Consumers Power Company

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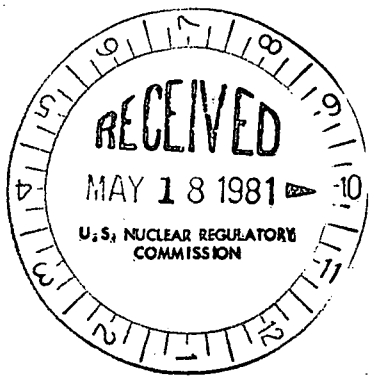

Director, Nuclear Reactor Regulation
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US Nuclear Regulatory Commission
Washington, DC 20555

DOCKET 50-255 - LICENSE DPR-20 -
PALISADES PLANT - SEP TOPIC V-11.B,
RHR INTERLOCK REQUIREMENTS

By letter dated September 15, 1980, the NRC transmitted for comment a draft evaluation of SEP Topic V-11.B, RHR Interlock Requirements. In general, we agree with the facts as presented in the report, except as noted, but we do not agree with the staff recommendations concerning interlocks for the motor-operated LPSI and shutdown cooling valves. Our detailed comments on the draft evaluation and the staff recommendations are attached.

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PALISADES NUCLEAR PLANT

Comments on Draft Evaluation
SEP Topic V-11.B, RHR Interlocks

The EI&C Evaluation for Topic V-11.B provides an evaluation to ascertain the degree to which the Palisades design complies with review criteria that deal with the interface between the high-pressure primary coolant system and the low-pressure shutdown cooling system (RHR system). Current review guidelines for interface between these two systems are contained in the Standard Review Plan: Sections 5.4.7 (Branch Technical Position RSB 5-1), 7.6 (Part III), Appendix 7A (Branch Technical Position ICSB-3), 9.5.1 Appendix A, and Regulatory Guide 1.75 which references IEEE Standard 384.

The EI&C Evaluation Report "Evaluation" and "Conclusion" were reviewed by Consumers Power Company. The need for several corrections was discovered and these are itemized below.

Corrections

The EI&C Evaluation Report Section V "Evaluation" references a simplified diagram of the shutdown cooling system. Our review shows numerous omissions and errors but only a few which are important to the review and worthy of mention, as follows: (a) The interlock which controls MO 3015 and MO 3016 comes from PS-0104 not PS-0103, (b) MO 3015 has redundant indicating lights as well as redundant hand switches, and (c) the LPSI pumps should be designated P-67A and P-67B, not T-67A and T-67B. The plant drawing for this system is P&ID M-204.

In the Suction Side Isolation section, first paragraph, the two motor-operated valves called MO 0316 and MO 0315 should be designated MO 3016 and MO 3015. In the same paragraph, it should be noted that administratively controlled switches are not addressed in the review guidelines as is stated in the sentence following.

In the second paragraph, it states that PS-0103 senses the pressure for an interlock to the suction valves. This pressure switch is actually PS-0104. (See P&ID M-204.) The second paragraph also states that a second interlock is provided by a torque switch in the "open" circuit. A review of Drawing E-242, Sheet 3, shows that the torque switch contact is not connected in the "open" circuit.

The remainder of the statements in the "Evaluation" and "Conclusion" sections are correct except for the internal conflict between BTP RSB 5-1 and BTP ICSB-3 which may eliminate conclusion 3. The two branches agree on each of the positions except for ICSB-3.B.5 which says, "For those interfaces where the subsystem is required for ECCS operation, the above recommendations need not be implemented. System interfaces of this type should be evaluated on an individual case basis." The review guidelines itemized in Section IV of the report fail to include this position. This discrepancy will be discussed further below.

Deviations From Current Review Guidelines

Table I has been attached to list the equipment involved, the P&ID, the current review guidelines and the deviations from those guidelines.

Justification of Adequacy of Existing Design MO 3015 and MO 3016

As shown in Table I, MO 3015 and MO 3016 do not have electrical interlocks to provide a close signal on increasing pressure, while the valves are open. In addition, on decreasing pressure, there is only a single nonredundant interlock to prevent the valves from being reopened. For the following discussion, it must be kept in mind that MO 3015 and MO 3016 are only operated by manual operator action and have no automatic operating capability.

In 1978, a low-temperature overpressure protection system was installed to protect the primary coolant system from pressure transients at temperatures below MPT. By Technical Specification and procedural requirements, this system is enabled during plant cooldown prior to the time MO 3015 and MO 3016 are opened and is not disabled during heatup until after MO 3015 and MO 3016 have been reclosed. This system is designed to relieve increasing pressures above approximately 400 psia through the operation of the PORVs. The system is redundant and is powered from the preferred ac buses. When enabled, the low-temperature overpressure protection system provides direct protection of the shutdown cooling system by preventing PCS pressure from exceeding shutdown cooling system design pressures.

In effect, then, MO 3015 and MO 3016 have redundant interlocks which are provided administratively when the low-temperature overpressure protection system is enabled. By Procedure GOP-9, "Plant Cooldown From Hot Standby/Shutdown," the system is enabled at approximately 400 psia as pressure is decreasing. Then, when PCS pressure is less than 270 psia, MO 3015 and MO 3016 are opened per procedure SOP 3, "Safety Injection and Shutdown Cooling."

While MO 3015 and MO 3016 are open, either the low-temperature overpressure protection system is in service or the PCS is vented through an opening of area $\geq$ 1.3 square inches (Technical Specification 3.1.8). Since this prevents PCS pressure from exceeding shutdown cooling system design pressure, equivalent or better protection exists without the use of additional interlocks on MO 3015 and MO 3016.

In view of the above, we feel that existing design features and administrative controls concerning the high-/low-pressure interface at MO 3015 and MO 3016 meet the intent of NRC review criteria and that additional system modifications are unwarranted.

As one final comment, the EI&C Evaluation Section V states that the NRC Fire Protection Safety Evaluation Report will address the noncompliance with guidelines for separation of cables for MO 3015 and MO 3016. It is possible that this report will fail to point out that the shutdown cooling system has alternate methods of cooling if the valves fail closed in the event of a fire.

These alternate methods are described in the review of the safe shutdown systems in the NRC letter dated November 5, 1980 starting on Page 19.

MO 3008, MO 3010, MO 3012, MO 3014 - Table I shows that MO 3008, MO 3010, MO 3012 and MO 3014 do not have interlocks which prevent them from opening on high PCS pressure or cause them to close on increasing pressure when they are open.

During decreasing pressure for normal shutdown cooling, the valves are not opened manually until after the low-temperature overpressurization protection system is placed in service as described in SOP 3 and GOP 9 (same operating limitations as MO 3015 and MO 3016 discussed above). While PCS pressure is increasing when these valves are open, the low-temperature overpressure protection system provides protection for the LPSI system until the valves are closed at the termination of shutdown cooling as described in SOP 3. Existing administrative controls, plus the two series check valves, therefore, provide adequate protection for the LPSI system under normal shutdown conditions.

In the event of an SIS signal, these valves will open automatically. At this point, BTP RSB 5-1 disagrees with BTP ICSB-3. It is our belief that pressure interlocks on the LPSI valves are not necessary and should not be installed. There are two reasons for this conclusion.

First, interlocks on the LPSI valves could adversely affect safety injection system response in large LOCA situations. The large LOCA is sensitive to the LPSI delivery time. The response time associated with pressure sensors in an interlock scheme could result in detrimental delays in opening the LPSI valves and delivery of LPSI water to the core.

Second, the Order for Modification of Palisades license dated April 20, 1981 and the enclosed Technical Specification require routine testing of selected safety injection system check valves. Under that Technical Specification, the LPSI and the downstream check valves adjacent to the loops will be routinely tested to verify that back leakage is acceptably low. This Order and Technical Specification were imposed to insure that the check valves would function to protect lower design pressure upstream piping from overpressurization (WASH-1400 Event V sequence). By this testing, continuing assurance will be available so that the check valve isolation capability remains functional.

In light of these additional considerations, we believe that the LPSI motor-operated valves should be addressed on a case basis in accordance with BTP ICSB-3.B.5 and that interlocks should not be required.

TABLE I

List of Equipment Noncompliances
With Current Review Guidelines

Equipment	P&ID	Review Guidelines	Noncompliance
MO 3015, MO 3016	M-204	BTD RSB 5-1, ICSB-3	Pressure interlocks are not redundant and do not provide close signal on increasing pressure.
		SRP Section 9.5.1, RG 1.75, IEEE 384	Physical separation of redundant systems.
MO 3008, MO 3010, MO 3012, MO 3014	M-204	BTP RSB 5-1, ICSB-3	No pressure interlocks for opening or closing.