Iowa Electric Light and Power Company June 12, 1981 DAEC-81-334

Mr. James G. Keppler, Director Office of Inspection and Enforcement Region III U. S. Nuclear Regulatory Commission 799 Roosevelt Road Glen Ellyn, Illinois 60137

Subject: Unique Report 81-2

File: A-118, NRC-1, NRC-7

Dear Mr. Keppler:

This report is submitted in accordance with the requirements of Appendix A to Operating License DPR-49, Specification 6.11.3.

Problem Discussion

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PDR

On March 3, 1981 during review of a revision to a design change package it was discovered that the potential for opening any containment isolation valve which had been previously isolated by a Group 3 isolation signal, even though the isolation signal was still present, was created by the design change. Operation of any valves which had been isolated by a Group 3 would still require deliberate operator action to bypass the isolation and operate the valve. The design change was completed during the 1980 refueling outage.

Prior to implementation of the design change, the isolation could only be bypassed for the drywell and torus outboard vent valves (18-inch valves) and inboard bypass vent valves (2-inch). Only one of the two vent paths, either drywell or torus, could be opened at a time. Reisolation of any valves whose isolation had been bypassed would not have occurred as a result of subsequent isolation signalas.

An NRC Division of Operating Reactors letter (October 22, 1979) required containment isolation valves whose isolation signal had been bypassed, to be reisolated on a diverse isolation signal. In response to this letter a design change was initiated. The intent of the design change was to allow the isolation for the containment vent outboard and inboard bypass valves to be bypassed to enable plant personnel to vent the containment with a valid isolation signal present. Any subsequent diverse isolation signal would result in the reisolation of any vent valve whose isolation had been previously bypassed. The four isolation signals which result in Group 3 isolations are high drywell pressure, reactor vessel low water level, reactor building ventilation exhaust high radiation or fuel pool exhaust high radiation.

The design change which was developed and installed, however, allowed a Group 3 isolation signal to any of the containment isolation valves to be bypassed, and the valves to be manually opened. This could have potentially resulted in a condition where several containment isolation valves could have been manually opened by operations personnel with a valid isolation signal present. A Group 3 isolation

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would normally only be bypassed to allow venting of the containment. The opening of the inboard and outboard 18-inch containment vent valves (rather than the intended outboard vent and inboard bypass valves) could have resulted in the damaging of the HEPA filters upstream of these valves in the Standby Filter Units. Although the design error would have allowed the simultaneous opening of any of the containment isolation valves with a valid isolation signal present and bypassed, this action was never taken. Operating Instructions for relieving containment pressure during normal operation specify opening of the inboard vent bypass valve and outboard valve. Containment venting required management approval prior to venting.

Cause Description

The design change package was inadequate to address the original problem of reisolation of containment vent valves. The design package provided all the valves isolated by a Group 3 isolation signal the same bypass capability as that originally intended for the containment outboard (CV 4301 and 4303) and inboard bypass (CV 4309 and 4310) valves.

Corrective Action

Upon discovery of the design error, the instructions to Operations personnel to contact management personnel prior to venting was reinforced with an additional note from the Operations Supervisor. This stipulation administratively prevented the opening of isolation valves when a containment isolation signal was present.

During the 1981 refuel and maintenance outage, the design change was revised to correct the design error. This modification returned the bypass function to its original intended status; namely, allowing only the outboard valve and inboard bypass valve to be operated when a containment isolation signal is present. The bypass function of the vent outboard and bypass valves is unique in requiring three deliberate operator actions: (1) bypass the existing isolation signal, (2) the operator must select drywell or torus override, and (3) the operator must open the individual valves using its handswitch. Any subsequent diverse isolation signal will reisolate these valves. It should be noted that the present design provides isolation of all other Group 3 valves except those discussed whenever an isolation signal is bypassed by the operator. Plant operating instructions have been revised to reflect the 1981 design change.

Subsequent to the design modification being installed, the logic and controls were tested and found to operate as originally intended.

On March 13, 1981 the potential consequences of opening both the 18-inch inboard and outboard containment vent valves were reviewed by the Iowa Electric 10CFR21 Evaluation Committee and it was determined that no health and safety hazard existed as a result of this incident. It was further determined that a reportable defect under 10CFR21 did not exist but that a submittal of a Unique Report would be appropriate. Mr. James G. Keppler June 12, 1981 Page 3

This report has been reviewed by the DAEC Operations Committee.

Very truly yours, Im

Daniel L. Mineck Chief Engineer Duane Arnold Energy Center

DLM/MSR/p1

Docket No. 50-0331

cc: P. Ward

- K. Meyer
- L. Root
- R. McGaughy
- J. Vinquist
- NRC Resident Inspector
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All 1980 Design Changes have been reviewed by ie: engineering and the plant which were implemented during 1980.

The review considered safety related design changes performed during this period. The safety related design changes were further classified into categories of mechanical, plant equipment improvement and design logic changes. Since the design basis of mechanical changes is more clearly defined and rigorously based upon calculation, a detailed review of mechanical packages was deemed unnecessary. Plant betterment DCR's, those which changes existing plant equipment to an improved/approved type but which did in no way alter the design philosophy were briefly considered and found to have no impact on design philosophy. Design changes which altered protective logic functions were given careful scrutiny. Two safety related DCR's, DCR 759 - Emergency Power Modifications and DCR 700 - Recirculation Pump Trip Modification, had well established design intents which were approved by the NRC prior to implementation. Five DCR's were required to be installed by the post-TMI NUREG requirements as listed:

> DCR 767- Add pressure indication on relief valve tail pipe as a diverse signal to detect "stuck up relief valve".

- DCR 906 Bypass capability of H₂ isolation valves to the drywell to assure a long term N₂ supply to ADS (relief valve accumulators)
- DCR 907- Modified control circuitry to isolation valves so that isolation valves would not re-open automatically on resetting the isolation logic.
- DCR 908- A temporary change to allow for bypassing of isolation to reactor water sample values any turner under accident conditions to provide a means of drawing reactor water samples. This change will be removed/modified upon implementation of the total post-accident monitoring system in 1981.

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DCR 918 and DCR 918, Seq. 5 - The problems and
solutions to this DCR are documented in
the Unique Report 81-2 to the NRC

The aforementioned design changes were reviewed for design intent/philosophy. Only DCR 918 was found to have problems which were identified and corrected by the plant during the 1981 refueling outage as described in the Unique Report.

To preclude futher events of the type described in Unique Report Iowa Electric prior to the 1981 refueling outage instituted 81-2 a special review and test group (post installation modification test subcommittee) whose job it was to assure the modifications to safety related systems were carefully reviewed and tested from both design intent and functional aspects prior to recommending the modifications/modified system be returned to operational service. In addition, a program has been put into effect which results in engineering, licensing and plant personnel with a high degree of expertise meet in order to establish, review, and approve the design intent prior to commencing the design change package. This problem has not yet been formalized on paper but is in effect and should be formalized shortly. The above steps which will result careful review of all future design changes from inception to implementation should preclude recurrence of the types.of problems previously described.