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SUBJECT: Responds to issues noted in supplemental safety evaluation,
 dtd 910916 re station blackout rule & provides addl info re
 condensate storage tank inventory.

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G. E. VAUGHN
Vice President
Nuclear Services Department

OCT 21 1991

United States Nuclear Regulatory Commission
ATTENTION: Document Control Desk
Washington, DC 20555

H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2
DOCKET NO. 50-261/LICENSE DPR-23
RESPONSE TO NRC SUPPLEMENTAL SAFETY EVALUATION OF THE RESPONSE TO THE STATION
BLACKOUT RULE (NRC TAC NO M68595)

Gentlemen:

The purpose of this letter is to respond to issues identified in the Supplemental Safety Evaluation (SSE), September 16, 1991, regarding the Station Blackout (SBO) Rule (10CFR50.63) for H. B. Robinson Steam Electric Plant, Unit No. 2 (HBR2) and to provide additional information on previously submitted information regarding Condensate Storage Tank inventory.

The NRC letter requested confirmation of implementation of additional control room heatup and reactor coolant inventory analysis. Following are 1) a clarification of the calculational methods used for the control room heatup calculations and 2) a commitment to credit a charging pump for RCS inventory makeup, which are provided to resolve the two issues described in Staff Evaluations 2.4 and 2.8.

1. Evaluation 2.4, Effects of Loss of Ventilation

Staff Evaluation

"The staff does not consider 75°F as an initial temperature as conservative enough for the control room heatup at HBR2. The control room initial temperature for conservative analytical purposes should be based on a value representing the maximum bounding temperature (with proper documentation) that has occurred in the past in the control room. If the maximum bounding temperature is not known, an initial temperature of an average value between the maximum control room Heating, Ventilation and Air Conditioning (HVAC) system design temperature and 104°F, the assumed initial temperature for a non-HVAC area, is considered by the NRC staff to be conservative enough for the HBR2 control room heatup evaluation. Therefore, the licensee should reevaluate the control room heatup and confirm that there is reasonable assurance of SBO equipment operability in the control room during an eight-hour SBO event. This evaluation and any resulting modifications should be included in the documentation supporting the SBO submittals that is to be maintained by the licensee."

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CP&L Response

CP&L's letter dated March 13, 1991 indicated that the control room heatup calculation was based on an initial control room temperature of 75°F and an outside air temperature of 95°F. However, the letter did not indicate that the calculation used the average temperature between the indoor system design temperature and the adjacent area outdoor system design temperature. The initial control room temperature used in the calculation was 85°F. Therefore, with at least two control room doors open, the calculation using the NUGSBO formula indicated the control room temperature did not exceed 120°F during the eight-hour coping period. Additionally, HBR2 Technical Specification Section 4.15.a provides for assuring once per 12 hours that the control room temperature is less than or equal to 85°F.

Concurrent with SBO submittal activities, which included a series of control room heatup calculations, a plant modification addressing control room human engineering deficiencies was also being developed. This modification, which revised the configuration of the control room environment as previously calculated, was primarily completed during Refueling Outage 13 in late 1990. The NRC Safety Evaluation on SBO was issued in February 1991. Additional design activities associated with the final control room ceiling configuration were subsequently identified. CP&L is in the process of assessing the impact of these changes on the SBO calculations. We will ensure that the eight-hour coping temperature limit of 120°F is not exceeded.

2. Evaluation 2.8, Reactor Coolant Inventory

Staff Evaluation

"The staff does not accept the estimation made in the WERG - ECA 0.0 as a basis for the SBO coping analysis. The licensee should perform a coping analysis using plant specific data for HBR2 to demonstrate that at the end of an eight-hour SBO coping duration, the core remains covered without RCS makeup."

CP&L Response

As indicated in the Safety Evaluation and restated in the Supplemental Safety Evaluation, the staff position is that the HBR2 core will not uncover during an eight-hour SBO event, if the 77 gpm charging pump is kept operating when the AAC power source is established within one hour following the SBO. Therefore, CP&L will add the charging pump, powered from the dedicated shutdown diesel generator bus, to the list of equipment required during SBO and take credit for the charging pump design flow rate of 77 gpm. This action will obviate a plant-specific coping analysis. Note that the charging pump will be aligned to provide 24 gpm for seal water injection with the remaining flow available for RCS makeup. Also, the 25 gpm stated in the associated SE statement for Technical Specification allowable RCS leakage is in error; TS 3.1.5.2 states, "operation of the reactor with a total leakage rate not exceeding 10 gpm shall be permitted."

3. Condensate Inventory Availability

As a result of ongoing Auxiliary Feedwater System (AFW) studies related to LER-89-010, several potential impacts to the Station Blackout Analysis were identified.

The modification associated with this LER will re-establish the Steam Driven Auxiliary Feedwater pump to a flow rate that is lower than the original value of 600 gpm referenced in the Technical Evaluation Report of the Safety Evaluation date February 4, 1991. After implementation of the modification, it is expected that the SDAFW pump will be able to deliver in excess of 420 gpm into fully pressurized steam generators. This pump flow rate will provide capability to restore Steam Generator level and maintain level during a Station Blackout consistent with the accident analysis. The minimum condensate inventory requirements will be values determined utilizing the NUMARC methodology and will not be reduced based on the analysis noted above related to minimum acceptable Auxiliary Feedwater flow rates.

In addition, a revision to the SBO calculation for condensate inventory requirements is in progress. As stated in CP&L letter dated March 30, 1990, and as evaluated in the February 4, 1991, NRC Safety Evaluation and associated Technical Evaluation Report (TER) performed by SAIC, adequate CST level was assured through the Technical Specification 3.4.1.c limitation of 35,000 gallons. As identified by the AFW system studies, the entire 35,000 gallons will not be usable during an SBO event due to the impact of Steam Driven Auxiliary Feedwater (SDAFW) pump seal leakoff flow to the condenser B hotwell. Therefore, CP&L is revising the SBO condensate inventory calculation to include the effects of the SDAFW pump seal leakage rate.

The following additional control is in place in the event that CST level requirements exceed the 35,000 gallons noted in the NRC Safety Evaluation and associated TER.

CP&L administratively controls CST level to be at least 34 percent full (with the SDAFW not running) to ensure that the operability requirement of Technical Specification 3.4.1.b is met:

"The reactor coolant shall not be heated above 350°F unless the following conditions are met:

b. Three auxiliary feedwater pumps must be operable."

A CST level of 34 percent is required to prevent SDAFW pump suction line voiding due to possible check valve back leakage and suction line drainage, which would render the SDAFW pump "inoperable." A seven-day LCO (72-hour reportability) is associated with Technical Specification 3.4.1.b. A CST level of 34 percent provides a CST inventory of at least 65,000 gallons.

CP&L will thus ensure adequate condensate storage tank inventory is available for the first hour.

4. Implementation Schedule

The NRC SSE on SBO for HBR2 was received by CP&L on September 19, 1991. In accordance with the scheduler requirements of the Rule, CP&L will complete all new items defined by the SSE necessary to meet 10CFR50.63 no later than September 19, 1993.

If you have any questions, please contact Mr. S. D. Floyd at (919) 546-6901.

Yours very truly,



G. E. Vaughn

JSK/jbw (1341RNP)

cc: Mr. S. D. Ebnetter
Mr. L. Garner (NRC-HBR)
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