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United States Nuclear Regulatory Commission
Washington, DC 20555

ATTENTION: Mr. Hugh L. Thompson, Jr., Director
Division of Licensing
Office of Nuclear Reactor Regulation

SUBJECT: Beaver Valley Power Station - Unit No. 2
Docket No. 50-412
Generic Letter 85-12
"Implementation of TMI Action Item K.3.5, 'Automatic Trip of Reactor Coolant Pumps,' Schedule"

Gentlemen:

In accordance with the instruction provided in Generic Letter 85-12, Duquesne Light Company (DLC) is submitting the following information for Beaver Valley Power Station Unit 2 (BVPS-2).

This letter addresses Items A.3 and B.1 of the Safety Evaluation Report (SER), Section IV Implementation Section, which was enclosed with Generic Letter 85-12. The remaining information for Items A.1, A.2, B.2, C.1, and C.2 will be submitted by October 31, 1985.

Item A.3 of the Implementation Section (IV) of the SER requested that in addressing the selection of the RCP criterion, consideration to uncertainties associated with the WOG supplied analyses values be provided. In response to this request, the following information is submitted.

The LOFTRAN computer code was used to perform the alternate RCP trip criteria analyses. Both Steam Generator Tube Rupture (SGTR) and non-LOCA event were simulated in these analyses. Results from the SGTR analyses were used to obtain all but three of the trip parameters. LOFTRAN is a Westinghouse licensed code used for FSAR SGTR and non-LOCA analyses. The code has been validated against the January 1982 SGTR event at the Ginna plant. The results of this validation show that LOFTRAN can accurately predict RCS pressure, RCS temperatures, and secondary pressures especially in the first ten minutes of the transient. This is the critical time period when minimum pressure and subcooling is determined.

The major causes of uncertainties and conservatism in the computer program results, assuming no changes in the initial plant conditions (i.e., full power, pressurizer level, all SI and AFW pumps run), are due to either models or inputs to LOFTRAN. The following are considered to have the most impact on the determination of the RCP trip criteria:

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1. Break flow
2. SI flow
3. Decay heat
4. Auxiliary feedwater flow

The following sections provide an evaluation of the uncertainties associated with each of these items.

To conservatively simulate a double-ended tube rupture in safety analyses, the break flow model used in LOFTRAN includes substantial amount of conservatism (i.e., predicts higher break flow than actually expected). Westinghouse has performed analyses and developed a more realistic break flow model that has been validated against the Ginna SGTR tube rupture data. The break flow model used in the WOG analyses has been shown to be approximately 30% conservative when the effect of the higher predicted break flow is compared to the more realistic model. The consequence of the higher predicted break flow is a lower-than-expected predicted minimum pressure.

The SI flow inputs used were derived from best estimate calculations, assuming all SI trains operating. An evaluation of the calculational methodology shows that these inputs have a maximum uncertainty of ± 10%.

The decay heat model used in the WOG analyses was based on the 1971 ANS 5.1 standard. When compared with the more recent 1979 ANS 5.1 decay heat inputs, the values used in the WOG analyses are higher by about 5%. To determine the effect of the uncertainty due to the decay heat model, a sensitivity study was conducted for SGTR. The results of this study show that a 20% decrease in decay heat resulted in only a 1% decrease in RCS pressure for the first ten minutes of the transient. Since RCS temperature is controlled by the steam dump, it is not affected by the decay heat model uncertainty.

The AFW flow rate inputs used in the WOG analyses are best estimate values, assuming that all auxiliary feed pumps are running, minimum pump start delay, and no throttling. To evaluate the uncertainties with AFW flow rate, a sensitivity study was performed. Results from the two loop plant study show that, a 64% increase in AFW flow resulted in only an 8% decrease in minimum RCS pressure, a 3% decrease in minimum RCS subcooling, and an 8% decrease in minimum pressure differential. Results from the three loop plant study show that a 27% increase in AFW flow resulted in only a 3% decrease in minimum RCS pressure, a 2% decrease in minimum RCS subcooling, and a 2% decrease in minimum pressure differential.

The effects of all these uncertainties with the models and input parameters were evaluated and it was concluded that the contributions from the break flow conservatism and the SI uncertainty dominate. The calculated overall uncertainty in the WOG analyses as a result of these considerations for BVPS is -30 to +300 PSI for the RCS/secondary differential pressure RCP

trip setpoint. Due to the minimal effects from the decay heat model and AFW input, these results include only the effects of the uncertainties due to the break flow model and SI flow inputs.

In regards to Item B.1 of Section IV of the SER, BVPS-2 has supplied the necessary information in its FSAR. In particular, Item B.1.a is addressed in FSAR Section 5.4.1 Amendment 1 and Item B.1.b in FSAR Section 6.2.4.2 Amendment 10 and Table 6.2-60 and Note (9) to this table.

If there are any questions concerning this letter, please contact Mr. S. D. Hall of my staff at (412) 787-5141.

DUQUESNE LIGHT COMPANY

By J. J. Carey
Vice President

SDH/wjs

cc: Mr. B. K. Singh, Project Manager
Mr. G. Walton, NRC Resident Inspector
INPO Records Center