UNION ELECTRIC COMPANY
1901 Gratiot Street, St. Louis

Donald F. Schnell
Vice President

December 28, 1984

Mr. Harold R. Denton, Director
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, D. C. 20555

Dear Mr. Denton: ULNRC-1003

DOCKET NUMBER 50-483
CALLAWAY PLANT, UNIT 1
CALLAWAY LICENSE CONDITION C(12)

The attachments to this letter provide our response to Callaway Facility Operating License NPF-30, License Condition C(12) regarding low temperature overpressure protection. This information was previously discussed with members of your staff in a meeting on November 27, 1984.

Please contact us if additional information is required. As specified in the subject license condition, the plant modifications described in the attachments will be made within one year of receiving NRC approval.

Very truly yours,

Donald F. Schnell

DS/bjk

Attachments

A010 1/3 Aperture Card Dist
Drawings To: Reg File-1
J. Holonich-2

STATE OF MISSOURI)
) S S
CITY OF ST. LOUIS)

Robert J. Schukai, of lawful age, being first duly sworn upon oath says that he is General Manager-Engineering (Nuclear) for Union Electric Company; that he has read the foregoing document and knows the content thereof; that he has executed the same for and on behalf of said company with full power and authority to do so; and that the facts therein stated are true and correct to the best of his knowledge, information and belief.

By _____
Robert J. Schukai
General Manager-Engineering
Nuclear

SUBSCRIBED and sworn to before me this 28th day of December, 1984

Mary C. Guinn

MARY C. GUINN
NOTARY PUBLIC—STATE OF MISSOURI
ST. LOUIS CITY.
MY COMMISSION EXPIRES JUNE 16, 1986

cc: Gerald Charnoff, Esq.
Shaw, Pittman, Potts & Trowbridge
1800 M. Street, N.W.
Washington, D.C. 20036

Nicholas A. Petrick
Executive Director
SNUPPS
5 Choke Cherry Road
Rockville, Maryland 20850

John H. Neisler
Callaway Resident Office
U.S. Nuclear Regulatory Commission
RR#1
Steedman, Missouri 65077

William Forney
Division of Projects and
Resident Programs, Chief, Section 1A
U.S. Nuclear Regulatory Commission
Region III
799 Roosevelt Road
Glen Ellyn, Illinois 60137

Bruce Little
Callaway Resident Office
U.S. Nuclear Regulatory Commission
RR#1
Steedman, Missouri 65077

Jan Stevens
Office of Nuclear Reactor Regulation
U. S. Nuclear Regulatory Commission
Mail Stop P-316
7920 Norfolk Avenue
Bethesda, MD 20014

This information is being provided in response to license condition C(12) of Facility Operating License NPF-30 for Callaway Plant, Unit 1 which states:

(12) Low Temperature Overpressure Protection (Section 15, SSER #3)

By January 1, 1985, UE shall submit for NRC review and approval a description of equipment modifications to the residual heat removal system (RHRS) suction isolation valves and to closure circuitry which conform to the applicable staff requirements (SRP 5.2.2). Within one year of receiving NRC approval of the modifications, UE shall have the approved modifications installed. Alternately, by January 1, 1985, UE shall provide acceptable justification for reliance on administrative means alone to meet the staff's RHRS isolation requirements, or otherwise, propose changes to Appendix A to this license which remove reliance on the RHRS as a means of low temperature overpressure protection.

In taking credit for the RHRS suction isolation valves for Cold Overpressurization Protection, there are two Standard Review Plan (SRP) sections and two Branch Technical Positions which must be addressed. These are SRP 5.2.2 "OVERPRESSURIZATION PROTECTION" and its associated Branch Technical Position RSB 5-2 "OVERPRESSURIZATION PROTECTION OF PRESSURIZED WATER REACTORS WHILE OPERATING AT LOW TEMPERATURES" and SRP 5.4.7 "RESIDUAL HEAT REMOVAL (RHR) SYSTEM" and its associated Branch Technical Position RSB 5-1. A discussion of compliance with these positions follows.

I. STANDARD REVIEW PLAN 5.2.2 AND BRANCH TECHNICAL POSITION RSB 5-2

The SNUPPS plants have been reviewed against these criteria and been found to have an acceptable design by use of the primary PORV's for a Low Temperature Overpressure Protection System (LTOPS) (Callaway SER Supplement #3, Section 5.2.2). When relying on the RHRS suction relief valves for LTOPS, the literal requirement of Branch Technical Position RSB 5-2 B.9 is not met. This section states:

> "If pressure relief is from a low pressure system, not normally connected to the primary system, the overpressure protection function should not be defeated by interlocks which would isolate the low pressure system from the primary coolant system. (See BTP ICSB3)"

Interlocks are provided on these valves to meet the requirements of SRP 5.4.7. However, as shown in our February 10, 1984 letter and as described in the bases for the Callaway Plant Technical Specifications Section B3/4.4.9 which states:

> "The OPERABILITY of two PORVs or two RHR suction relief valves, or an RCS vent of at least 2 square inches ensures that the RCS will be protected from

pressure transients which could exceed the limits of Appendix G to 10 CFR Part 50 when one or more of the RCS cold legs are less than or equal to 368°F. Either one PORV or one RHR suction relief valve has adequate relieving capability to protect the RCS from overpressurization when the transient is limited to either: (1) the start of an idle RCP with the secondary water temperature of the steam generator less than or equal to 50°F above the RCS cold leg temperatures, or (2) the start of a centrifugal charging pump and its injection into a water-solid RCS.

RHR/RCS suction isolation valves 8701A and B are interlocked with an "A" train wide range pressure transmitter and valves 8702A and B are interlocked with a "B" train wide range pressure transmitter. Removing power from valves 8701B and 8702A, prevents a single failure from inadvertently isolating both RHR suction relief valves while maintaining RHR isolation capability for both RHR flow paths."

It is apparent that no single failure will cause isolation of both trains and the worst case overpressurization transient will not challenge the pressure interlock setpoint. Therefore, it is our position that the intent of SRP 5.2.2 and Branch Technical Position RSB 5-2 is met.

II. STANDARD REVIEW PLAN 5.4.7 AND BRANCH TECHNICAL POSITION RSB 5-1

Branch Technical Position RSB 5-1 Sections B.1(a) and (c) (referenced in SRP 5.4.7) state:

B. RHR System Isolation Requirements

The RHR system shall satisfy the isolation requirements listed below.

1. The following shall be provided in the suction side of the RHR system to isolate it from the RCS.

   (a) Isolation shall be provided by at least two power-operated valves in series. The valve positions shall be indicated in the control room.

   (b) The valves shall have independent diverse interlocks to protect against one or both valves being open during an RCS increase above the design pressure of the RHR system.

During the period when one valve in each train is locked open as discussed in I. above, the requirements of this SRP are not met. This SRP, however, did not consider use of the RHRS suction relief valves for LTOPS. To ensure the RHRS is isolated from the RCS, administrative controls have been implemented which verify power is

restored to valves BB-PV-8702A and EJ-HV-8701B and the valves are closed prior to exceeding the RHRS suction relief setpoint. Once power is restored, the interlocks are no longer defeated and full compliance with this SRP is re-established. Although Union Electric deems these controls adequate to demonstrate compliance with the intent of RSB 5-1 and RSB 5-2 (i.e. no single failure can result in the isolation of both RHR suction relief valves, available overpressure transient initiators will not result in activation of the pressure interlock, and a plant procedure requires closing all RHR suction isolation valves when realigning RHR to the standby mode), we are proposing the design change shown in Attachment 2 as a means of more fully meeting the intent of these Branch Technical Positions.

III. DESCRIPTION OF PROPOSED PLANT MODIFICATION

This modification would add an alarm circuit to valves BB-PV-8702A and EJ-HV-8701B such that if the valves are open or do not have power available and the interlock activation setpoint is reached, the alarm would initiate on the main control board. As is true for all main control board annunciators, an annunciator alarm response procedure would be generated for this alarm. This procedure would require closing or verifying closure of the affected RHR suction isolation valves. This combination of annunciator/annunciator response procedure coupled with the administrative controls already in place provide a more positive means of protection for the RHR system than the current design. That conclusion is based on the following items.

1. Removing power (defeating the interlocks) not only protects the RCS from a single failure causing isolation of both RHRS suction relief valves (loss of LTOPS) but also provides protection for both RHR pumps when in operation, from a loss of suction due to a single pressure transmitter failure. Inadvertent isolation of the RHR suction valves has been a concern at other plants and has resulted in damage to one RHR pump at Callaway. This concern was also addressed by NRC Inspector P. R. Wohld in inspection report number 50-483/84-09(DE) where he recommended locking all RHR suction valves open in Modes 5 and 6.

2. Although the interlocks are reliable, there is no visual indication in the control room (other than valve position indication) that the interlocks have closed the valve. Therefore, if a signal is generated to close the valve and the valve fails to close, the operator would not be alerted. With the alarm circuit installed, if the valve is open or if power is not available and the pressure setpoint is reached, an alarm is generated in the control room giving the operator positive indication. Therefore protection is afforded if the operator fails to restore power or if the interlock actuates and the valve fails to close. Additionally, alarm response procedures would provide positive operator actions.

3. Since it is not probable that both valves in the system would remain open and undetected during a normal startup due to other indications (i.e. relief valves lifting, PRT level, pressure and temperature alarms) and since it has been shown that no credible transient would challenge the interlock setpoint, the interlock would only function to shut a valve if one valve in the train were already closed. Therefore it is considered acceptable to use an alarm versus an interlock since operator response time would be sufficient to prevent operation at full RCS temperature and pressure with only single valve protection for the RHR system.

IV. CONCLUSION

Based on the discussions above, it is the position of Union Electric that reliance on the administrative controls with the addition of the alarm circuits on valves BB-PV-8702A and EJ-HV-8701B not only meets the intent of SRP 5.4.7 but in actuality provides more protection for both the RCS (LTOPS) and the RHR system than the interlocks.