Commonwealth Edison
One First National Plaza, Chicago, Illinois
Address Reply to: Post Office Box 767
Chicago, Illinois 60690



October 28, 1976



Mr. Benard C. Rusche, Director
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Subject: Dresden Station Units 2 and 3 - Proposed Amendment to Technical Specifications for Facility Operating License DPR-19 and DPR-25, to Authorize Operation With One Automatic Depressurization System (ADS) Valve Out of Service for 30 Days, NRC Docket Nos. 50-237 and 50-249

References (a): D. L. Ziemann Letter to J. S. Abel dated August 29, 1975 - Amendment No. 5 and Change No. 22 to DPR-25, NRC Docket No. 50-249.

(b): D. L. Ziemann Letter to R. L. Bolger dated May 23, 1976 - Amendment No. 21 to DPR-19, NRC Docket No. 50-237.

Dear Mr. Rusche:

Pursuant to 10 CFR 50.59, Commonwealth Edison proposes to amend the Technical Specifications Appendix A to Facility Operating Licenses DPR-19 and DPR-25 in order to authorize operation with one automatic depressurization system (ADS) valve out of service for up to 30 days.

The original Technical Specifications for the units permitted 30 days operation with one ADS valve out of service. The permissible out of service time for one ADS valve was reduced by the NRC for Dresden Units 2 and 3 and References (a) and (b). According to the safety evaluation, the reduction in the permissible out of service time was made because the analysis made in accordance with 10 CFR 50 Appendix K assumed all ADS valves were available.

General Electric Company has conducted an analysis with the most limiting ADS valve out of service using the ECCS performance codes which have been approved by the NRC for use in demonstrating conformance with 10 CFR 50.46 and Appendix K. The enclosed results



11190

of the analysis shows that, for the most limiting loss of coolant accident (LOCA) of break size 0.10 ft.$^2$, assuming the worst single failure of the high pressure coolant injection (HPCI) system, the peak cladding temperature (PCT) will be 2120$^o$F which is well within the final acceptance criteria of 2200$^o$F PCT. No reduction in the maximum average planar linear heat generation rate (MAPLHGR) or power levels were necessary to comply with the Appendix K requirements while operating with an ADS valve out of service.

Inasmuch as the General Electric analysis has specifically addressed the concerns in the safety evaluation for which the reduction in out of service time was based, this amendment proposes that the original 30 day period by restored.

Restoration of the original 30 day period is requested in order to schedule outages for repair of an ADS valve during periods of minimum load and to assure adequately planned outages. Under the present limitation of seven days, it would be necessary to shut down to make repairs on the next weekend (period of minimum load). This would probably be within a few days of discovering the malfunction and may not provide the Station with adequate time to properly plan the outage. Of greater significance is the fact that the other units may already be scheduled for outages that period and a shutdown of a nuclear unit may force the rescheduling of another outage or severely affect our capability to meet the load demand for that weekend. A midweek shutdown during maximum load conditions, of course, results in a severe economic penalty.

At the present time, many large units both fossil and nuclear are being overhauled while other large units are off line for unscheduled emergency repairs. The ability to defer a potential outage to repair an ADS valve for up to 30 days would be of great value because of the generation capacity which would be restored in the interim.

This proposed change has received on-site and off-site review.

In view of the potential impact of this amendment on unit availability, prompt consideration of this amendment is requested.

Three (3) signed originals and 37 copies are provided for your use.

Very truly yours,

R. L. Bolger
Assistant Vice President

SUBSCRIBED and SWORN to before me this 28th day of October, 1976.

Nancy M. Hollingsworth
Notary Public

Enclosure (1): Forty (40) copies of amended pages 78 and 84 to Appendix A, License Nos. DPR-19 and DPR-25.

Enclosure (2): Dresden Units 2 and 3 and Quad-Cities Units 1 and 2 ECCS Appendix K analysis with one ADS valve out of service.

Note: Copies of Technical Specification pages are provided for the limiting condition for operation (LCO) section and the bases section although the bases section was not altered in previous licensing action.

| 3.5 LIMITING CONDITION FOR OPERATION | 4.5 SURVEILLANCE REQUIREMENT |
|---|---|
| D. Automatic Pressure Relief Subsystems | D. Surveillance of the Automatic Pressure Relief Subsystem shall be performed as follows: |
| 1. Except as specified in 3.5.D.2 and 3 below, the Automatic Pressure Relief Subsystem shall be operable whenever the reactor pressure is greater than 90 psig and irradiated fuel is in the reactor vessel | 1. During each operating cycle the following shall be performed:<br>a. A simulated automatic initiation which opens all pilot valves, and<br>b. With the reactor at low pressure each relief valve shall be manually opened until thermocouples downstream of the valve indicate fluid is flowing from the valve.<br>c. A logic system functional test shall be performed each refueling outage. |
| 2. From and after the date that one of the five : relief valves of the automatic pressure relief subsystem is made or found to be inoperable when the reactor is pressurized above 90 psig with irradiated fuel in the reactor vessel reactor operation is permissible only during the succeeding thirty days unless repairs are made and provided that during such time the HPCI Subsystem is operable. | 2. When it is determined that one electromatic relief valve of the automatic pressure relief subsystem is inoperable, the HPCI shall be demonstrated to be operable immediately and weekly thereafter. |
| 3. From and after the date that more than one of five relief valves of the automatic pressure relief subsystem are made or found to be inoperable when the reactor is pressurized above 90 psig with irradiated fuel in the reactor vessel reactor operation is permissible only during the succeeding 24 hours unless repairs are made and provided that during such time, the HPCI Subsystem is operable. | 3. When it is determined that more than one electromagnetic relief valve of the automatic pressure relief subsystem is inoperable, the HPCI subystem shall be demonstrated to be operable immediately. |

D. Automatic Pressure Relief – The relief valves of the automatic pressure relief subsystem are a back-up to the HPCI subsystem. They enable the core spray or LPCI to provide protection against the small pipe break in the event of HPCI failure, by depressurizing the reactor vessel rapidly enough to actuate the core sprays or LPCI. The core spray and/or LPCI provide sufficient flow of coolant to limit fuel clad temperatures to well below clad melt and to assure that core geometry remains intact.

Redundancy has been provided in the automatic pressure relief function in that only 4 of the 5 valves are required to operate. Loss of 1 of the relief valves does not materially affect the pressure relieving capability and therefore a 30-day repair period is specified. Loss of more than 1 relief valves significantly reduces the pressure relief capability and thus a 24-hour repair period is specified.

E. Isolation Cooling System – The turbine main condenser is normally available. The isolation condenser is provided for core decay heat removal following reactor isolation and scram. The isolation condenser has a heat removal capacity sufficient to handle the decay heat production at 300 seconds following a scram. Water will be lost from the reactor vessel through the relief valves in the 300 seconds following isolation and scram. This represents a minor loss relative to the vessel inventory.

The system may be manually initiated at any time. The system is automatically initiated on high reactor pressure in excess of 1060 psig sustained for 15 seconds. The time delay is provided to prevent unnecessary actuation of the system during anticipated turbine trips. Automatic initiation is provided to minimize the coolant loss following isolation from the main condenser. To be considered operable the shell side of the isolation condenser must contain at least 11,300 gallons of water. Make-up water to the shell side of the isolation condenser is provided by the condensate transfer pumps from the condensate storage tank. The condensate transfer pumps are operable from on-site power. The fire protection system is also available as make-up water. An alternate method of cooling the core upon isolation from the main condenser is by using the relief valves and HPCI subsystem in a feed and bleed manner. Therefore, the high pressure relief function and the HPCI must be available together to cope with an anticipated transient so the LCO for HPCI and relief valves is set upon this function rather than their function as depressurization means for a small pipe break.

F. Emergency Cooling Availability – The purpose of Specification D is to assure a minimum of core cooling equipment is available at all times. If, for example, one core spray were out of service and the diesel which powered the opposite core spray were out of service, only 2 LPCI pumps would be available. Likewise, if 2 LPCI pumps were out of service and 2 containment service water pumps on the opposite side were also out of service no containment cooling would be available. It is during refueling outages that major maintenance is performed and during such time that all low pressure core cooling systems may be out of service. This specification provides that should this occur, no work will be performed on the primary system which could lead to draining the vessel. This work would include work on certain control rod drive components and recirculation system. Thus, the specification precludes the events which could require core cooling. Specification 3.9 must also be consulted to determine other requirements for the diesel generators.

# DRESDEN 2/3 AND QUAD CITIES 1/2
# ECCS APPENDIX K ANALYSIS
# WITH ONE ADS VALVE OUT OF SERVICE

## INTRODUCTION

The basic ECCS analysis performed for Dresden 2/3 and Quad Cities 1/2[1] in accordance with 10CFR50.46 and Appendix K and submitted to the NRC in April of 1975 was based on the assumption that all five (5) Automatic Depressurization System (ADS) valves were in operation when required. This analysis assumption does not allow plant operation with any ADS valves out of service. Thus, the loss of one (1) ADS valve during plant operation would require a plant shutdown and repair of the valve prior to continued operation. The purpose of this document is to provide the technical bases for plant startup and/or operation with one (1) ADS valve out of service.

## DISCUSSION

ADS operation is only significant for small break sizes up to 0.5 $ft^2$. For break sizes larger than 0.5 $ft^2$ the system pressure is reduced rapidly such that by the time the ADS is placed in operation it does not contribute to the reduction in peak cladding temperature (PCT).

Analysis results have shown that the only break sizes resulting in higher PCT than the previous calculations[1] are breaks up to 0.5 $ft^2$ in size. The increase in PCT that results with one ADS valve out of service is summarized in Table 1. The maximum increase in PCT occurs for a 0.03 $ft^2$ break in the suction side of the recirculation line and is approximately 500°F. The maximum PCT resulting from the analysis is 2120°F at break size of 0.10 $ft^2$ in the suction side of the recirculation line.

## CONCLUSION

The results shown in Table 1 verify that the MAPLHGR's calculated for each fuel type as shown in the plant Technical Specifications are applicable to continuous full power operation with one ADS valve out of service.

## REFERENCE

1. "Quad Cities Station Unit 2 Special Report No. 15, Supplement C", April 1975.

TABLE 1

DRESDEN 2/3-QUAD CITIES 1/2
PCT WITH ONE ADS VALVE OUT OF SERVICE

| Worst Single Active Failure | Break Area, $Ft^2$ | Maximum PCT, °F |
|---|---|---|
| HPCI | .03 | 2060* |
| " | .05 | 2040** |
| " | .07 | 2000** |
| " | .10 | 2120* |
| " | .30 | 1330* |
| " | .40 | 1340* |
| LPCI Injection Valve | .50 | 1350* |

*REFLOOD small break model

**CHASTE small break model