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U-601960
L47-92(04-16)-LP
8E.100a

10CFR50.90
JSP-206-92
April 16, 1992

Docket No. 50-461

Document Control Desk
Nuclear Regulatory Commission
Washington, D.C. 20555

Subject: Clinton Power Station
Proposed Amendment of Facility
Operating License No. NPF-62

Dear Sir:

Pursuant to 10CFR50.90, Illinois Power Company (IP) hereby applies for amendment of Facility Operating License No. NPF-62, Appendix A - Technical Specifications, for Clinton Power Station (CPS). This request consists of a proposed change to Technical Specification 3/4.1.5, "Standby Liquid Control System." A description of the proposed change, the associated justification (including a Basis For No Significant Hazards Consideration), and marked-up copies of the affected pages from the current Technical Specifications are provided in Attachment 2. In addition, an affidavit supporting the facts set forth in this letter and its attachments is provided in Attachment 1.

IP has reviewed the proposed change against the criteria of 10CFR51.22 for categorical exclusion from environmental impact considerations. The proposed changes do not involve a significant hazards consideration, or significantly increase the amounts or change the types of effluents that may be released offsite, nor do they significantly increase individual or cumulative occupational radiation exposures. Based on the foregoing, IP concludes the proposed changes meet the criteria given in 10CFR51.22(c)(9) for a categorical exclusion from the requirement for an Environmental Impact Statement.

Sincerely yours,

J. S. Perry
Vice President

TAB/alh

Attachments

A001
1/1

cc: NRC Clinton Licensing Project Manager
NRC Resident Inspector, V-690
NRC Region III, Regional Administrator
Illinois Department of Nuclear Safety

Attachment 1
to U-601960

STATE OF ILLINOIS
COUNTY OF DEWITT

J. Stephen Perry, being first duly sworn, deposes and says: That he is Vice President of Illinois Power Company; that the application for amendment of Facility Operating License NPF-62 has been prepared under his supervision and direction; that he knows the contents thereof; and that to the best of his knowledge and belief said application and the facts contained therein are true and correct.

DATE: This 16 day of April 1992

Signed: J. Stephen Perry

Subscribed and sworn to before me this 16th day of April 1992.

Pamela K. Spurling
Notary Public

" OFFICIAL SEAL "
PAMELA K. SPURLING
NOTARY PUBLIC, STATE OF ILLINOIS
MY COMMISSION EXPIRES 5/24/95

Background

The Clinton Power Station (CPS) Standby Liquid Control (SLC) system consists of two positive displacement pumps each rated at 43 gpm and 1220 psig. The SLC system is designed to assure reactor shutdown from full power operation to a cold, subcritical condition without control rod movement, by mixing a neutron absorber solution with the primary coolant. Based on the original design of the system, each pump was to provide 100% of the required capacity.

Subsequent to initial plant design, the Anticipated Transient Without Scram (ATWS) Rule (10CFR50.62) was issued. This rule requires each Boiling Water Reactor to have an SLC system with a minimum flow capacity and boron concentration to achieve a reactivity control capability equivalent to 86 gpm of 13 weight-percent sodium pentaborate solution injected into a 251-inch reactor vessel. As this required capability exceeded the original design requirements of the SLC system for most BWRs, implementation of this rule was generally achieved by either using an enriched boron solution or an increased injection rate. CPS chose to increase the injection rate by using both pumps. As a result of issuance of the ATWS Rule requirements, the CPS SLC system operating procedure was revised to initiate both pumps in the event operation of the system was required.

On February 15, 1991 the NRC issued Information Notice No. 91-12, "Potential Loss of Net Positive Suction Head (NPSH) of Standby Liquid Control System Pumps". The information notice stated that, depending on the SLC system pump suction piping configuration, the simultaneous operation of both SLC system pumps may create NPSH issues not included in the original design. Therefore, as a result of this concern, the Information Notice was issued to alert licensees of potential problems with the adequacy of NPSH for SLC system pumps under conditions of minimum SLC storage tank level and maximum sodium pentaborate solution temperature in the tank.

In response to the Information Notice, Illinois Power (IP) performed an analysis to determine if adequate NPSH would be available with two-pump operation and the SLC system storage tank at the most limiting conditions for NPSH (i.e., minimum storage tank level and maximum temperature). The analysis indicated that, based on preoperational testing, the system design provides adequate NPSH for dual-pump operation under the worst case conditions. However, the analysis indicated the SLC system storage tank level instrument zero should be raised 9.38 inches to prevent potential air entrainment in the pump suction piping due to vortexing. As this change in instrument zero results in a larger volume of sodium pentaborate solution below instrument zero (i.e., "unavailable" volume), Technical Specification Figure 3.1.5-1, "Weight Percent Sodium Pentaborate Solution as a Function of Net Tank Volume," must be revised due to the reduction in net tank volume.

Description of Proposed Change

CPS Technical Specification 3/4.1.5, "Standby Liquid Control System," identifies and prescribes the requirements for determining the operability of the SLC system. The surveillance requirements necessary to demonstrate system operability include verification of the available volume of sodium pentaborate solution in the SLC system storage tank. The available volume of sodium pentaborate solution is required to be within the limits of Technical Specification Figure 3.1.5-1 which specifies the minimum quantity of solution (at

a particular weight-percent concentration) required to meet the system's safety basis as required by the ATWS Rule. Figure 3.1.5-1 currently identifies the storage tank volume associated with the low-level alarm, the high-level alarm, and the overflow level, as well as the minimum required sodium pentaborate solution concentration.

In accordance with 10CFR50.90, the following changes to Technical Specification 3/4.1.5 are being proposed:

1) Figure 3.1.5-1 is being revised to identify the change in the net tank volume associated with the overflow level as well as to remove the specified high-level alarm setpoint volume and to remove the notes which do not aid the operator in maintaining system operability in compliance with 10CFR50.62.

2) In addition to the above change, IP proposes a change to the Bases for Technical Specification 3/4.1.5 to provide additional clarification and documentation of the boundaries identified in proposed Figure 3.1.5-1.

Justification for Proposed Change

As stated in the Bases for CPS Technical Specification 3/4.1.5, a minimum available quantity of 3574 gallons of sodium penetaborate solution is adequate to bring the reactor from full power to a cold, xenon-free shutdown, assuming the withdrawn control rods remain fixed in the rated-power pattern. The volume of sodium pentaborate solution below instrument zero is assumed to be unavailable for injection. After raising the instrument zero for the storage tank level instrumentation at CPS, it was necessary to recalibrate the low-level alarm such that the corresponding level continues to be equivalent to a net volume of 3574 gallons of sodium pentaborate solution available in the storage tank. Additionally, the high-level alarm was recalibrated such that its corresponding level continues to be equivalent to a net volume of 4526 gallons of sodium pentaborate solution available in the storage tank. These changes resulted in an increase in the required gross volume of solution in the storage tank, thus reducing the expansion volume.

The expansion volume within the tank is the volume between the high-level alarm and the overflow level. The high-level alarm is an administrative limit intended to notify the operator that the tank level is approaching the overflow level and to provide sufficient time for any required action. The high-level alarm setpoint does not define a limit required to maintain system operability in compliance with 10CFR50.62 nor does reducing the expansion volume impact the operability of the system. The expansion volume provides space for level changes as a result of heating and mixing of the sodium pentaborate solution. The noted change does reduce the expansion volume, but it has been determined the reduced expansion volume continues to provide adequate space for heating and mixing of the solution.

Additional changes have been made to Figure 3.1.5-1 to reduce potential confusion and aid in operator understanding. As discussed above, the line on the figure indicating the net volume associated with the high-level alarm setpoint is provided only for information and does not define a limit required to maintain system operability in compliance with 10CFR50.62. Therefore, this line was deleted to provide the operator with a clear understanding of the acceptable region for operation of the system. The notes on the figure were deleted since

they provided no additional information and are unnecessary without the high level alarm line.

In support of the above changes, it is proposed that the Bases for Technical Specification 3/4.1.5 be revised. Additional documentation and clarification of how the boundaries of the acceptable region for operation were developed is provided. This proposed revision will ensure that the basis for the figure is understood and that the impact of any proposed changes to the figure in the future can be evaluated. The revised bases will provide plant personnel with a clear understanding of the importance of this figure and demonstrate how CPS compliance with 10CFR50.62 is achieved in relation to the design basis of the system.

The proposed changes do not affect the net quantity of sodium pentaborate solution that is available for injection. There is no change to the system operation and the design basis for the system remains unchanged. In addition, the CPS SLC System is still in compliance with the ATWS Rule, and raising the instrument zero by the determined amount has no impact on the system's safety basis or its ability to perform its required function. By implementing this change in instrument zero the potential for air entrainment in the pump suction piping due to vortexing will be reduced.

Basis For No Significant Hazards Considerations

In accordance with 10CFR50.92, a proposed change to the operating license (Technical Specifications) involves no significant hazards considerations if operation of the facility in accordance with the proposed change would not: (1) involve a significant increase in the probability or consequences of any accident previously evaluated, or (2) create the possibility of a new or different kind of accident from any accident previously evaluated, or (3) involve a significant reduction in a margin of safety. This request is evaluated against each of these criteria below.

(1) As discussed previously, increasing the instrument zero elevation reduces the total available volume of sodium pentaborate solution above the revised instrument zero. However, the low-level and high-level alarm setpoints were also revised to account for the revised instrument zero such that the net volume of sodium pentaborate solution corresponding to each of these setpoints does not change. As a result, sufficient sodium pentaborate solution will continue to be available to shut down the reactor in the event of an ATWS event. In addition, revisions have been made to the figure to provide additional understanding and less confusion in the use of the figure. Since these changes do not impact the ability of the system to perform its function, this request does not result in a significant increase in the consequences of any accident previously evaluated. With respect to the probability of occurrence of any accident previously evaluated, the SLC system is designed to mitigate the consequences of transients/accidents in the event of a failure to scram. Operation of the SLC system and the impact of the proposed changes on the SLC System have no impact on the probability of occurrence of those transients/accidents.

(2) This request does not result in any change to the plant design or operation beyond the change to the instrument zero for the SLC storage tank level instrumentation. The proposed change does not involve any changes to the plant design other than that specifically described and impacts no other

systems or components. In fact, the proposed changes ensure the design requirements of the system are achieved. As a result, no new failure modes are introduced, and the request will not create the possibility of a new or different kind of accident from any accident previously evaluated.

(3) The proposed request does not adversely impact the reliability of the SLC system as the reliability of SLC system operation is in fact increased by preventing potential air entrainment in the pump suction piping due to vortexing. Since this request does not involve an adverse impact to system operation or reliability, and since SLC system reactivity control capability is not affected by the proposed change, this request does not involve a significant reduction in a margin of safety.

Based upon the foregoing, IP concludes that this request does not involve a significant hazards consideration.