Michael T. Coyle
Vice President

AmerGen
A PECO Energy/British Energy Company

Clinton Power Station
P.O. Box 678
Clinton, IL 61727
Phone: 217 935-8881 Ext. 4161

U-603338
8E.100a
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Docket No. 50-461

10CFR50.90

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

Subject: Additional Information Regarding Proposed Amendment of Facility Operating License No. NPF-62 for Clinton Power Station (LS-97-006)

Dear Madam or Sir:

By Letter U-603032, dated October 23, 1998, as supplemented and/or revised by Letter U-603160 dated February 22, 1999 and U-603212 dated June 24, 1999, a proposed amendment of the Clinton Power Station (CPS) Operating License (License No. NPF-62) was requested pursuant to 10CFR50.90. The application, which is currently under review by the NRC staff, consists of proposed changes to the CPS Technical Specifications (TS) to implement a feedwater leakage control system (FWLCS) mode of the residual heat removal (RHR) system to enhance the isolation capability of the primary containment feedwater penetrations. While it would support implementation of the FWLCS, the amendment would also change the periodic leakage testing requirements for the primary containment feedwater penetration isolation check valves such that a water leakage test would be allowed to be performed in lieu of the currently required air leakage test.

Pursuant to the amendment application, a teleconference was recently conducted between representatives from the NRC staff and AmerGen Energy Company, LLC (AmerGen). During this teleconference the NRC staff requested additional information with regard to the impact of the FWLCS on the flow(s) required for other RHR modes of operation. This question was prompted by one of the changes proposed for the TS wherein the minimum required RHR flow rate specified in the TS for the suppression pool cooling mode of operation is being reduced from 5050 gpm to 4550 gpm. As it is understood that the FWLCS is designed to utilize some of the total RHR pump flow (following a design-basis loss of coolant accident), the staff requested additional information regarding the basis for the new value proposed for the minimum required suppression pool cooling flow. The

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staff also requested additional information regarding the potential impact of FWLCS flow on other modes of the RHR system. Pursuant to these requests, the additional information is provided in Attachment 2 to this letter.

It should be noted that at the time of submittal of the original application, CPS was in an extended shutdown condition (i.e., the last refueling outage), and completion of the FWLCS was anticipated prior to restart. Thus, the amendment was originally requested to support plant startup with an operable FWLCS. Although installation and testing of the FWLCS was completed during the outage, in Letter U-603160 it was noted that all of the feedwater primary containment penetration isolation check valves had been air leak tested with satisfactory leak test results (following, in particular, extensive modification of the outboard check valves to improve their leakage performance, as addressed further in Letter U-603225 from John P. McElwain to James E. Dyer, dated September 20, 1999). On this basis, it was identified that the requested amendment was no longer considered a startup restraint from the outage. Receipt of the amendment during the forthcoming (i.e., during the current) operating cycle was therefore anticipated.

Pending NRC review and approval of the amendment request (and eventual release of the FWLCS for operation), the FWLCS has been maintained isolated from the feedwater and RHR system to which it is connected via closed manual isolation valves. These valves are located in the main steam tunnel and are inaccessible during plant operation (due to radiation levels in the steam tunnel and the relatively inaccessible location of the valves within the steam tunnel). At present, it is AmerGen's understanding that the NRC staff is nearing completion of its review of this amendment request, and that a license amendment is forthcoming. Issuance of the amendment with an immediate effective date would require the FWLCS to be made immediately Operable during plant operation, which would be problematic in light of the current inaccessibility of the manual isolation valves. On this basis, AmerGen requests that the amendment contain a provision such that the amendment would not be effective or required to be implemented until the next plant shutdown. This will provide the needed flexibility for implementing the FWLCS in the safest possible manner.

AmerGen appreciates the staff's attention to this matter.

Sincerely yours,

Michael T. Coyle
Vice President

TBE/mlh

Attachments

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

AFFIRMATION

Michael T. Coyle, being first duly sworn, deposes and says: That he is Vice President for Clinton Power Station; that this 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 the letter and the statements made and the facts contained therein are true and correct to the best of his knowledge and belief.

Date: This 31st day of March 2000.

Signed: Michael T. Coyle
Michael T. Coyle
Vice President

STATE OF ILLINOIS)
) SS.
DeWitt COUNTY)

" OFFICIAL SEAL "
Jacqueline S. Matthias
Notary Public, State of Illinois
My Commission Expires 11/24/2001

Subscribed and sworn to before me this 31st day of March 2000.

Jacqueline S. Matthias
(Notary Public)

Response to Questions from NRC Regarding FWLCS and Impact on Required Flows for RHR Modes

Question

In the amendment application for the Feedwater Leakage Control System (FWLCS) (Ref. Letter U-603032), the paragraph at the top of page 8 of Attachment 2 to the letter describes the proposed change for the required flow rate specified in the Technical specifications (SR 3.6.2.3.2) for the Residual Heat Removal (RHR) pump for the suppression pool cooling mode. Specifically, the required flow rate would be changed from 5050 gpm to 4550 gpm. The basis for this revised flow rate is only briefly described in this paragraph, wherein the discussion refers to the required diversion of flow to the FWLCS, consideration of instrument uncertainties, and analyses performed to reassess flow requirements for the RHR heat exchanger. Please provide a more detailed basis for the proposed flow value (i.e., 4550 gpm), particularly with regard to the impact on all affected modes of RHR operation.

Response

During the design of the FWLCS, hydraulic calculations identified very little margin between the flow required for the FWLCS and the required flow for the suppression pool cooling mode of operation for the RHR system. Given the uncertainty associated with hydraulic resistance calculations, various options were evaluated to achieve the desired flow to FWLCS. These options included changing FWLCS pipe and valve sizes, changing RHR flow orifices, and reviewing RHR flow requirements for the suppression pool cooling mode.

During Generic Letter 89-13 program improvements in 1998 and 1999, testing of the RHR heat exchangers was examined to develop a specification for testing that would provide more accurate performance data and include uncertainty in test measurements. The option of reducing the RHR flow for suppression pool cooling operations was identified for resolving the FWLCS flow margin issue. Calculations (65-019 and 065-019-TGL-01) were thus completed to verify the design margins for the RHR heat exchanger with reduced RHR flow. The results showed that an increase in shutdown service water (SX) system flow to the RHR heat exchangers relative to the original design flow of 5800 gpm, along with the reduction of required RHR flow from 5050 gpm to 4550 gpm, would still meet suppression pool heat removal specifications. These calculations utilized, as inputs, design values from the GE design specification for suppression pool heat removal, as well as RHR temperature and cooling water (SX) temperatures. These calculations show that conservative overall heat exchanger fouling factors and performance testing requirements will ensure heat transfer margins are maintained.

To support increased SX flow to the RHR heat exchanger(s), an orifice change was made per Engineering Change Notice (ECN) 30860 (completed 9/29/98). The orifice change will ensure minimum required SX flow to the RHR heat exchangers at all current design

conditions. With this change, testing has confirmed that the RHR heat exchanger(s) has adequate margin to allow the FWLCS to be operated while the RHR system is operating in the suppression pool cooling mode. In other words, implementation of the SX cooling water flow changes and confirmation of the design capability of the RHR heat exchanger (at reduced RHR flow for the suppression pool cooling mode), established the increased margin needed to support the flow requirements of the FWLCS.

Consideration was also given to the impact of the FWLCS required flow on other modes of the RHR system (besides the suppression pool cooling mode). Specifically, during the design of the FWLCS modification, Calculation 01RH29 was prepared to demonstrate that adequate head/flow margin exists to meet the requirements of any one of the three RHR modes, i.e., Low Pressure Coolant Injection (LPCI), Containment Spray, or Suppression Pool Cooling, operating concurrently with FWLCS operation. This calculation was performed using the design basis LPCI and Containment Spray (CS) head/flow requirements, current available pump capacity, and the flow requirements of the FWLCS operating concurrently with any one of the three noted modes of RHR operation. Conservatisms were added to account for piping hydraulic losses, pump degradation, diesel generator frequency variations and flow calculation uncertainties. The results of this calculation show LPCI head and flow requirements in Modes A-1 (with RPV pressure at 24 psig) and A-2 (with RPV pressure at 0 psig) as well as for CS (B-2 mode) are still met with FWLCS in service.