the information. One engineer believed the bounding start time was needed, while the other was trying to determine the shortest start time for the pumps.

- c. Minor modification 12-MM-337 was performed to replace the emergency diesel generator (EDG) starting air system safety valves. The NRC inspector indicated that the calculation for the seismic adequacy of the new valve type was not performed. The design change package referenced calculation DC-D-12-ES-116.

This referenced calculation was not intended to follow the typical format in what was then the calculation procedure. DC-D-12-ES-116 was a record-keeping and retrieval file for a number of individual reviews prepared for the replacement of non-identical valves.

The file did contain the final approval letter from the structural design section documenting that the valve change had been reviewed. However, we would have expected to find information in this file related to

the decision making process, such as isometric data, weight data, and support location information.

For unknown reasons, this file did not contain the information that would have been expected pertaining to the review of the valve replacement of 12-MM-337. The information could not be found. It was reconstructed and the new review was documented appropriately. The file now contains the appropriate information and review documentation (performed in May 1997) that confirmed the conclusion of the original design approval letter.

Whether the file was lost, or the review never documented, this condition is characterized as insufficient attention to detail. It resulted in the inability to retrieve design data or design basis related information.

3. Corrective Action Taken and Results Achieved

- a. Calculation DC-D-1-SI-F101, for the safety injection system stress analysis, was revised and approved on June 2, 1997, to address the cited discrepancies.
- b. On May 29, 1997, a revised safety review, incorporating the correct MDAFW pump start time was approved by the plant nuclear safety review committee (PNSRC). The conclusions of the original safety review remained unchanged.
- c. A walkdown and review of the valves installed under 12-MM-337, for the EDG starting air system, was performed on May 13, 1997, and documented with the related condition report. This review confirmed the original conclusions of the seismic qualification review performed in 1992. The review was formally documented on May 15, 1997.

4. Corrective Actions Taken to Avoid Further Violations

We understand the importance of "attention to detail", and to having a design basis that is clear, understandable, and retrievable. Each of the three cited examples in the NRC inspection report refer to a lack of "attention to detail", or a lack of clear communication of design information.

The three examples of design control problems highlighted in this violation will be considered again as a part of the larger set of issues identified by the NRC AE team inspection of Cook Nuclear Plant. Resolution of the overall design control issue will require action beyond that which is committed in this response. Those actions will be defined in the course of addressing the AE team inspection issues.

The violation examples a. and c. have been characterized as insufficient attention to detail.

When the errors were identified by the inspector, discussions were held with the engineers in the design engineering organization who are involved in the development and



documentation of the calculations. They were made aware of the inspection findings and the importance of attention to detail. This was accomplished while the OSTI was still in progress.

Training will be provided for personnel in the nuclear engineering organization who perform, review, and approve engineering and design calculations. The session will emphasize the importance of "attention to detail" and good calculation control processes. This training will be completed by December 31, 1997.

In 1990, as a result of design verification concerns raised during the safety system functional inspection of our essential service water system, quality review teams (QRTs) were established to periodically review design output documentation for technical adequacy and procedural compliance. These teams were disbanded in 1996. The discrepancies found under the QRT program had no impact on the conclusions of the calculations.

Selected calculations performed during the past year, August 1996, to August 1997, will be reviewed. The review will look for calculation errors, inconsistencies, proper documentation of assumptions, and procedure adherence. Any findings will be addressed and documented under the corrective action program. This assessment will be completed by December 1, 1997.

The problem cited in example b. of the violation, incorrect data input to a safety review, has been identified to be a communication problem. On August 26, 1997, the nuclear safety and analysis section conducted a tabletop session that discussed the need for precision in the use of technical information in safety reviews. It stressed that the use of written input is the preferred method, and that if verbal communication is needed, it must be followed up with a written document.

These standards for information exchange and use were formally established by procedural direction issued on September 2, 1997. This document provides requirements for nuclear engineering organization personnel when providing technical direction. The objective of the standard is to provide assurances that the information is accurate, based on sound engineering principles, properly conveyed, and properly documented.

5. Date When Full Compliance Was Achieved

Relative to the individual examples cited in the violation, full compliance was achieved:

- a. On June 2, 1997, when calculation DC-D-1-SI-F101 was reviewed and approved for the safety injection system stress analysis.
- b. On May 29, 1997, when the revised safety review for the AFW flow retention time delay relay setpoint was approved by the PNSRC.



- c. On May 15, 1997, when walkdown and review of the seismic qualification of the EDG starting air system safety valves was documented and verified.

