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Docket No. 50-461

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Nuclear Regulatory Commission  
Washington, D.C. 20555

Subject: Clinton Power Station Response to Request for  
Additional Information Related to Proposed Amendment  
of Facility Operating License No. NPF-62 (PS-95-015)

Dear Madam or Sir:

By letter dated February 22, 1996 (letter number U-602551), Illinois Power (IP) submitted an application for amendment of the Clinton Power Station (CPS) Operating License (License No. NPF-62) to incorporate a proposed change to the CPS Technical Specifications (Appendix A). IP proposed to revise Technical Specification (TS) 3.4.11, "Reactor Coolant System (RCS) Pressure and Temperature (P/T) Limits," to incorporate specific P/T limits for the bottom head region of the reactor vessel, separate and apart from the core beltline region of the reactor vessel.

IP received a Request for Additional Information (RAI) from the NRC (dated June 24, 1996) requesting a formal response to a number of questions that were raised during the review process of the proposed license amendment. Attachments 1 and 2 to this letter provide IP's response to each of the questions contained in the RAI.

Sincerely yours,

Michael W. Lyon  
Director-Licensing

310001

JFK/csm

Attachments

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

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By letter dated June 24, 1996, the NRC requested additional information related to Illinois Power's (IP's) February 22, 1996 request to amend the Operating License for Clinton Power Station (CPS). IP's response to each of the specific questions is provided below.

Questions and Responses

1. **"The Background section states that the lower head temperature during leak and hydro testing is typically at a lower temperature than the beltline due to cold water injection through the control rod drive penetrations:**

**What is the typical temperature differential between the lower head and the beltline for hydro and leak test conditions?**

**In the Clinton Power Station Technical Specifications, SR 3.4.11.1 states that metal temperatures are measured at the lower head, vessel flange and recirculation loop. Where in the recirculation loop is the temperature measured? Will temperatures now also be measured at the vessel beltline or will the beltline temperature be inferred from other measurements?"**

Response: Using the current P-T limits curves and reactor vessel exposure, the temperature difference between the bottom head and the beltline region is approximately 14 °F at test conditions.

The coolant temperature in the reactor recirculation loops is measured between the pumps and the suction isolation valves. The recirculation loop isolation valves remain open during hydrostatic and pressure testing. The beltline temperature will continue to be inferred from the reactor coolant temperature measured in the recirculation loops.

2. **"The ASME Code, Appendix G requirements state that "the system hydrostatic test . . . should be performed at a temperature not lower than the highest required temperature for any component of the system." The submittal acknowledges that the beltline curves are currently limiting for vessel test conditions. Provide the rationale (or clarification) as to why the proposed technical specification amendments meet the ASME Code requirements."**

Response: Though the applied test pressure applies to all regions within the reactor vessel, each region may be separately evaluated for the most limiting component. The operating conditions for the bottom head and beltline region are not the same. The bottom head of the reactor vessel receives a small fraction of the neutron fluence that the beltline receives. As such, by

using ASME methodologies, the calculated P-T limits applicable to the bottom head are evaluated separately and are lower than for the beltline region due to the less severe irradiation embrittlement effects. Therefore, the calculated temperature limits for each region continue to be based on the most limiting component in accordance with ASME requirements.

3. **"The Section on the Core Beltline Region refers to revising the P-T limits curves after withdrawal of the first surveillance capsule at 10 EFPY. For the currently projected outage schedule, when would the capsule be removed and when would test results be available?"**

Response: The withdrawal of the first surveillance capsule is currently scheduled for the ninth refueling outage (Spring, 2001). At that time the reactor vessel will have 10 EFPY and the capsule will have 6 EFPY. The difference in EFPY is due to the lead factor associated with the location of the capsules within the vessel. The results of specimen testing and subsequent analyses should be available within a year of their withdrawal from the vessel.

4. **"The Section on Non-Beltline Regions discusses stress and fracture toughness analyses performed for the BWR/6. Provide the reference with the details of these analyses."**

Response: Attached is a copy of General Electric report SASR 89-59. The report contains a description of the analyses performed to establish the P-T limits curves that are proposed to be adopted for use at CPS by this TS amendment request. Figure 4-2 of this document is the basis for TS Figure 3.4.11-1. The curve marked "BOT HD" is the applicable curve for the bottom head. This reference indicates that the ASME Code has been applied to both the beltline and the bottom head, but it accounts for lower neutron radiation exposure levels for the development of the bottom head curve.

Attachment 2  
to U-602612  
PS-95-015

Copy of General Electric Report SASR 89-59