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February 7, 1984

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

Attention: Ms. E. G. Adensam, Chief
Licensing Branch No. 4

Re: Catawba Nuclear Station
Docket Nos. 50-413 and 50-414

Dear Mr. Denton:

Section 8.4.7 of the Catawba Safety Evaluation Report discusses Confirmatory Item 36, Flooding of Electrical Equipment as a Result of a LOCA. In response to this item, attached is a revised response to Question 440.48.

Very truly yours,

Hal B. Tucker

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Attachment

cc: Mr. James P. O'Reilly, Regional Administrator
U. S. Nuclear Regulatory Commission
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NRC Resident Inspector
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Response:

The maximum post-accident flood level inside containment has been determined to be elevation 571' 0". The safety related control instrumentation below this elevation are the reactor coolant loop elbow flow rate instruments and the reactor coolant system wide range temperature RTD's. The flow rate instrumentation provides both control room indication and a reactor trip (on low flow in any one loop) neither of which is required after an accident (no operator actions taken on indication, and reactor trips due to safety injection signal). The RTD's are sealed units which are terminated above the flood level and therefore are not affected by submergence.

A list of safety related solenoid valves in containment that are below maximum flood elevation is presented in Table Q440.48-1. These solenoids perform one of two functions; namely, controlling air to air diaphragm operated valves and providing air to the lower personnel air lock inflatable seals. All of the air diaphragm operated valves are designed to assume their safety position on loss of air. All of the solenoids controlling the air supply are designed to vent the air diaphragm on loss of power. Therefore, even if control of these solenoid valves is lost the air operated valve will assume its correct position. The solenoids which supply air to the lower personnel air lock seals are designed to fail in the position which supplies air to the seals. None of these valves are required to be repositioned to perform short or long term ECCS functions.

A list of active valves in containment that are below maximum flood elevation is presented in Table Q440.48-2. In this evaluation it was discovered that two valves were required to be raised above flood elevation (the two valves -- 1NW46A and 1NW110B provided sealing water for several containment isolation valves). The valves which will potentially be flooded are, except as noted, electric motor operated. These are assumed to fail in the position they are in when flooded. There is sufficient time for the ones which receive a safety signal to stroke to their safety positions before being flooded. None of these valves are required to be repositioned to perform short or long term ECCS functions.

In addition, 18 valve operators were not previously qualified for submergence (1KC429B, 1NC54A, 1NI95A, 1NI266A, 1NI267A, 1NM6A, 1NM72B, 1NM75B, 1NM78B, 1NM81B, 1NM187A, 1NM190A, 1NM197B, 1NM200B, 1NM207A, 1NM210A, 1NM217B, and 1NM220B).

These valves close on Containment Isolation Phase A (ST) signals. There is sufficient time for them to close before being flooded. To prevent possible repositioning after flooding, the valves motor controls circuits are being modified (see Fig. Q440.48-1). One relay per train will be energized by a ST signal and mechanically latched in. Normally closed contacts from this relay will be wired between the limit switches and the open motor starter coils of valves of the

corresponding train. These contacts will open on ST and prevent any spurious limit switch operation from repositioning the valves. These relays will have manual reset capability in the control room.

Breakers and fuses are coordinated such that, in the case of faults caused by submergence, the faulted valve circuits will be isolated without adversely affecting the upstream class 1E power sources. These modifications will be completed prior to fuel loading.

An additional valve, 1NI438A, has been identified as being approximately three feet below the final flood elevation. This valve is a normally closed, EMO which supplies nitrogen from a cold leg accumulator to a pressurizer PORV as a part of the low temperature overpressure protection system (LTOP). Since is is near the top of the flood elevation, it is not flooded during the time that cold leg accumulator injection is required and spurious operation if it were to occur after the valve is flooded presents no safety question.

Table Q440.48-1

SAFETY RELATED SOLENOID VALVES INSIDE CONTAINMENT BELOW ELEVATION 571'0"

Solenoid Valve	Functional Description
CN1NVSV0010	Controls air to valve 1NV1A Letdown Isolation
CN1NVSV0020	Controls air to valve 1NV2A Letdown Isolation
CN1NVSV0320	Controls air to valve 1NV32B Charging Isolation
CN1NVSV0390	Controls air to valve 1NV39A Charging Isolation
CN1NVSV0520	Controls air to valve 1NV52A RCP #1 Seal Leakoff Isolation
CM1MVSV0630	Controls air to valve 1NV63B RCP #1 Seal Leakoff Isolation
CN1NVSV0740	Controls air to valve 1NV74A RCP #1 Seal Leakoff Isolation
CN1NVSV0850	Controls air to valve 1NV85B RCP #1 Seal Leakoff Isolation
CN1NVSV1010	Controls air to valve 1NV101A RCP #1 Seal Bypass
CN1NVSV1020	Controls air to valve 1NV102A RCP #1 Seal Standpipe Makeup
CN1NVSV1070	Controls air to valve 1NV107B RCP #1 Seal Standpipe Makeup
CN1NVSV1120	Controls air to valve 1NV112A RCP #1 Seal Standpipe Makeup
CN1NVSV1170	Controls air to valve 1NV117B RCP #1 Seal Standpipe Makeup
CN1NVSV1220	Controls air to valve 1NV122B Excess Letdown Isolation
CN1NVSV1230	Controls air to valve 1NV123B Excess Letdown Isolation
CN1NVSV1240	Controls air to valve 1NV124B Excess Letdown Control Valve
CN1NVSV1241	Controls air to valve 1NV124B Excess Letdown Control Valve
CN1NVSV1250	Controls air to valve 1NV125B Excess Letdown Flowpath
CN1NCSV0580	Controls air to valve 1NC58A Prt Spray Valve

Table 440.48-2

ACTIVE VALVES INSIDE CONTAINMENT BELOW ELEVATION 571'0"

Valve Number	Valve Function
1BB149B	BB Tempering Line Containment Isolation
1BB150B	BB Tempering Line Containment Isolation
1NC196A	NCP Motor Oil Fill Line Containment Isolation
1ND1B	NC to ND Suction Isolation Valve
1ND2A	NC to ND Suction Isolation Valve
1NC36B	NC to ND Suction Isolation Valve
1ND37A	NC to ND Suction Isolation Valve
1NV1A	Letdown Isolation (air operated)
1NV2A	Letdown Isolation (air operated)
1NV10A	Letdown Orifice Selection & Containment Isolation (air operated)
1NV11A	Letdown Orifice Selection & Containment Isolation (air operated)
1NV13A	Letdown Orifice Selection & Containment Isolation (air operated)
1NV37A	NV Auxiliary Pressurizer Spray
1NV122B	Excess Letdown/Isolation (air operated)
1NV123B	Excess Letdown/Isolation (air operated)
1NV89A	Seal Water Return Containment Isolation (air operated)
1RN429A	RN Return Header Containment Isolation
1RN484A	RN Return Header Containment Isolation
1WL805A	NCDT Discharge Containment Isolation
1WL825A	Containment Floor & Equip Sump & II Sump Containment Isolation
1WL876A	Vent, Unit Condensate Drain Containment Isolation
1VQ16A	Containment Air Addition & Release Containment Isolation
1KC429B	KC Equipment Drain Header Containment Isolation
1NC54A	Prt Sample & Vent Containment Isolation

Table 440.48-2 (continued)

ACTIVE VALVES INSIDE CONTAINMENT BELOW ELEVATION 571'0"

Valve Number	Valve Function
1NI95A	NI Test Header Containment Isolation
1NI266A	UHI Test Header Containment Isolation
1NI267A	UHI Test Header Containment Isolation
1NM6A	Pzr Sample Containment Isolation
1NM72B	Cold Leg Accumulator Sample Containment Isolation
1NM75B	Cold Leg Accumulator Sample Containment Isolation
1NM78B	Cold Leg Accumulator Sample Containment Isolation
1NM81B	Cold Leg Accumulator Sample Containment Isolation
1NM187A	Steam Generator Sample Containment Isolation
1NM190A	Steam Generator Sample Containment Isolation
1NM197B	Steam Generator Sample Containment Isolation
1NM200B	Steam Generator Sample Containment Isolation
1NM207A	Steam Generator Sample Containment Isolation
1NM210A	Steam Generator Sample Containment Isolation
1NM217B	Steam Generator Sample Containment Isolation
1NM220B	Steam Generator Sample Containment Isolation
1N154A	Cold Leg Accumulator Isolation Valves
1N165B	Cold Leg Accumulator Isolation Valves
1N176A	Cold Leg Accumulator Isolation Valves
1N188B	Cold Leg Accumulator Isolation Valves
1N1438A	Cold Leg Accumulator Nitrogen Supply to PORV Activator
1KC332B	KC Return from NCDT Containment Isolation