

ILLINOIS POWER

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L42-91 (04-05)LP
4F.190

April 5, 1991

Docket No. 50-461

Mr. A. B. Davis
Regional Administrator, Region III
U.S. Nuclear Regulatory Commission
799 Roosevelt Road
Glen Ellyn, Illinois 60137

Subject: Response to the Notice of Violation in NRC Inspection Report 50-461/90027, dated March 5, 1991

Dear Mr. Davis:

This letter provides the Illinois Power Company (IP) response to the Notice of Violation in NRC Inspection Report 50-461/90027. The Notice of Violation discusses two examples of the failure to ensure adequate design control measures were established to support Field Alterations. Attachment A includes a discussion of the background, cause and corrective actions taken for each example.

IP recognized the need to strengthen design control activities at Clinton Power Station in late 1989. In February 1990, a design transition action plan was developed to strengthen design control and improve in-house design capabilities. Included in this plan was the implementation of an engineering assurance program. The purpose of the engineering assurance program is to self-identify areas of weakness within the engineering department including engineering contractors. This program serves to facilitate implementation of a management feedback and quality improvement system.

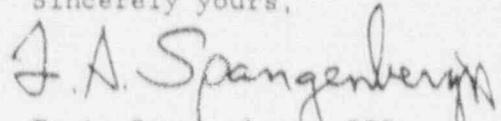
Additionally, in December 1990, a thorough self-assessment of CFS performance was conducted. Based on the results of this assessment, IP developed the 1991 Initiatives which include an initiative to "Develop In-house Design Capability." This initiative includes actions to upgrade documents and procedures, provide technical training for engineers, and increase the engineering staffing levels. Attachment B discusses the specifics of this initiative as well as actions IP has taken to provide better oversight of design contractors. Additional status on this initiative will be provided in future NRC/IP Management Meetings.

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IP believes that this response adequately resolves the concerns identified in the Notice of Violation.

Sincerely yours,

A handwritten signature in cursive script that reads "F. A. Spangenberg, III". The signature is written in dark ink and is positioned above the typed name and title.

F. A. Spangenberg, III
Manager, Licensing and Safety

JVS/ah

Attachments

cc: NRC Clinton Licensing Project Manager
NRC Resident Office
NRC Document Control Desk
Illinois Department of Nuclear Safety

Attachment A
Response to Notice of Violation
in Inspection Report 50-461/90027

A. The Notice of Violation States in part:

"... Calculations performed on October 1, 1985, January 20, 1986, and March 27, 1990 were not verified to ensure the adequacy of the design [of Field Alteration C-F057]. Further, discrepancies between the referenced calculations and previous information, in the Final and Updated Safety Analysis Report, were not evaluated to ensure that the design basis was correctly translated into specifications or instructions..."

I. Background

Field Alteration C-F057 added a temperature element in the Main Steam Tunnel area in an effort to resolve Integrated Leak Rate Test (ILRT) temperature measurement weaknesses identified in NRC Open Item 50-461/86066-02. The Field Alteration involved recalculating the volume fractions for the ILRT to account for the new sensor, and installing wiring to gather data from the sensor. (The sensor would be installed only during the ILRT.) The sensor was required because the Containment Building Main Steam Tunnel was determined to be an enclosed volume separate from the remaining Containment volume. Since this volume does not communicate with the rest of the Containment, a temperature element was added to provide adequate monitoring of the Steam Tunnel during the ILRT.

A contractor was retained by Illinois Power Company (IP) to assist in developing the ILRT program and to perform initial ILRT volume calculations in 1982-1983. Subsequently, the same contractor revised the ILRT volume calculation to incorporate minor corrections in September 1985. In January 1986, after performing the initial ILRT, IP incorporated minor revisions to the ILRT volume fraction calculation (Calculation #21) utilizing the contractor calculation as a basis. Upon completion of the initial ILRT (January 1, 1986), IP made a commitment to add a new temperature element in the Steam Tunnel prior to the next ILRT. IP performed safety-related calculation #323 on March 27, 1990 to redistribute the volume fractions to include the Steam Tunnel. The resultant volume fractions, shown on drawing SK-ILRT-1, formed a portion of the design bases for Field Alteration C-F057.

As described in the Notice of Violation, Field Alteration C-F057 relied on a series of calculations to establish the design bases for IRLT volumes. The first calculations were originated by an engineering contractor in 1983. Assumptions and engineering judgements contained in this calculation were not well documented. Also, later revisions to this calculation did not clearly document bases, assumptions, or engineering judgements. These deficiencies were not evaluated and/or the evaluations were not documented by IP during IP's use of

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the base calculations. The IP safety-related calculations also did not clearly document bases, assumptions, or differences between the calculated values and previous information.

IP's review during the NRC inspection indicated that the results of the calculations supporting Field Alteration C-F057 were valid and appropriate for use in performing the ILRT during the second refueling outage (RF-2).

II. Cause of This Violation

Nuclear Station Engineering Department (NSED) procedures did not provide guidance to the NSED engineer to ensure that vendor calculations were appropriately reviewed, assumptions and judgements were properly documented, and the engineer was familiar with design details and associated design bases, including previous calculations.

As a result, the calculations supporting Field Alteration C-F057 were difficult to follow, and the bases for the design were not readily identifiable.

III. Corrective Action Taken and Results Achieved

IP conducted a detailed review to verify the adequacy of the calculations and bases for Field Alteration C-F057 to validate the values shown on drawing SK-ILRT-1. This review, conducted jointly by NSED and Plant Staff Technical, concluded that the current values were acceptable for the RF-2 ILRT. Documentation of this review has been filed with the latest revision of the ILRT Volume Fraction calculation (IP safety-related calculation #323). In order to enhance and consolidate the information within the calculation, a complete revision of the calculation will be performed prior to the next ILRT which is currently scheduled for performance during the fourth refueling outage (RF-4).

IV. Corrective Actions Taken to Avoid Further Violations

The actions IP is taking as described in the CPS 1991 Initiative "Develop In-house Design Capability" and the actions IP has taken to provide better oversight of engineering contractors should prevent the errors identified in this violation. Attachment B describes these actions in detail.

V. Date When Full Compliance Will be Achieved

IP will be in full compliance by December 31, 1991.

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B. The Notice of Violation States in part:

"... For Field Alteration IA-F010, which modified [Main Steam Isolation Valve] MSIV, [Safety Relief Valve] SRV, and [Automatic Depressurization System] ADS valve accumulator piping configurations, the licensee failed to ensure that the design and post-modification testing criteria were adequate. The design verification was deficient, in that: (1) incorrect piping material weights were used in the seismic calculations, and the documented; (2) justification for not performing system flushing, as required by CPS 2800.04 ["Generic Flush Procedure"], was not documented; and (3) the post-modification functional (air leakage) testing criteria was without technical basis..."

I. Background

IA-F010 modified all 24 MSIV, SRV, and ADS valve accumulator piping configurations by changing the routing of common piping headers to the accumulators and the valve actuators to conform to original design requirements. The new pipe routing connects the air lines to the bottom head of the accumulators, with the outlets on top of the accumulators. The purpose of the Field Alteration is to trap any particulates in the compressed air within the accumulators, and prevent these particulates from damaging valve actuators. The modification also adds a drain plug as a long-term cleanout point in the bottom of each accumulator.

II. Cause of Violation

Numbers in parentheses refer to the item numbers stated in the violation.

- (1) NSED procedures did not require an IP review of contracted design calculations. As a result, NSED personnel did not perform an in-depth design review of the Clinton Power Station (CPS) Architect/Engineer (Sargent & Lundy (S&L)) calculations. Without this design review, minor calculation errors were not detected by IP.
- (2) Plant Staff Technical personnel did not adequately document the engineering judgement used when determining flushing of all drains was not required during the performance of CPS Procedure 2800.04. Plant Staff Technical personnel did not realize the importance of documenting the basis for not flushing all of the drains.
- (3) NSED did not adequately document engineering judgement and review of design bases when identifying post modification testing requirements.

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CPS Procedure 9061.11 "Instrument Air Check Valve Operability" was specified as a post installation test to verify proper restoration of the system following installation of the Field Alteration. Because this procedure was intended only to verify proper installation rather than modification functional requirements, the engineer did not critically review the acceptance criteria to verify it was appropriate.

III. Corrective Action Taken and Results Achieved

- (1) IP review of S&L Calculations (LEMS70 Rev. 8 & LEMS71 Rev. 9) found the differences between the assumed carbon steel and stainless steel material densities to be negligible. A calculation revision is unwarranted; a letter from S&L has been filed with the calculation, documenting the discrepancies and the basis for not revising the calculation. NSED is performing a design review of the remaining piping calculations for IA-F010. The expected completion date for this review is July 31, 1991.
- (2) The justification for deleting portions of CPS 2800.04 based on flushing methods and design bases was added to the test package.
- (3) The post installation (air leakage) testing criteria were evaluated by NSED. This evaluation included a detailed design review and a review of the justification for testing parameters. The evaluation resulted in a revision of testing methodology and the issuance of a revision to CPS 9061.11. The revised test methodology was reviewed by the NRC inspectors and was determined to be acceptable as stated in Inspection Report 50-461/90027.

IV. Corrective Actions Taken to Avoid Further Violations

- (1) The actions IP is taking as described in the CPS 1991 Initiative "Develop In-House Design Capability" and the actions IP has taken to provide better oversight of engineering contractors should prevent errors similar to those identified in this violation.
- (2) Plant Staff Technical personnel have been briefed on the requirements for and importance of documenting the justification for not flushing all components.

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- (3) The actions IP is taking as described in the CPS 1991 Initiative "Develop In-House Design Capability" should prevent errors similar to those identified in this violation.

V. Date When Full Compliance Will be Achieved

IP will be in full compliance by December 31, 1991.

Attachment B
Response to Notice of Violation
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Develop In-House Design Capability

CPS has historically been dependent on design contractors for essentially all design activities. Specific actions have been identified to reduce this dependence. Development of in-house design capability will result in: full ownership of design products; improved design productivity; and reduced cost. The Initiative actions, including some that will continue through 1993, are:

Procedure Enhancements

- * Upgrade nuclear plant design procedures necessary to enhance compliance with the quality assurance program requirements.
- * Refine procedures to assure design packages are produced that are readily translated into installation packages.
- * Finalize procedure revisions to assure complete definition of the requirements for post-modification functional testing.

These actions are in progress and are scheduled to be implemented by December 31, 1991.

Training Enhancements

- * A training plan has been developed to provide technical training for engineering.
- * To enhance the design engineers' understanding of design, develop design basis hierarchy and lower tier matrices which define the documents constituting the Plant design basis. Train engineers on use of this hierarchy and these matrices.

These actions are in progress and are scheduled to be implemented by December 31, 1991.

Staffing Additions

- * Expand the staffing levels of both the Design and Analysis Division and the Engineering Assurance Group in the Nuclear Station Engineering Department (NSED) to support additional design responsibilities and monitoring of the activities to support these responsibilities.

This action is in progress and will continue throughout the design transition process.

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Oversight of Design Contractors

To provide better oversight of contractors and to better control the quality of contractor engineering work, IP has:

- ° Established and filled a Project Manager - Design Contract Support position. This position serves as the focal point for management interactions between IP engineering personnel and engineering contractors, and should facilitate prompt, consistent and authoritative feedback on any quality of work, teamwork, cost, or schedule issues.
- ° Initiated regular meetings with Architect Engineer management to discuss and evaluate product quality, budget, schedule, and teamwork.
- ° Initiated preparation of a design interface procedure which will provide a greater degree of IP engineering involvement in designs developed by design contractors. This procedure is expected to be issued by July 31, 1991. In the interim, NSED management has instituted more thorough controls over contracted engineering activities, including more stringent reviews of contractor products.